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A Project To Improve Advanced Practice Provider Financial Metrics Through A Practice Management Program

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Management Program

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Abstract

A Project to Improve Advanced Practice Provider Financial Metrics Through a Practice Management Program

This DNP project developed a practice management program for ambulatory Advanced Practice Providers (APPs) practicing in a large academic healthcare system with the goal to improve financial metrics. In 2020, Centers for Medicare and Medicaid Services (CMS) reported $25.74 billion in incorrect payments citing documentation errors and insufficiency as the common cause. The growth of the APP workforce necessitates APP practice management knowledge to avoid significant revenue loss since APPs collectively report lack of healthcare business knowledge.

Twenty ambulatory APPs participated in a 12-week practice management program focused on visit code assignment, global procedural period, modifiers, charge capture, and revenue cycle management. A 10-minute podcast lecture for each concept was sent to participants' mobile phones via text message every 2-weeks. Participants completed a pre- and post-program practice management knowledge assessment and a perceived self-efficacy survey. The participants received monthly productivity metrics. Average work relative value units (wRVUs) per session benchmarks for each participant were established and monitored during and for 2-months after the program.

There was a highly significant improvement post -program in average total perceived self-efficacy of ($t = 4.8695$, $p < 0.0001$) and average total knowledge acquisition of ($t = 2.579$, $p = 0.014$). Areas within these domains also demonstrated significant trends in improvement. Mean wRVUs per session during implementation was found to be statistically significant ($t = 2.63$, $p = 0.017$). at 0.60 above benchmark.

In conclusion, a short, focused practice management program improved APP practice management confidence and knowledge and increased in APP estimated financial productivity.

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Part 1

A Pilot to Improve Advanced Practice Provider Financial Metrics Through a Practice Management Program

In today's economic climate, health care systems' greatest challenges are related to cost containment, patient access, and quality of care. Decreased reimbursement, coupled with the increasing number of people without health insurance, are pushing healthcare systems to transform provider care delivery(Brooks & Fulton, 2020). Federal quality assurance programs, like the Hospital Value Based Purchasing program, are designed to improve the quality of care in hospitals with financial incentives for eliminating adverse events, decreasing cost, and increasing patient satisfaction (Centers for Medicare & Medicaid Services, 2020). Advanced practice registered nurses (APRNs) and physician assistants (PAs), collectively known as advanced practice providers (APPs), could be a viable solution to these health system challenges (Kurtzman & Barnow, 2017; Yang et al., 2018).

APPs are master's prepared, highly skilled, revenue generating providers who deliver cost-effective care which is associated with improved patient access and patient satisfaction, as well as decreased hospital length of stay, readmissions, hospitalizations, and emergency room visits(Katz et al., 2021; Kippenbrock et al., 2019; Traczynski & Udalova, 2018). For APPs to maximize their contribution to the healthcare system, they must develop a business acumen that parallels their clinical expertise. Clinical documentation, billing and coding, reimbursement, provider productivity, and clinical operations are areas of practice management that impact financial and quality metrics and measure provider success (Bhagavath et al., 2021; Brooks & Fulton, 2020; Luster-Tucker, 2016). However, APP practice management knowledge is lacking. APP graduate programs, institutional onboarding curricula, and professional organizations fall short in providing the training necessary to maximize their contribution in the healthcare marketplace(Luster-Tucker, 2016; Lyden et al., 2018).

Problem Statement

The American Association of Colleges of Nursing (AACN) recognizes the importance of business and financial practice skill sets as necessary education requirements(AACN, 2006). However, the business curricula requirement is relegated to the Doctor of Nursing Practice programs, which leaves the master's prepared nurse practitioner ill-equipped for the financial aspect of independent practice. The Accreditation Review Commission for Education of the Physician Assistants (ARC-PA) states that the PA curriculum must include instruction on the business of healthcare comprising of billing and coding, documentation, and healthcare delivery systems(ARC-PA, 2019). Nonetheless, APPs collectively report frustration with their lack of healthcare business knowledge, reporting that their graduate training programs provided little to no business education or simply glossed over these topics (Lafevers et al., 2015; Lyden et al., 2018). The Accreditation Council for Graduate Medical Education (ACGME) cites "incorporating considerations of value, cost awareness, delivery and payment, and risk- benefit analysis in patient and/or population-based care as appropriate; and understanding healthcare finances and its impact on individual patients health decisions" as a systems-based core competency for physician residency graduation(ACGME, 2020). Physician residency programs across specialties have identified a gap between patient care and practice management and have created practice management curricula which have improved both financial and quality metrics (Bhagavath et al., 2021; Ghaderi et al., 2017; Kelley et al., 2019; Malaty et al., 2020; Reyes et al., 2017). While APPs may have been included alongside residents in departmental ACGME mandated practice management education, there is a paucity of research identifying APP specific practice management curricula. This DNP project developed a practice management program for ambulatory APPs practicing in a large academic healthcare system. The program focused on documentation, billing and coding, and revenue cycle management and how these impact financial metrics.

Significance of Addressing the Problem

A Medicare data review reported that coding and billing errors are responsible for $100 billion revenue loss annually (HSS, 2016). In the United States, miscommunication and poor documentation has been attributed to potentially 2,000 deaths per year (Kern, 2016). Formalized practice management curricula for resident and attending physicians have collectively shown significant improvement in medical coding documentation, clinical productivity, generation of higher billing codes, financial reimbursement, and compliance (Bhagavath et al., 2021; Ghaderi et al., 2017; Kelley et al., 2019; Malaty et al., 2020; Reyes et al., 2017). A clinical documentation program in an academic surgery department resulted in a calculated increase of hospital surgical charges equaling $4,672,786, identified $843,360 of missed billing opportunities, decreased documentation delinquency by 85% to 97%, and improved compliance with the Surgical Care Improvement Program (SCIP) metrics (Reyes et al., 2017). A practice management program for APPs may yield the same financial improvements. This is significant given that the number of APRNs in every US region more than doubled, growing from about 91,000 to about 190,000 between 2010-2017 and the number of licensed PAs grew to a total of over 158,000 by the end of 2018 (NCCPA, 2018). In addition, both APP professions are among the top 20 occupations with the highest percent change of employment between 2019-29 with the APRN profession predicted growth rate of 52% and the PA profession predicted growth rate of 31% (US Department of Labor, 2020). NPs outpace the physician growth rate nearly 10-fold. The exponential growth of the APP workforce supporting private practices, academic medical centers, and health systems necessitates APP practice management knowledge to avoid massive losses of revenue for these organizations and to ensure the highest quality of care to the millions of patients served (Brooks & Fulton, 2020; Luster-Tucker, 2016; Lyden et al., 2018).

Background

Search Strategy

The search utilized the following electronic databases: PubMed and Scopus. Google Scholar was used to obtain pertinent background information from professional organizations and regulatory bodies. Snowball literature review was also used to identify pertinent studies. The search terms included: documentation, medical coding, billing, practice management, training, education, healthcare, business, nurse practitioner, physician assistant, and advanced practice providers. Inclusionary criteria were articles that addressed APRN and/or PA business knowledge and provider practice management training and narrowed to include the years 2010-2021. It is important to note that articles addressing physician practice management training were included as there was limited data on APP practice management training. The search yielded 66 articles. After duplicates were removed, 51 articles remained. The title and abstract review yielded a total of 25 articles. Following full-text review 11 articles remained. Two additional articles were later identified using snowball method (Appendix A).

Synthesis of Literature

Two reports from CMS document the improper payment data associated with insufficient documentation, medical necessity, and incorrect coding across the hospital outpatient domain. Two articles address the importance of APP practice management knowledge to success and the lack of business training in graduate and APRN programs; 1 article addresses APP practice management training in a clinical re-design; and 8 articles address both the importance of practice management knowledge to success from a physician perspective and the implementation and outcomes of physician and resident trainee practice management training. The predominant themes evident in the literature review include the significant financial impact of poor documentation, necessity for provider practice management education, improvement in practice management quality and financial metrics through a formalized curriculum, and the lack of practice management education in APP training programs. Practice management is a term

that collectively refers to the business operations of healthcare including, but not limited to, billing and coding, clinical documentation, compliance, reimbursement, financial management, and contract negotiation. There is limited research on the impact practice management programs have on provider financial metrics. Several studies measure the participant comfort level or confidence level after receiving practice management training through self-reported surveys and only a few use metrics as a measure of effectiveness. Most articles included in the evidence matrix rank as Joanna Briggs Institute level of evidence II for effectiveness (Briggs, 1997). The overall quality of the articles is moderate to low risk for bias. The most common limitation that affects quality is small sample size and single department or institution location of the research.

Literature Findings

Documentation Errors

Center for Medicaid and Medicare Services (CMS) 2020 Medicare Fee-for- Service Supplemental Improper Payment Data provides a view of the cost of poor documentation. CMS reported a staggering $25.74 billion in incorrect Medicare payments in 2020 (CMS1, 2020). The common causes were: insufficient documentation at 61.3%, failure to demonstrate medical necessity at 16.2%, incorrect coding at 10.9%, other at 5.4%, and no documentation at 4.4% (CMS1, 2020). Office visits-established had the highest projected improper payment of Medicare Part B listing over $789 million and the highest improper payments of Medicare Part A (excluding hospital inpatient prospective payment system) was hospital outpatient at $2.5 billion (CMS1, 2020). On a local level, the state's projected improper payments for 2020 exceeded $150 million (Centers for Medicare & Medicaid Services, 2020b). Improper payments are not typically the result of fraud, but rather payments that did not satisfy the statutory, regulatory, administrative, or legal requirements for billing (CMS2, 2020). In most cases, the lack of documentation or documentation errors prevent CMS's ability to qualify the payment accurately. CMS uses this data to create process improvement initiatives to decrease the improper

payment rate (CMS2, 2020). The improper payment rate has been on the decline since 2013 and showed a significant decrease in 2020 dollars when compared to $28.91 billion in 2019 (CMS1, 2020). Despite improvement, the data demonstrates the urgency for providers to improve their documentation and play an active role in overall cost containment.

Practice Management Education

Two studies highlight the necessity of APRN practice management education. LaFevers et. al (2015) implemented a survey assessing nurse practitioner (NP) (APRN) business practice knowledge and found gaps in knowledge and content. They stated that if NPs do not comprehend essential business concepts and their application, the profession runs the risk of marginalization and decreased professional legitimacy. In addition, insufficient business practices result in the inability to sustain a clinical practice, achieve financial stability, and provide patient care. The variability found in the survey results of NP's business practice knowledge confirmed the need for standardized formal business practice education. Similarly, Lyden et. al (2018) surveyed and interviewed self-employed NPs to measure job satisfaction and empowerment. The survey identified that managing the paperwork and bookkeeping were major dissatisfiers of NP self-employment. Many participants cited lack of business education in their graduate programs as the root cause of this dissatisfaction. Lyden et. al (2018) also stated that successful operations of a private practice require business acumen and time management to attend to administrative duties including accounting and maintaining creditworthiness.

There is a paucity of data regarding the importance of practice management to PA practice, however this concept is formally investigated in physician trainee studies. These report that knowledge of documentation, compliance, medical coding, billing, and reimbursement are essential to a successful medical practice (Ghaderi et, al 2017; Kelley et. Al, 2019; Yount et. Al 2014). Based on research outcomes reporting inexperience and uncertainty among residents across specialties regarding clinical billing, Ghaderi et. al (2017) implemented a curriculum to improve knowledge and performance in documentation, coding and billing, and to satisfy the

Accreditation Council for Graduate Medical Education (ACGME) requirement for systems-based practice education. The goal was to close the gap between patient care and practice management. Kelley et. al (2019) also instituted similar didactic training to satisfy ACGME requirements and to improve resident comfort levels regarding documentation and stated that medical coding knowledge was imperative for the future success as a surgeon irrespective of the choice to enter an academic, hospital-employed, or private practice. In another study, orthopedic resident knowledge of clinical documentation, coding, and Medicare fraud was assessed through a baseline examination. A 45-minute lecture followed the examination covering the tested topics (Varacallo et al., 2017). A post-session examination and a self-assessment survey on the level of comfort regarding documentation and coding was administered. The post-session examination results revealed a significant improvement in average total examination scores. Varacallo et al. (2017) concluded that a high-yield education intervention improved orthopedic resident documentation and coding knowledge. Yount et. al (2014) measured the resident awareness of documentation requirements and reimbursement in a multi-institutional survey. The results revealed that residents have limited knowledge of documentation requirements, tend to overestimate lower acuity encounters, and underestimate high acuity encounters. The researchers addressed the importance of resident practice management education in terms of losses, citing inadequate documentation that can result in large penalties and repayments and potential medical legal costs. Castaldi et. al (2019) implemented a training and education program on International Classifications of Diseases (ICD-10) diagnoses requirements and evaluation and management (E/M) coding (Castaldi & McNelis, 2019). High impact diagnoses were audited, and when an opportunity for improvement was identified, it was sent to a specially trained PA for adjustment (Castaldi & McNelis, 2019). This program resulted in significant revenue gain.

Financial and Quality Metrics

Practice management curricula administered to APPs, physician, and resident trainees across specialties have been shown to improve comfort level, clinical documentation, compliance, and financial and quality metrics. In a clinical re-design to improve APP utilization, Brooks et. al (2019) implemented an APP billing algorithm, created independent APP clinics, and provided monthly financial dashboards to APPs which lead to increased APP Work Relative Value Units (wRVUs), clinic density, and clinic sessions. Castaldi et. al (2019) identified a $2.8 million revenue loss on an in-patient surgical service due to documentation and coding errors. Inaccurate medical documentation pertaining to the severity of illness and services provided lead to under coding (Castaldi & McNelis, 2019). A gap analysis revealed inconsistent documentation on high impact diagnoses with minimal understanding of the documentation process (Castaldi & McNelis, 2019).

A coding and documentation education program lead by a group of clinical documentation specialists and PAs resulted in over $2.2 million validated revenue, over $1.7 million in potential revenue opportunities, and over $65, 000 in lost revenue opportunities (Castaldi & McNelis, 2019). Johnson et. al (2018) implemented an education program on QI metrics including length of stay (LOS) and diagnostic related groups (DRGs) with complication or comorbidity (CC) or major complication or comorbidity (MCC) coding. LOS initiatives focused on recognizing, monitoring, and eliminating peri-op delays and improving clinical documentation accuracy. Vascular admissions showed a 21% reduction in LOS and documentation improved with 24% DRGs accurately reflecting CC/MCC. Case-mix index (CMI) improved by 10% (Johnson et al., 2018). The results support that resident education and engagement in quality improvement activities enhances documentation, shortens hospital length of stay, and fosters a culture of continuous improvement (Johnson et al., 2018).

Through a comprehensive outpatient chart audit of resident documentation, Ghaderi et. al (2017) identified knowledge, motivation, and billing infrastructure as 3 major barriers in coding and implemented a program educating on accurate and complete documentation and medical

decision making in the validation of billing code field (Ghaderi et al., 2017). Ghaderi et. al (2017) found their curriculum yielded significantly increased rates of higher complexity evaluation and management (E&M) coding based on improved documentation and billing awareness. Reyes et. al (2016) also audited surgical charts and identified 76% of charts had a possible DRG (diagnosis-related group) increase with improved documentation and a projected 40% loss in reimbursement due to insufficient documentation. A comprehensive clinical documentation curriculum was presented to the entire surgical department including physicians, APPs, and resident trainees. Provider responses to clinical documentation improvement queries resulted in over $4 million increased charges. In addition, delinquent documentation decreased by 85% and compliance with surgical care improvement program (SCIP) measures improved by 85% to 97%.

Kelley et. al (2019) surveyed surgical residents and found they were uncomfortable with medical coding and documentation and delivered a medical coding curriculum. The curriculum improved resident comfort level with respect to documentation and identified needs for further practice management training (Kelley et al., 2019). Family Practice residents' knowledge and preparedness regarding medical coding, productivity, and medical practice financials was measured in a survey before and after reviewing their own practice management reports and metrics in a study by Malaty et. al (2020). Reviewing quarterly practice management reports which included individual financial and quality metrics along with national benchmarks significantly improved individual productivity and financial metrics as well as the ability to implement clinic-based patient care improvement processes (Malaty et al., 2020)

APP Training Programs

Business education in APRN and PA graduate training programs is not well documented. Lafevers et. al (2015) implemented 33-item survey measuring APRN perspectives in business practice knowledge and attitudes. The results revealed the differing business knowledge priorities based on APRN role and provided an evidence-based approach in

identifying content that should be in APRN training programs. In a mixed methods study measuring self-employed APRN job satisfaction and empowerment, Lyden et. al (2018) found a common concern to be the lack of information and resources regarding business management. They noted that NP's main frustration was the absence of business education in their masters or doctoral programs. The majority of the NP study participants recommended that graduate degree programs offer classes dedicated to accounting, marketing, economics, and business law. No data was found on PA program business training.

Summary of Literature Findings

The CMS's improper payment report provides compelling data demonstrating the widespread severity of documentation errors and inadequacies. Provider practice management education has proven to be necessary to achieve and sustain a financially viable clinical practice, control the quality of patient care, and ensure clinical documentation compliance. This concept is well described in physician and physician trainee studies that use financial, quality, and productivity metrics to measure success. However, the same breadth and depth of research is deficient for the APP profession despite studies citing the importance of APP practice management education to success and its absence in APRN graduate training programs. No studies were found addressing practice management education in PA graduate training programs. PAs bill independently like APRNs; however, they do not have full practice authority which could explain the paucity of research on this topic. Small sample size, single institution design, and lack of long-term follow up were limiting factors across all studies using metrics to measure the outcome of practice management curricula. Research exploring the outcome of a practice management curricula specifically designed for APP practice is warranted.

Project Model

The DNP project used Lewin's change model to plot the steps taken to implement and evaluate the project (Burnes, 2020). Lewin's change model is comprised of three stages: unfreezing, movement, and refreezing (Burnes, 2020) (Appendix C). Unfreezing is the process

of identifying and destabilizing an established equilibrium (Burnes, 2020). In the unfreezing stage of this DNP project, the APP practice management knowledge gaps and inefficiencies were identified and buy-in from APP and hospital leadership was secured. The movement stage took place in phases, with the development of a practice management program designed to fill the knowledge gaps identified and improve workflow of APPs, followed by hospital leadership providing encouragement to embrace the program. The APPs applied the new knowledge that resulted in enhanced productivity. Finally, the refreezing stage solidified the change. The improved productivity metrics were shared with the APPs, and they made the new knowledge and workflow a standard practice.

Supporting Theoretical Framework

The supporting theoretical framework for this project, the Cognitive Theory of Multimedia Learning (CTML), guided the development of the practice management program(Mayer, 2008). The program was implemented in a podcast format. CTML was chosen as it has been used as a theoretical framework in the development of educational podcasts called content acquisition podcasts (CAPs) (Kennedy, 2011, 2015; Mayer, 2008; McNamara & Drew, 2019) (Appendix D). CTML is founded on three assumptions. First, verbal and visual information is processed by two separate channels. This assumption is called the dual channel assumption (McNamara & Drew, 2019). CAPs utilize both spoken word and images. Second, it is assumed that the amount of information that can be processed by each channel has limits. This assumption is known as the limited capacity assumption (McNamara & Drew, 2019). According to the redundancy principle, large volumes of information impede learning as it cannot be organized and processed due to the limited capability of short-term memory (Mayer, 2005). CAPs only include information necessary to understanding a concept and limit the time frame information is presented. Third, learning is assumed to be an active process of gathering, organizing, and incorporating new information with prior knowledge. This assumption is called constructive learning (McNamara & Drew, 2019). CAPs help the learner to make connections between what is newly learned and

what is already known using images and audio text. CTML has 12 evidence-based principles that were used to design and develop the podcast and assist the APPs ability to learn (Driver et al., 2014; Mayer, 2008; McNamara & Drew, 2019) (Appendix D).

Organizational Assessment

This DNP project was piloted within the ambulatory sector of a large urban hospital.. With an annual operating budget of $5.0 billion, the large, non-profit, private, academic health system is comprised of 5 hospitals and numerous ambulatory clinics providing care in over 100 medical specialties. There are over 1,000 APP across the system. The flagship hospital is a Magnet designated hospital which builds nursing science into the overarching organizational framework(Beal & Riley, 2019). It is also a high reliability organization (HRO) with a culture focused on safety that necessitates staff at every level be comfortable sharing information and concerns with others and ensures staff be commended when they do (Cantu et al., 2021). The health system's vision is to provide access to high value, patient centered care. It's mission highlights commitment to innovation and excellence in patient care, teaching, research, and service to its community. The practice management program is an APP quality improvement project with a focus on improving documentation accuracy, which will result in enhanced compliance, increased billing, and decreased communication errors. These goals align with the HRO culture, and the health system's vision, mission, and values.

Implementing a change in a large academic health system with many facets presents a challenge. Several hundred APPs in multiple service lines with varying practice patterns and a multitude of leaders would not be feasible. Piloting the practice management program in a subset of APPs within a single service line under one director would allow for closer communication, monitoring, evaluation, and pivoting if necessary. Project flaws would be more easily recognized and repaired. Neuroscience Orthopaedics Surgery (NOS) service line ambulatory APPs would be an ideal group for the pilot. The service line clinical leadership hierarchy consists of a Vice President (physician), Executive Director of Nursing Operations

(RN), Director of Advanced Practice (APP), and 4 Clinical Managers (APPs) who provide leadership to approximately 75 ambulatory and hospital-based APPs. There are 32 full-time ambulatory APPs within the ambulatory neurosurgery and the orthopedics specialties that would be excellent candidates to participate in this pilot. The APPs from these two surgical departments have similar work schedules, practice environments, workflow, and see similar types of patients with similar levels of complexity. In addition, the APPs in these two specialties have a diverse level of clinical experience ranging from new graduate to over 20+ years of experience. This is an ideal group to pilot a practice management program to improve financial metrics given all have robust patient panels, see patients both collaboratively with physicians and independently, perform outpatient procedures, and make a significant financial contribution to the practice. The project is open to all 32 APPs practicing in these two services. There is support from the Director of Advanced practice and the ambulatory clinical managers who have access to the metrics that would be used as outcome measures.

Strengths, Weaknesses, Opportunities and Threats Analysis (SWOT)

A SWOT (Strengths, Weaknesses, Opportunities and Threats) analysis was conducted for this project.

      Strengths. Large academic health systems are centers of research and innovation which provide a supportive environment for scholarship and inquiry. Magnet designated hospitals have a nursing culture that inspires nurses to develop scholarly nursing practice (Beal & Riley, 2019). Quality improvement projects align with innovation, teaching, and research which are three of the tenets of the health system's mission statement as well as HRO practices. There are approximately 1,000 APPs across the health system in both ambulatory and inpatient roles with strong tenured leadership. The Surgical Services APP director is supportive of this DNP project and will assist with service line approval and buy-in. The NOS ambulatory APPs receive monthly dashboards which include the financial metrics that will measure the effect of this DNP project.

Weaknesses. Process approval and change can be challenging in a large academic health system. The billing and coding professionals have little to no personal interaction with the APPs outside of an occasional email requesting a chart correction, which may obstruct buy-in from both stakeholders. Many of the APPs have shared visits with their collaborating MDs which could skew the financial being measured.

Opportunities. Medicare data on healthcare revenue loss related to coding and billing errors, along with calls by The American Association of Colleges of Nursing (AACN) and The Accreditation Review Commission for Education of the Physician Assistants (ARC-PA) for the importance of business and financial practice skill sets and training (AACN, 2006),support the need for this project. The need for practice management training in both NP and PA professions and the unique implementation strategy using a podcast format may catch the attention of APP national professional organizations interested in adoption/endorsement of the program. Professional organization endorsement would significantly increase program access on a national level. The evidence confirms global lack of practice management training in APP graduate training programs. This DNP project could serve as a model for business education in both graduate training programs and institutional onboarding since the program focusses on APP knowledge gaps, is low cost, and makes efficient use of time. This DNP project provides an opportunity to validate content acquisition podcast efficacy in advanced practice education and in doing so creates business prospect outside the organization in the private sector. An advanced practice educational podcast incorporating additional topics such as health policy advocacy, diversity, equity, and inclusion, and social determinants of health could be built on the foundation established by this DNP project..

Threats. CMS guidelines and policies in the current healthcare landscape change rapidly. A major CMS guideline change in or around the project course could make the material in the program obsolete. Cyber security threats are ever-present and could limit the integrity of the program information and the access to participants. The current health system environment

is highly competitive for patients and employees. Given the large size and financial contribution of the APP workforce, a successful practice management program that generates revenue could be an attractive program for a competing health system to duplicate. This would diminish the DNP project health system sponsor's competitive advantage from both an APP financial and staffing position. The mergers and acquisition market among hospitals, health systems, and large specialty practices was at an all-time high in 2022 (PricewaterhouseCoopers, 2022). A merger or acquisition within the DNP project health system during implementation could bring changes in patient volume, provider roles, staffing, workflow, and revenue cycle management which in turn could compromise project success. National and state regulatory changes could impact APP independent practice making the project irrelevant. A COVID-19 surge, or similar pandemic emergency could threaten the DNP project should the healthcare system operations and patient care pause the way it did in 2020 .

Project Goal and Aims

This DNP project developed a practice management program for ambulatory Advanced Practice Providers (APPs) practicing in a large healthcare system.

The project aims were:

1. To develop a program for improving ambulatory APP financial metrics.

2. To implement and evaluate the program.

3. To make recommendations for scaling and sustainability of the program throughout the healthcare system.

Part 2

Methods

Overview of Methods

A 12-week practice management program focusing on 5 key concepts identified in the evidence was developed for 23 advanced practice providers in ambulatory orthopedics and neurosurgery departments. All participants completed a baseline practice management knowledge assessment and a perceived self-efficacy survey prior to participation. Participant productivity metrics were obtained retrospectively for 3-months prior to the launch of the program. The program consisted of 5 podcast lectures lasting no longer than 10-minutes. A podcast lecture was released approximately every 2-weeks and sent to the participant via text-message to their mobile phone. The participants received productivity metrics monthly via email. The participants completed a practice management knowledge acquisition survey and a perceived-self efficacy survey at the end of the program. Participant productivity metrics were monitored and evaluated for 2-months after the program.

Goal

This DNP project developed a practice management program for ambulatory APPs practicing in a large academic healthcare system. It focused on improving ambulatory APP financial metrics.

Aims

1. To develop a program for improving ambulatory APP financial metrics.

2. To implement and evaluate the program.

3. To make recommendations for scaling and sustainability of the program throughout the healthcare system.

Aims and Associated methods.

Aim 1

To develop a program for improving ambulatory APP financial metrics.

- Preliminary work: The idea of a practice management program for APPs to improve

  financial metrics was presented to key stakeholders in the health system Neuroscience

  Orthopedic Surgery (NOS) service line including the Executive Director of Nursing of

  Operations and the Vice President of Surgical Services. It was also presented to the

  hospital Surgical Services Director of Advanced Practice. The pilot to improve advanced

  practice provider financial metrics through a practice management program did not

  require financial support from the health system. APP participation was voluntary and did

  not interfere with regular work hours. Leadership received monthly program progress

  updates. Leadership buy-in was secured without recommendations for modification.

- Regular monthly meetings were held with the APP Director and site preceptor for

  monitoring of the project.

Podcast development

- Five didactic lectures comprising the following key concepts based on the evidence:

  code assignment, charge capture, global procedural period, modifiers, and revenue

  cycle management were developed.

  - An expert panel consisting of a billing and coding specialist and a practice manager

    evaluated the program content for accuracy, completeness, and feasibility and

    provided development guidance. The content regarding CMS reimbursement

    regulatory updates was closely reviewed for compliance by the billing and coding

    specialist. No CMS updates were scheduled for roll out during the project timeline

- The 12-principles of CTML were reviewed and applied to the lectures to enhance the

  participants potential to learn (Mayer, 2008; McNamara & Drew, 2019)(Appendix D).

- The lectures were scripted for podcast recording and each podcast was no longer than 10-minutes.
- A fidelity check list (Kennedy, 2011) was used to validate each recorded lecture to ensure it met the criteria of a content acquisition podcast (CAP) (Mayer, 2008).

- The CAPs were recorded in a home broadcast studio using GarageBand software.

- A page on the health system's intranet website was built by the student project leader to house each of the key concept CAPs along with articles and recourses for each key concept.
  - The health system site preceptor tested the website to ensure the CAPs were operational and the resource materials was accessible.

Survey development

- Pre and post perceived self-efficacy surveys and pre and post knowledge acquisition surveys were used to measure APP comfort and knowledge of key aspects of practice management. These surveys were the same but given at different times (pre/post).
  - The perceived self-efficacy survey was based on Bandura's Theory of Perceived Self-efficacy (1997). According to Bandura's social cognitive theory, perceived self-efficacy is a judgement of capability. A person's expectation of self-efficacy is a powerful predictor of behavioral change because the expectation drives the initial decision to perform the behavior (Bandura, 1997). Bandura asserts that self-efficacy scales be made-to-measure the activity domains and evaluate the multidimensional ways that efficacy beliefs function within the selected activity domain. In addition, the efficacy scales must be linked to factors that determine the quality of functioning in the measured domain (Bandura, 2006). The survey included 10 Likert type questions scored at 10 points each for a total scale score of 100.

- o The knowledge acquisition survey had 12 multiple choice questions, each worth 5 points for a total survey score of 60 points.
  - o Both the self-efficacy and the knowledge acquisition survey were reviewed by billing and coding and practice management experts.
  - o A program evaluation survey consisting of 4 multiple-choice questions and 3 open ended questions were used to evaluate the program.

Aim 2

To implement and evaluate the program.

Leadership

- Neurosurgery APP clinical manager, Director of Advanced Practice, and Executive Director of NOS Nursing Operations received project updates at monthly staff meetings.

Enrollment

- APPs working in ambulatory orthopedics and neurosurgery services in a large academic hospital were enrolled in the program. It was conservatively estimated that approximately 20 of the 32 current providers would complete the program, based on support from management for attendance and interest in the topic. To plan for attrition, 24 providers were enrolled in the program. There was program buy-in from the Neurosurgery APP clinical manager, Director of Advanced Practice, Executive Director of NOS Nursing Operations, and Surgical Services Vice President. The student project leader attended a neurosurgery APP staff meeting to present the program to the APPs. The student project leader was the clinical manager of the orthopedics APPs and presented the program at a staff meeting of that service. APPs who were interested were asked to volunteer to participate.
- Once enrolled, APPs received education and an instruction sheet on how to access the key concept CAPs from their smartphone and the intranet website from a desktop or

laptop computer. Website resources included key concept articles and printable reference cards.

- The perceived self-efficacy pre-survey and the knowledge assessment survey were developed in the Qualtrics platform. The participants received a text message link for the surveys and completed them on their phone at their convenience.

- Demographic data gathered included years of experience and type of APP certification. Additional data collected for each participant included baseline work relative value units (wRVUs) and evaluation and management (E&M) coding distribution.

- *Sequencing:* One key concept CAP was released approximately every 2-weeks over a 12-week period. The participants received a text message on their registered smart phone with a link to the CAP and an image and text of the key concept. Once released, the CAP was available on the website with unlimited downloads. The participant was encouraged to listen to the CAP before the subsequent lecture was released. Participants sent the student project leader a text confirming they had listened to the podcast. Attrition was tracked after each podcast release.

- Participation reminders were sent via text message to participants on the non-release weeks with an audio file of the podcast and accompanying image.

- Weekly reminders with image and text on the key concepts presented were texted to each participant.

Monitoring: Participants' wRVUs were collected during implementations and for 2-months after the program. E & M coding distribution was collected during the program.

- The student project leader received the orthopedic participant wRVUs and E&M coding distribution in a monthly report as part of her responsibility as the orthopedic APP clinical manager. The student project leader partnered with the neurosurgery APP clinical manager to obtain the same report for the neurosurgery participants.

- Each participant's average wRVU per visit per month was averaged for the 3-months prior to program implementation to create an individual baseline average wRVU per visit benchmark for comparison.

- Each participant's monthly visit code distribution was averaged for the three months prior to program implementation. Each visit code had an average percent that served as an individual benchmark for comparison.

Evaluation

- Participant's average wRVUs per visit were compared to the established pre-program individual benchmark for a 2-month period after the program.

- *Knowledge acquisition:* The same knowledge assessment survey from the Qualtrics platform was completed to assess change in participants' knowledge. The questions focus on the key concepts addressed in the program.

- *Perceived Self efficacy:* The perceived self-efficacy post-survey from the Qualtrics platform was administered to participants to assess for increased confidence in the key concepts addressed in the program. The survey questions specifically highlight each of the concepts.

- A program evaluation survey was also be administered from the Qualtrics platform.

- All surveys were sent to the participants via text message through the Qualtrics platform. Qualtrics surveys were designed to be completed on a smartphone. Results were housed in the Qualtrics platform.

- Descriptive and bivariate statistics were used to evaluate results.
    - The pre and post metrics wRVU data were analyzed using a paired t-test.
    - The knowledge acquisition survey was analyzed using a t-test for the total score and chi-squared for individual questions.
    - The perceived self-efficacy surveys were analyzed using a student's T-tests.

- The program evaluation survey was assessed descriptively by the student project leader.

- A multivariate linear regression was used to assess for any differences between groups (APRN and PA).

Aim 3

To make recommendations for scaling and sustainability of the program throughout the healthcare system.

Sustainability

Findings were presented to the health system NOS service line leadership. Recommendations to sustain this program include creation of an ambulatory practice management committee, similar to the nursing Magnet committee. A practice management committee would continuously assess the educational needs of the APP staff, modify, and add new practice management key concepts to the program curriculum, and update information to reflect current compliance and billing and coding guidelines. This committee would report up through Advanced Practice Executive Committee (APEC).

Scaling

This program is relevant to all ambulatory APPs who provide billable services. Inclusion to other ambulatory surgical service lines within the organization would be the first tier in scaling. APP clinical managers could create a data dashboard to track the program metrics. After fine tuning, the program could be distributed to the entire enterprise of the health system through APEC. APEC would assist in the operationalizing, deploying, and monitoring the program throughout the system.

Dissemination

The manuscript will be submitted for publication in Journal of Nursing Administration (JONA) and for presentation at the American Association of Nurse Practitioners (AANP).

Timeline

This program extended from June 2022 to December 2022. It required a 1-month retrospective data collection phase prior to implementation, a 3-month active implementation phase, and a 3-month retrospective data collection phase after project completion to allow for 2-months of data give the reporting lag time. The total time equals 7-months for project activity.

The student project leader implemented the project in June 2022, and participants completed the pre-program surveys listed above. The student project leader obtained the participant metrics from April, May, and June retrospectively. The pod cast program began in July and completed in September. During the implementation period, the APPs listened to 5 podcasts and receive their monthly wRVU and visit code distribution reports. They completed the post program surveys and evaluation at the end of the program. The student project leader tracked the participants' post program metrics in October, November, and December.

Human Subjects Considerations

This is DNP project was deemed a quality improvement project by Yale University's IRB. The project was also reviewed by The Nursing Scientific Review Committee of the organization where the project was implemented.

Part 3

Systems, Policy, and Business Implications

The Business Case and Leadership Engagement

This DNP Project was piloted in a large, non-profit, private, academic health system with over 1,000 APPs practicing as independent billing providers. The institution does not provide formalized practice management training for providers despite the impact that clinical documentation, billing and coding, reimbursement, provider productivity, and clinical operations has on financial and quality metrics and provider success (Bhagavath et al., 2021; Brooks & Fulton, 2020; Luster-Tucker, 2016). Formalized institutional practice management programs for physician and physician trainees have demonstrated improvement in medical coding documentation, clinical productivity, generation of higher billing codes, financial reimbursement, and compliance (Bhagavath et al., 2021; Ghaderi et al., 2017; Kelley et al., 2019; Malaty et al., 2020; Reyes et al., 2017). A practice management program for APPs focusing on billing and coding, reimbursement, and documentation compliance may result in similar outcome with substantial revenue recovery given the number of APPs.

The Surgical Services Director of Advanced Practice and the Executive Director of Nursing Operations for the NOS service line were both sponsors of this project and supported APPs working to the full scope of their license recognizing that maximizing the utilization of APPs improves patient access and creates improved revenue opportunities for the institution. They have created and championed clinical support roles to complete patient-related administrative tasks and triage, allowing APPs to provide patient care to optimize billable services. This has led to improved economic efficiency in the ambulatory clinics and creation of high functioning teams. The NOS service line leaders were updated on the progress of this project and will be responsible for the approval of scaling the project to additional departments. The student project leader was a member of the Advanced Practice Provider Council and would engage the council to assist in the scaling of the program.

Business Financial Considerations

Project Budget

The current economic state of healthcare requires that organizations work to mitigate preventable losses in provider revenue. CMS reported over $150 million of improper Medicare payments to the state of Connecticut associated predominantly with insufficient documentation, failure to demonstrate medical necessity, and incorrect coding (CMS1, 2020). Improper payments can result in repayment and hefty penalties for organizations. The evidence cites that incomplete or inaccurate medical documentation relating to the severity of illness and provider services delivered leads to under coding and lost revenue. The COVID-19 pandemic has increased the financial strain on healthcare organizations forcing them to better manage resources, improve efficiency of care delivery, and explore new revenue streams. This DNP project improved accuracy and completeness of APP clinical documentation resulting in increased revenue.

The cost associated with this DNP project included the printing of program guides, training, and participation at the APP average hourly rate. The student project leader used existing hardware provided by the sponsor organization including a laptop and personal hardware including a microphone. The participants used their existing smartphone or laptop provided by the organization.

Indirect benefits of this DNP project included increased patient and employee satisfaction scores and improved documentation accuracy and timeliness. The curriculum focused on improving financial metrics which led to the following direct benefits: effective use of internal recourses within Epic, business process enhancement through the revenue cycle, improved clinical documentation compliance, and increased revenue through billing and coding accuracy.

The evidence demonstrates that providers under-code ambulatory visit level of complexity and that practice management programs result in improved provider confidence

levels regarding clinical documentation resulting in increased revenue (Ghaderi et al., 2017; Johnson et al., 2018; Kelley et al., 2019; Malaty et al., 2020; Varacallo et al., 2017). A similar practice management program demonstrated a 42.4% increase in coding complexity of established patients and 22.2% increase in new patients(Ghaderi et al., 2017). The higher the level of complexity of the code, the higher the reimbursement.

This DNP pilot program resulted in an estimated 6.7% increase in wRVUs per session per APP during the implementation phase. The estimated return on investment was 683% over 3-months.

Risk Assessment and Risk Mitigation Plan

The potential risks of this DNP project were identified, and a contingency plan was developed. The first potential risk was low APP participation due to demanding clinic schedules and limited administrative time. Participation reminders via text message with the practice management program podcast attached sent before morning and afternoon work commute times encouraged participation through maximizing commute time. Evidence has shown that podcast knowledge acquisition or retention are not meaningfully affected by driving(Gottlieb et al., 2021) The second potential risk was a practice management program implemented by the organization. The sponsor organization developed a training on the 2022 CMS billing and coding guidelines and required all billing providers to complete the training by June 1, 2022. The content did not overlap with the content of this DNP project. The third potential risk was lack of curriculum access and technology literacy. The practice management podcast curriculum was sent as an audio file by text message and was compatible with Apple iPhone technology stack. The participant needed only to open the text message and touch the screen to hear the podcast. All participants had a personal or hospital issued iPhone. The process was shown through a pictorial in the participant guide and an in-person demonstration occurred during enrollment to mitigate this risk.

Part 4

Results

A total of 24 ambulatory APPs were enrolled in the APP Practice Management Program. This included 13 APPs from the department of orthopedics (APRN=7, PA=6) and 10 from the department of neurosurgery (APRN=5, PA=5). None of the APPs had participated in a formal practice management program. Each podcast had 100% listening participation through self-reported confirmation. A total of 23 participants completed the perceived self-efficacy baseline survey and 18 completed the post-program survey. The average total improvement in perceived self-efficacy when comparing the baseline and post-program scores was highly significant with an average total improvement of 10.4 points (t = 4.8695, $p< 0.0001$) (Appendix D). Specifically, 5 questions demonstrated highly significant findings beyond the 0.01 level (Table 1). There was no statistically significant association between practice certification ($p = 0.53$) or years of experience ($p = 0.80$).

Table 1. Perceived self-efficacy questions with significant improvement.

Questions	Pre_n	Post_n	Pre Mean	Post Mean	t	p
Total Score	23	18	1.913	12.3889	4.8695	0
I am confident in my understanding of global procedural periods for Medicare, Medicaid, and private insurances.	23	18	-0.3478	1.4444	5.1001	0
I believe I use modifiers correctly.	23	18	0.2609	1.1667	3.5746	0.001
I am confident in my understanding of revenue cycle management.	23	18	-1	1.1667	6.9369	0
I am confident in my knowledge regarding delinquent documentation and its connection to revenue, quality, and safety.	23	18	0.6522	1.7222	3.4814	0.0014
I am confident in my overall practice management knowledge and skill.	23	18	0.7391	1.5	3.5027	0.0012

A total of 19 pre-program and 21 post-program knowledge acquisition surveys were completed. The average total survey score was 6% higher in the post-program survey than the baseline pre-program survey and found to be significant (t = 2.579, $p = 0.014$,) (Appendix E). A significant improvement comparing baseline pre-program and post-program answers for

question number 2 regarding coding and prescription drug management was noted (x^2 = 8.747, p = 0.04,) (Appendix F).

A wRVUs per session baseline was calculated using 3-months of retrospective data for all 24 participants prior to the program. The wRVUs per session data was tracked during and after the program. A paired t-test was used to assess the data. The mean wRVUs per session during the implementation phase was 0.60 higher than the mean wRVUs per session baseline pre-program phase and was found to be statistically significant (t = 2.63, p = 0.017) (Appendix G). The estimated percent change in wRVU per session from baseline phase to implementation phase was 6.7% (95% CI: 1.3% to 12.0%). Mean post-program wRVUs per session were 0.27 lower than baseline, but this was not found to be statistically significant (p = 0.663).

Eighteen participants completed the program evaluation survey. Overall, 61% were extremely satisfied, 33% were moderately satisfied, and 6% were moderately dissatisfied. *Brevity, convenience*, and *content relevance* were the themes supporting satisfaction. The podcast was able to achieve both brevity and convenience allowing participants to engage with the program when it fit into their schedule. A key concept focus worked well with the CAP format and aligned with the CAP fidelity checklist. *Delayed metrics reporting* and *too few lessons* were themes supporting dissatisfaction. Participants stated that by the time they received their metrics, they could not remember which practice change they wanted to track. Several participants commented that 5 lessons were not enough and recommended additional topics. Favorable responses were reported concerning practice management knowledge enhancement with 67% reporting a great deal and 33% reporting a lot. Overall, 75% of respondents would recommend the program. Recommendations for improvement included additional topics, faster metrics reporting, and continuation of the program.

Part 5

Discussion and Conclusion

This DNP project improved APP practice management confidence and knowledge and increased in APP estimated financial productivity. This is significant because the financial viability of our current healthcare system depends on complete and accurate provider documentation for collection of professional fees and hospital payments (Kelley et al., 2019). Clinical documentation, billing and coding, reimbursement, provider productivity, and clinical operations are areas of practice management that have the greatest impact on the financial health of an organization (Bhagavath et al., 2021; Brooks & Fulton, 2020; Luster-Tucker, 2016). Understanding and incorporating principals of practice management into each patient visit is essential for both provider and institution financial success.

This DNP project's practice management program focused on the key concepts of clinical documentation, billing and coding, and revenue cycle management. Baseline surveys of participant's perceived self-efficacy demonstrated lack of confidence in these key areas, which was consistent with the evidence. After 5 short lessons on the key concepts, participants demonstrated a significant improvement in confidence levels illustrating that short and focused practice management curricula can be effective in boosting confidence levels. The results suggest that APPs at all levels of certification and experience are not developing practice management confidence in standard clinical practice and that formal training would benefit all APPs. Baseline knowledge assessment of participants demonstrated a similar knowledge deficit that was seen in the evidence. According to the post-program survey, knowledge acquisition improved overall and in several key areas. These results suggest a wide knowledge gap that could be narrowed with focused training. The lack of association between knowledge deficit and practice certification and years of experience suggests that academic training programs and intuitional onboarding are not providing practice management training for APPs.

Estimated financial productivity improved during the implementation phase of the program suggesting that participants applied their new practice management knowledge. Specifically, the post-program improvement of question number 2 on the knowledge acquisition survey regarding coding and prescription drug management could account for an overall increase in wRVUs during the program. This question identified a knowledge gap shared by a majority of participants. Providing participants with their wRVU data along with a practice management curriculum has been shown to improve the ability to implement clinic-based practice changes (Malaty et al., 2020). In this project, participants were able to track their own wRVU productivity. The significant increase in participant wRVUs during the implementation phase suggests the application of practice management knowledge into clinical practice.

This DNP project adds the to the body of literature illustrating the benefit of provider education in clinical documentation and overall practice management. In the current literature, this is the only focused practice management program specifically for APPs that achieved improved confidence levels, billing and coding literacy, and increased estimated reimbursement. It is also the only practice management program to use a Content Acquisition Podcast (CAP) to deliver the curriculum. Participant program evaluation surveys demonstrate satisfaction with regard to the CAP format specifically citing convenience, topic relevance and brevity. Given the overall success of this project, further study is warranted to validate CAPs as an education strategy in APP education.

Limitations

There are several limitations to this project. First, the inability to match and evaluate individual participant pre and post program perceived self-efficacy and knowledge acquisition survey responses. The surveys were developed in the Qualtrics platform and distributed using a link sent to the participant's smartphone. The survey responses were received anonymously by the platform. As a result, mean scores were used for statistical analysis. Assigning each participant, a unique code to link their responses within the Qualtrics platform would correct this

issue. Second, the relatively small number of participants in this program may have impacted

the significance of the findings , although several significant findings were demonstrated. Third,

the lag in visit code assignment data reporting prevented the tracking of visit codes alongside

wRVUs as planned. Visit code tracking would have provided insight into the application of the

key concepts with regard to practice changes as they relate to changes in wRVUs. Fourth,

Qualtrics user challenges resulted in incomplete surveys and lower than planned participation. A

more thorough participant orientation to the platform would help correct this issue. Lastly, a

significant workflow change was implemented by the organization in the first month post-

program completion that affected more than half of the participants. This limited APP

independent practice and their ability to generate wRVUs, resulting in decreased post-program

wRVUs per session and rendering any further measurement invalid as reflective of the true work

of APP participants. .

Sustainability

Findings will be presented to the health system NOS service line leadership, Advanced

Practice Executive Council(APEC), and academic medical practice leadership.

Recommendations to sustain this program include creation of an ambulatory practice

management committee, similar to the nursing Magnet committee. A practice management

committee would continuously assess the educational needs of the APP staff, modify, and add

new practice management key concepts to the program curriculum, and update information to

reflect current compliance and billing and coding guidelines. This committee would report up

through APEC. In addition, the APP practice management program could become part of the

APP mandatory compliance training suite with a monthly podcast listening requirement and

quarterly knowledge assessment. This assessment could be the method APEC uses to ensure

minimal competency and identify trends and gaps in knowledge. Results from the knowledge

assessment could be used to create additional lessons.

Scalability

This program is relevant to ambulatory APPs who provide billable services for a health system. Inclusion to other ambulatory surgical service lines within the organization would be the first tier in scaling. Beginning with the high-volume departments would be ideal as their workflows tend to be standardized and they have the volume of staff to support the roll out. A partnership between the APP clinical managers, information technology (IT) team, and clinical documentation/compliance team should be forged to create a data dashboard that includes patient volume, visit code distribution as a percent, and wRVUs per session in order to continuously track program metrics and identify areas in need of improvement. This dashboard should remain simple for ease of use and to remain focused. Program improvements using this dashboard could be done at the organizational, departmental, and individual levels similar to the way the quality and safety teams track surgical site infections and ventilator associated pneumonia. After fine tuning, the program could be distributed to the entire enterprise of the health system through APEC with support from IT and clinical documentation/compliance teams. APEC would lead in the operationalizing, deploying, and monitoring the program throughout the system.

Healthcare and Policy Implications

The AACN's *Standards for Quality Nurse Practitioner Education 2022* lists the APRN core courses as advanced health assessment, advanced physiology/pathophysiology, and advanced pharmacology (AACN, 2022). There are no formalized requirements for practice management. Standardizing and making practice management curricula a requirement for all advanced practice programs and incorporating it into the national certification exams would be one way to address the deficiencies in APRN practice management knowledge. As of 2019, PA programs have made practice management a core requirement and continue to refine curricula (ARC-PA, 2019). In 2020, there were 325,000 nurse practitioners licensed in the Untitled States and currently 26 states have full practice authority (AANP, 2021; Hayes et al., 2023). It is

imperative that the AACN take action to ensure nurse practitioners are prepared and empowered to maximize their financial contribution through billing and coding as it relates to clinical documentation and the revenue cycle.

It is necessary for billing providers to understand CMS documentation guidelines as it relates to billing and coding in order to maintain compliance. Given the millions of dollars tied to documentation errors, CMS should consider requiring organizations to mandate training for providers. CMS National Training Program (NTP) and Medicare Learning Network (MLN) offer educational webinars that could be incorporated into institutional mandatory training.

Conclusion

This DNP project demonstrated the necessity and benefits of a dedicated APP practice management program. Confidence, knowledge, and estimated financial productivity were significantly improved with a short and focused program on the key concepts that directly impact financial reimbursement. Through education and individual financial metrics reports, APPs were able to improve practice management literacy and implement practice change. This DNP project serves as a starting for further research in this area.

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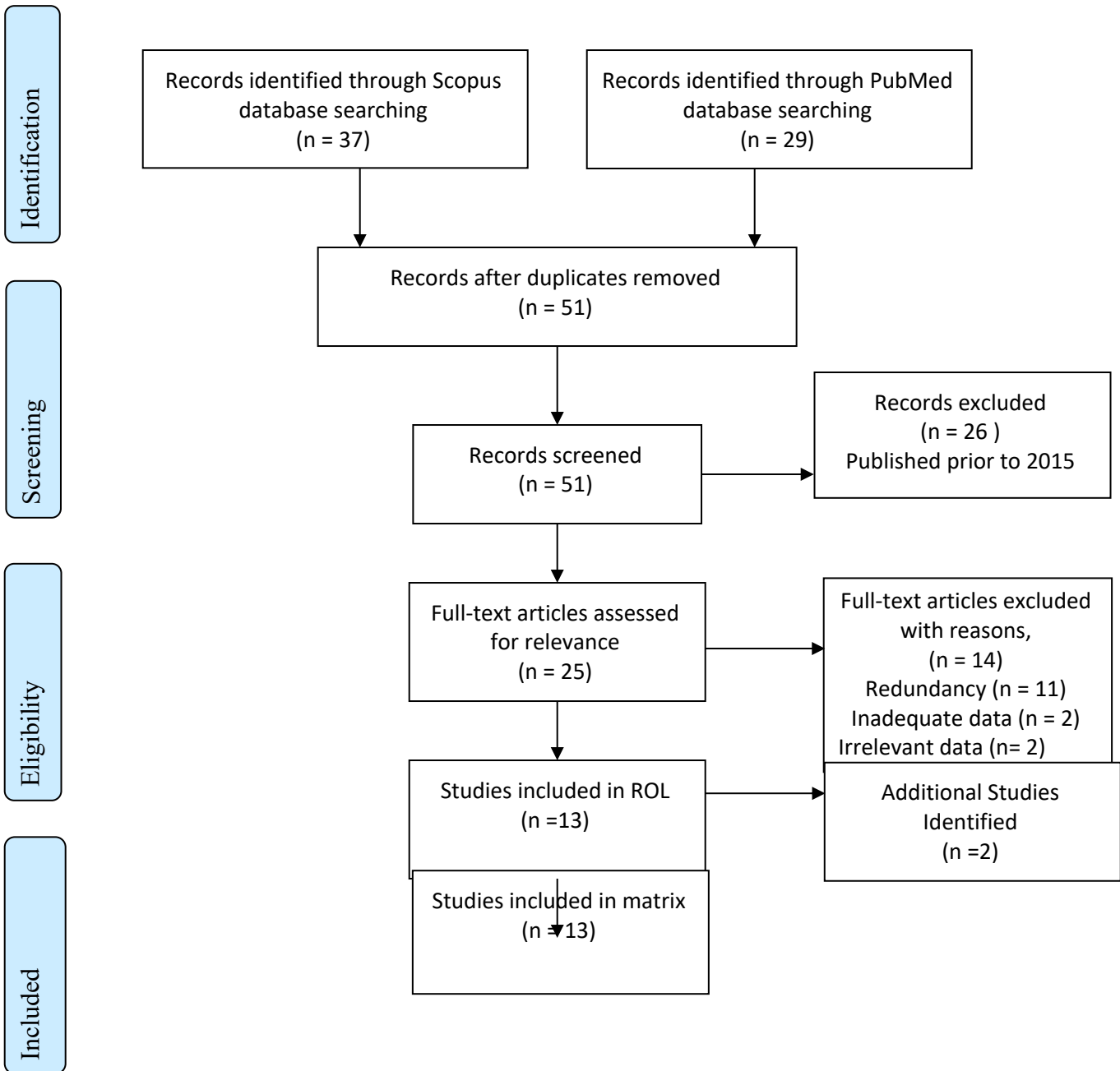https://doi.org/10.1016/j.jamcollsurg.2016.11.010

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      Knowledge of Documentation, Coding, and Medicare Fraud [Article]. *Journal of*

      Surgical Education, *74*(5), 794-798. https://doi.org/10.1016/j.jsurg.2017.02.003

Yang, Y., Long, Q., Jackson, S. L., Rhee, M. K., Tomolo, A., Olson, D., & Phillips, L. S.

      (2018). Nurse Practitioners, Physician Assistants, and Physicians Are

      Comparable in Managing the First Five Years of Diabetes [Article]. *American*

      Journal of Medicine, *131*(3), 276-283.e272.

      https://doi.org/10.1016/j.amjmed.2017.08.026

Appendix A

PRISMA Flow Diagram

Records identified through Scopus database searching (n = 37)	Records identified through PubMed database searching (n = 29)

Records after duplicates removed
(n = 51)

Records screened
(n = 51)

Records excluded
(n = 26)
Published prior to 2015

Full-text articles assessed
for relevance
(n = 25)

Full-text articles excluded
with reasons,
(n = 14)
Redundancy (n = 11)
Inadequate data (n = 2)
Irrelevant data (n= 2)

Studies included in ROL
(n =13)

Additional Studies
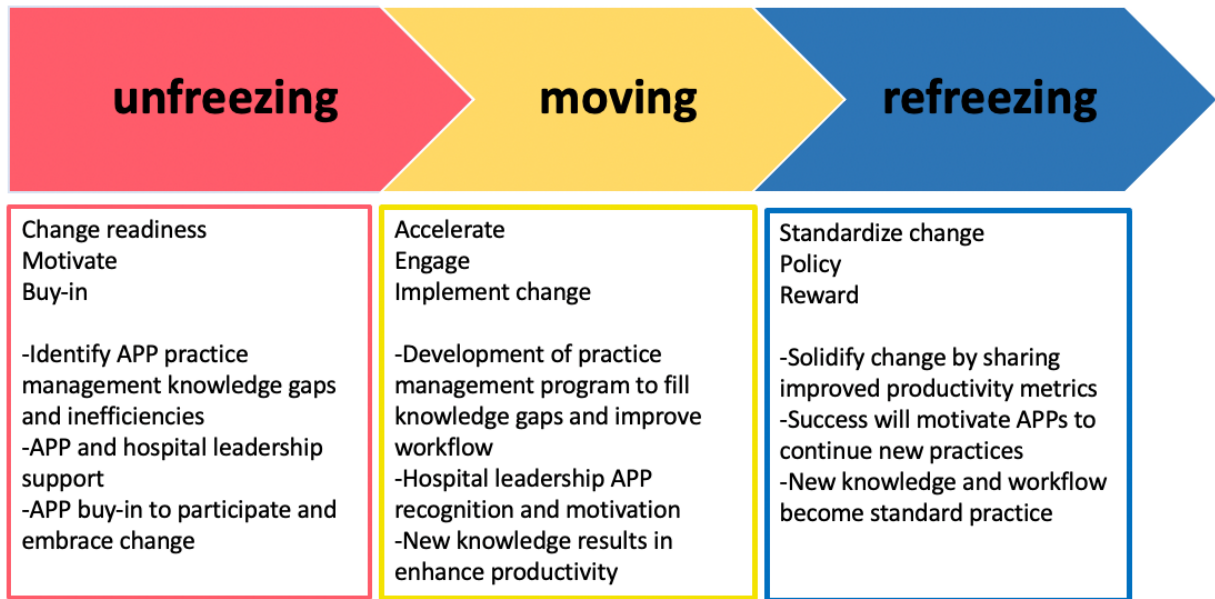Identified
(n =2)

Studies included in matrix
(n =13)

Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. PLoS Med 6(7): e1000097. Doi:10.1371/journal.pmed1000097

Appendix B

Project Model

Lewin's Change Model

| unfreezing	moving	refreezing
Change readiness Motivate Buy-in -Identify APP practice management knowledge gaps and inefficiencies -APP and hospital leadership support -APP buy-in to participate and embrace change	Accelerate Engage Implement change -Development of practice management program to fill knowledge gaps and improve workflow -Hospital leadership APP recognition and motivation -New knowledge results in enhance productivity	Standardize change Policy Reward -Solidify change by sharing improved productivity metrics -Success will motivate APPs to continue new practices -New knowledge and workflow become standard practice

Burnes, B. (2020). The origins of Lewin's Three-Step Model of Change. *Journal of Applied Behavioral Science*, *56*(1), 32-59. https://doi.org/10.1177/0021886319892685

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Appendix C

Theoretical Framework

Cognitive Theory of Multimedia Learning (CTML)
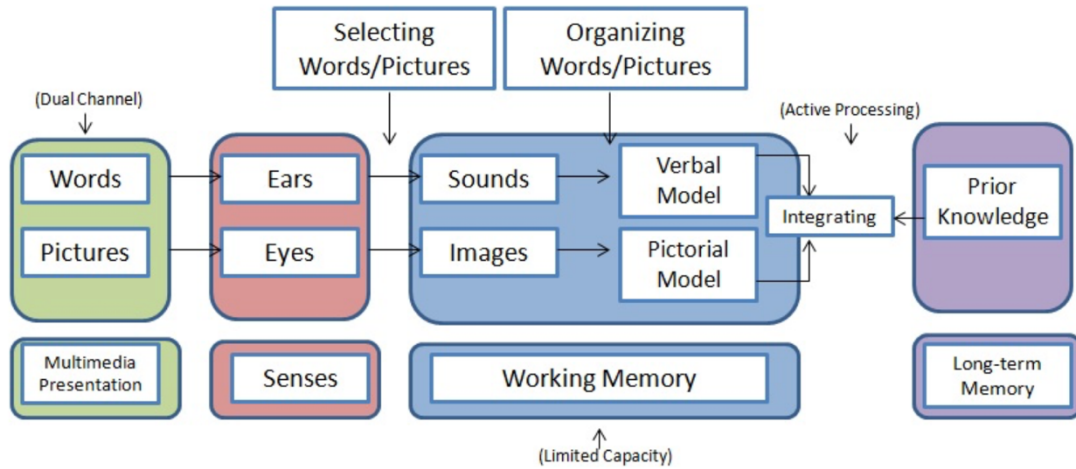
(Mayer & Moreno)

Cognitive theory of multimedia learning: 12 principles

| CTML Design Principle	Explanation	Cognitive Processing
Coherence	Extra information is excluded from the presented lesson	Extraneous
Signaling	Important and relative information is emphasized	Extraneous
Redundancy	Material is presented as graphics and narration versus graphics, narration, and printed text	Extraneous
Spatial Contiguity	Related words and pictures are presented closer together	Extraneous
Temporal Contiguity	Narration and pictures presented simultaneously	Extraneous
Segmenting	Learner is able to control the pace of the lesson	Essential
Pre-training	Outline the relative learning goals prior to the actual lesson	Essential
Modality	Pictures presented with spoken words as opposed to written text	Essential
Multimedia	Words and pictures are better than words alone	Generative
Personalization	Informal rather than a formal language style	Generative
Voice	Human voice is better than a computer synthesized voice	Generative
Image	Image of the narrator is superimposed over the lesson	Generative

Mayer (2014)

Figure 1
Perceived self-efficacy total average score baseline (pre-program) vs post-program
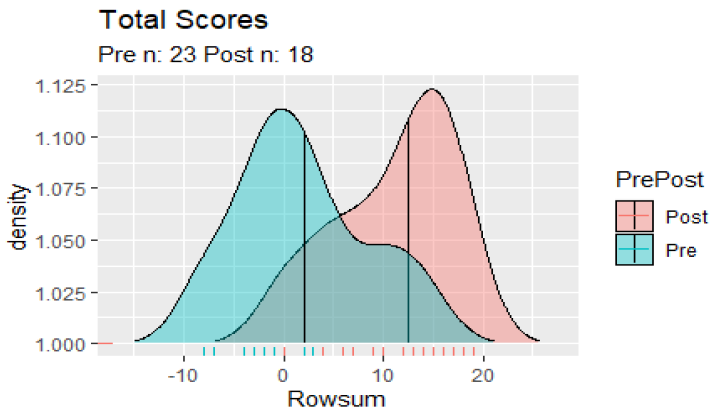
Figure 2
*Knowledge acquisition total average score mean baseline (pre-program) vs post-program*
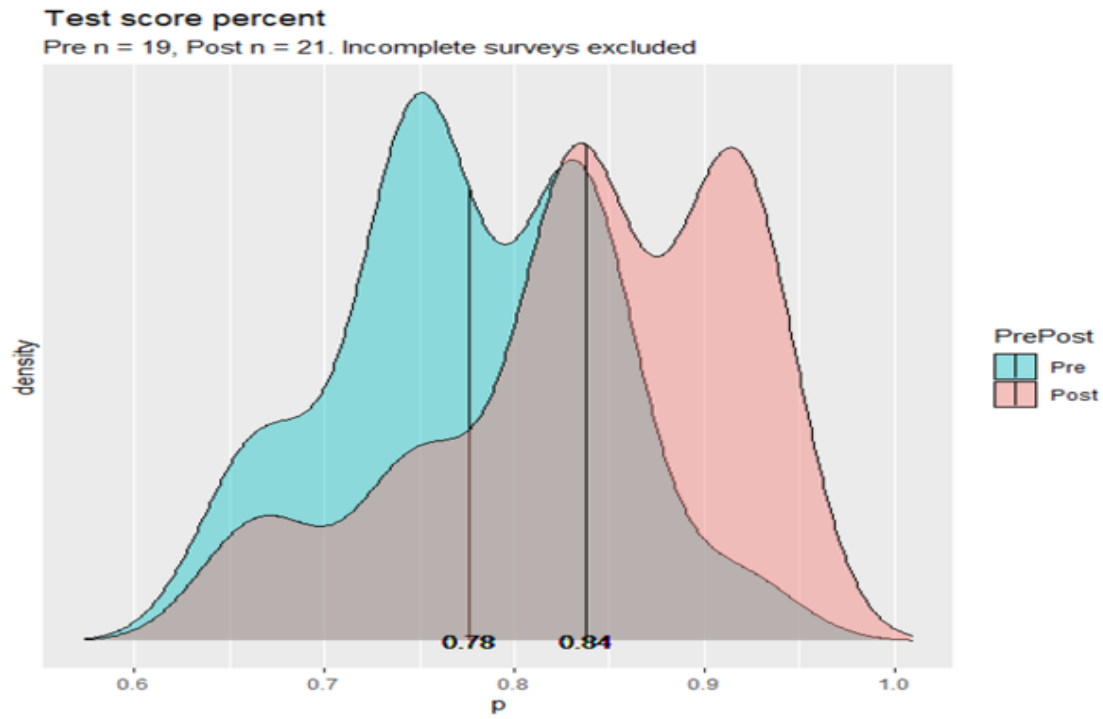
Figure 3
Knowledge acquisition survey question 2.

In scenario above, the patient says, "I have tried several different over the counter NSAIDs and they have not relieved my pain". In response, you prescribe the prescription NSAID meloxicam. What will your visit code be with the addition of a prescription medication?
Pre n: 21, Post n: 22
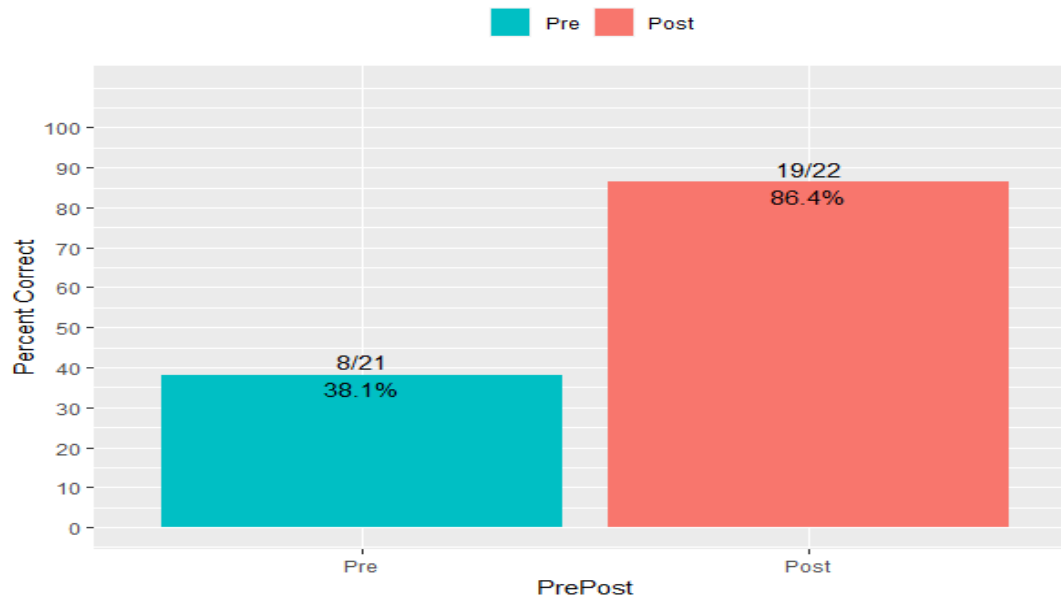
Figure 4
Pre, mid, and post implementation participant wRVUs per session

Pre, Mid, and Post Intervention wRVU