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This doctoral project, directed and approved by the candidate's committee, has been accepted by the College of Graduate and Professional Studies of Abilene Christian University in partial fulfillment of the requirements for the degree

Doctor of Nursing Practice



Dr. Joey Cope, Dean of the College
of Graduate and Professional Studies

Date: February 22, 2020

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School of Nursing

Utilization of a Concurrent Query Form to Improve Clinical Documentation in a VA Facility for
Patients With Stroke or TIA

A doctoral project submitted in partial satisfaction
of the requirements for the degree of
Doctor of Nursing Practice

By

Lisa A. Keefner

April 2020

Dedication

To my daughter Rachel without whom this endeavor would not be realized. Logan, you bring me joy and enthusiasm. My VA colleagues are included in this list of people, for without you, I would not have had the knowledge or support to complete this milestone. And, finally, this is for you, Michelle. Your sage advice and parallel journey have been wrought with tears, fears, and friendship that I will always treasure.

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Abstract

Caring for stroke patients diagnosed with acute ischemic stroke (AIS) and transient ischemic attack (TIA) at Veterans Health Administration (VHA) acute care hospitals is a very complex process that centers on accurate documentation. Inaccurate or missing documentation leads to patient safety issues, lower quality care, and inaccurate Veteran Equitable Resource Allocation (VERA) classification for reimbursement. This pilot project's 3 problems of interest include improving provider response to clinical queries about documentation, capturing national metrics collected by the VHA, and accurately representing veterans in VERA classification. Based on a review of the literature available on patient treatment file (PTF) accuracy and clinical documentation improvement, the researcher used a three-pronged intervention for data collection and management plan. The data were abstracted from 97 ($N = 97$) AIS and TIA patient treatment files from calendar years 2015 to 2019, then compared with prospective data collected for a period of 3 months, and analyzed for statistical and clinical significance. The results of this pilot project included an increase in provider response to queries, captured metrics, and VERA classification of veterans that satisfies clinical documentation integrity according to VHA directives.

Keywords: RN-led CDI program, clinical documentation improvement specialist, clinical and financial CDI outcomes, clinical documentation improvement models

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Chapter 1: Introduction

The Veterans Health Administration (VHA) is the largest healthcare delivery system in the United States. O'Hanlon et al. (2016) noted that, nationally, the veteran population has unique needs and worse overall health status when compared to the general population. As of 2018, the strategic planning of Veterans Affairs (VA) was undergoing a major shift in care by modernizing the electronic health record (EHR), offering better access to community resources, and patient safety and satisfaction initiatives (U.S. Department of Veterans Affairs, 2018). Clinical documentation improvement (CDI) is one of these transformational evidence-based initiatives that fits the VA's strategic goal by enhancing quality care and access to veterans. Sacco (2019) estimated that the prevalence and cost of stroke will increase significantly by 2030. This escalation of health care and personal costs contributed to the decision to design and implement a documentation improvement pilot project at the VA. According to the American Heart Association (2019), "acute ischemic stroke (AIS) occurs when a blood vessel supplying blood to the brain is obstructed. It accounts for 87 percent of all strokes." Transient ischemic attack (TIA) is "a transient episode of neurologic dysfunction caused by focal brain, spinal cord, or retinal ischemia without acute infarction" (Nanda, 2018, para. 1). Both neurologic conditions can cause major life-altering changes for patients and their families as well as be associated with a significant cost burden.

Statement of the Problem

AIS and TIA are potentially debilitating medical conditions that can impact individuals, families, and society. The veteran population is at high risk for stroke based on findings from a large study on the impact of posttraumatic stress disorder (PTSD) on blood vessel health (Grenon et al., 2016). Demaerschalk, Hwang, and Leung (2010) noted that "in 2005, the prevalence of stroke was 5.8 million among adults age 20 years and older" (American Heart Association, 2008,

p. 525). The high risk for AIS and TIA in the veteran population and the subsequent care given by the VA trainees and specialists needs accurate and impeccable documentation.

The clinical documentation improvement specialist (CDIS) is a registered nurse (RN) responsible for providing subject matter expertise and guidance to the VA's hospital CDI program. The CDIS RN possesses up-to-date clinical knowledge and efficiently and concurrently reviews medical records, identifies opportunities for improved documentation, and possesses knowledge of utilization management. Clinical documentation requirements, current standards of care, coding and compliance guidelines, knowledge of medicare severity diagnosis related groups (MS-DRGs) and third-party payment regulations are also part of the scope of knowledge an RN offers a CDI program (VHA, 2016).

The purpose of this process improvement pilot project was the implementation of a small test of change to neurology department trainees and specialists using a customized query form for patients diagnosed with AIS or TIA. The use of the specific query form containing metrics and the clinical indicators of AIS and TIA allowed the concurrent discussion of the hospitalized patients between the RN and the clinician providing care. The focus of this pilot project had a positive impact on the accuracy and compliance of documentation of AIS and TIA veterans hospitalized at the VA.

The project design for this pilot was quantitative and quasi-experimental in nature with a goal of generalizing from the historic sample of hospitalized veterans diagnosed with AIS or TIA. I designed the pilot project to generate an objective measurement of the accuracy of a patient treatment file (PTF) based on designated metrics and data necessary for billing purposes. A customized query form was completed on the day of patient admission, or on subsequent days when the admission happened on a weekend.

The data collection for the pilot project was prospective using a three-pronged approach. The first was the concurrent query form modified for AIS and TIA clinical indicators. The second, the Physician Documentation Quality Instrument (PDQI-9®) is a Likert scale-based questionnaire that I used as a guide in determining whether the information noted in a PTF was accurate. This measurement tool was invaluable in that the PTF abstractor compared baseline PTFs with postintervention documented metrics. The overview of the pilot project follows.

Chapter 1 focuses on the importance of bridging the clinical gap between trainees, specialists, and coders and ensures patients' PTFs are accurate and meet safety, fiscal, and compliance goals. According to recent VA data, the complexity and quality of care of patients has decreased and that is a direct reflection of the poor clinical documentation by trainees and specialists overall, and specifically in the neurology department. The literature review in Chapter 2 supported the evidence-based information available from the private sector and business success of an RN-led CDI program. The guidance for this pilot project came from healthcare systems, corporate entities, and individuals tasked with designing and implementing a similar model. Chapter 3 outlines the methodology of the pilot project. This identified the pilot project design and the target population—neurology physicians and nurse practitioners that cared for patients diagnosed with AIS or TIA at a VA hospital located in the Northeast. In Chapter 4 of the paper is the pilot project analysis that reports the results of the CDI pilot project. Chapter 5, the final chapter, interprets the outcomes of the pilot project and includes inferences about the findings, leadership implications, evidence-based practice (EBP) relationship to DNP Essentials I–VIII, and future research endeavors.

Purpose of the Study

U.S. healthcare costs are skyrocketing and there is a need for accurate and compliant documentation to improve patient care quality. Everett-Thomas, Brito, and Joseph (2018) noted

that “the United States has the world’s highest per capita health care costs, and tax-funded expenditures accounted for nearly 64.3%” (Himmelstein & Woolhandler, 2016, p. 1). AIS remains a leading cause of mortality and morbidity in the U.S. and 800,000 per year (~90% are ischemic). Stroke is the number five cause of death and one out of every 20 deaths. Every 40 seconds someone has a stroke and every four minutes someone dies of a stroke (American Heart Association, 2008). Stroke as a chronic illness garners a financial burden of \$34 billion each year (American Heart Association/American Stroke Association, 2019).

Consumers demand better care for veterans who risk their lives and suffer the affects that deployments have on these men and women (U.S. Department of Veterans Affairs, 2018). However, Everett-Thomas et al. (2018) noted “the United States has the world’s highest per capita health care costs, and tax-funded expenditures accounted for nearly 64.3%” (Himmelstein & Woolhandler, 2016, p. 1). According to Buttner (2018), provider documentation that does not support the diagnosis may reduce payments, increase denials, or result in repayment to payers. The current political climate is compelling the VHA to create alternative treatment options for veterans (LaPointe, 2019). Community trainees, specialists, and hospitals are contracted and a large advertising campaign informs veterans of their choices and about a move toward private delivery of health care (LaPointe, 2019).

The overarching mission of the U.S. Department of Veterans Affairs (2018) demands that those responsible for the care of veterans modernize the technology and continuously fund research that provides better access to benefits and services. Updating the electronic health record (EHR) and PTF is a part of that goal. Ensuring the trainees and specialists understand and comply with documentation standards is an extension of that strategic plan. Clinical documentation accuracy is an overarching strategic goal for the VA, according to the latest national release (VHA, 2016). This complex structure demands a way to account for the

workload of the trainees and specialists providing care to veterans.

According to Monica (2017), “a Black Book Market Research report last year showed almost 90 percent of hospitals with 150 or more beds outsourcing clinical documentation functions made over 1.5 million in healthcare revenue and claims reimbursement after implementing CDI” (para. 8). In addition to the fiscal stewardship CDI offers, documentation that is incomplete and inaccurate impacts patient safety. Everett-Thomas et al. (2008) furthered the message that “nurses’ education and experience are key components for CDI specialists to ensure that patients receive appropriate care” (p. 2). Nurses bridge the knowledge gap between the required documentation supporting patient care and the trainees and specialists and can offer subject matter expertise.

The research design for this pilot project was quantitative and quasi-experimental in nature. An objective measurement of the accuracy of a PTF based on designated metrics and data necessary for billing purposes was necessary. I completed the PDQI-9® survey on veterans with a diagnosis of AIS or TIA. I then abstracted the historic data from 86 randomly selected PTFs for metrics collected by the VA. The data collection for the pilot project was prospective using a three-pronged approach. The first was the concurrent query form modified for AIS and TIA clinical indicators. The PDQI-9® is a Likert-type scale that I used as a guide in determining whether the information noted in a PTF was accurate. This measurement tool was invaluable in that a reliable comparison could be made between the baseline PTFs and the postintervention files.

This study was longitudinal in nature. I continuously evaluated the data to see if additional education was warranted. The study continued for the three-month period. Once I obtained IRB approval from Abilene Christian University (ACU) and the VA, I started the pilot

project on September 3, 2019, and finished on November 20, 2019, allowing for adequate collection and analysis of the data.

Internal Factors of the Study

The following is a discussion of two identified internal factors: focus on the VA's need for the project and patient safety.

VHA need for the pilot project. The VHA released strategic goals improving veteran care, including easier access, timely and integrated care, VA consistency and transparency, and modernizing systems (U.S. Department of Veterans Affairs, 2018). This important mission included responsible stewardship on the parts of trainees and specialists and those tasked with billing for services. Ensuring accurate and compliant PTFs is a daunting task. Inaccurate or missing information impacts not only the financial component but is also a safety burden.

Miscommunication can be a threat to hospitalized patients. Trainees and specialists are not adequately taught in school the storytelling process necessary for adequate understanding of hospitalized patient care. Professional coders are not licensed trainees and specialists. RNs are in an ideal position as a clinical subject matter expert informing the coders about the details of the story necessary for exceptional patient care of patients diagnosed with AIS and TIA. Patient safety is a priority of healthcare institutions and the VA's strong efforts and dedication can be realized integrating this model into practice.

Analyzing the study strengths and weaknesses was imperative during the design phase of the pilot project. A strength of this pilot project was the participation of a group of engaged neurology service line employees. Leadership was interested in impacting documentation of other metrics collected by the VA. The private sector has used the CDI model with great success and the integration of this model into the VA infrastructure was a natural fit. The information technology (IT) infrastructure was already in place. Weaknesses of the study were a concern and

I avoided any identified challenges when possible.

There were several weaknesses of this pilot project and I considered with care minimizing the confounding variables and understanding the limitations. The weaknesses included the likelihood that there were only a small sample of patients diagnosed and treated for AIS or TIA at the VA during the short duration of the pilot project. Another weakness was that the rotation of the interns and residents posed a challenge to the outcomes. It was important for me to continuously assess and offer individual and group refreshers that contributed to the project's success. The EHR platform was in place for the CDIS RN role, but another weakness was that the entire software package was obsolete. In this case, the opportunities balanced the weaknesses.

Opportunities for growth of the facility included presenting this model to administration for all hospital service lines including the outpatient setting. The strategic initiative outlined by the VHA speaks to modernizing the infrastructure and I determined this model to be a relatively low impact solution with high return. Veteran care is always in the spotlight and transparent processes are important to the taxpayers. Removing threats from the pilot project would likely turn them into opportunities.

Threats to the pilot project included the cost of hiring, training, and integrating RNs into the team. The return on investment takes time and effort, but the long-term benefits will outweigh the short-term vagaries. The obsolete VHA directives demand that professional coders work outside their scope and do not support RNs (Title 38) in the general schedule roles in the siloed health information management departments. The layers of federal government are many and the culture change is slow when implementing new processes. A systematic restructuring of any system takes time and the enthusiasm of implementing this model promoted success.

Patient safety. Documentation of treatment modalities and care plans involved more than

just the bloodwork and radiology testing requests by the trainees and specialists. Snell (2019) noted that “trainees and specialists spend 27 percent of their work time on direct patient interactions and about 49 percent on EHR documentation” (para. 14). For example, the care given to veterans demanded that trainees and specialists spend more time with the patients and less time on documentation. An RN reviewing the concurrent PTF and offering salient recommendations enhanced the overall experience of the veteran and the clinician. The VA Maintaining Internal Systems and Strengthening Integrated Outside Networks (MISSION) Act of 2018 is intended to streamline the process for veterans that desire care outside the VA. The underlying message of this act, argued LaPointe (2019), was that “researchers cautioned that outsourcing VA care to non-VA hospitals should be reconsidered” (para. 8). LaPointe’s article noted a recent Dartmouth University study that found that the VA hospitals provide as good or better care than private sector hospitals. Improving the processes and removing the silos between departments necessitates the current administration’s approval of effective models like an RN-led CDI program rather than sending veterans to the community for care.

The VA is a federal institution and Congress appropriates the budgets for each facility annually. Each facility generates revenue reports and the limited financial data available to me was important. A RN-led CDI program cost benefit analysis for fiscal year 2016 (FY2016) demonstrated a savings of approximately \$130,000 (Appendix C). The report included the cost of the RN and professional coder and training. The original report included the items identified as not billable: the lack of medical necessity documentation, no diagnosis or symptom in note, student note, unsigned document, and resident supervision not met. All these variances were avoidable. A concurrent review by a licensed professional offset these avoidable incidents before the final encounter was sent to the business office. The return on investment for the full-time equivalents (FTE) may happen the first year. And the data were for inpatient hospitalizations

only. This model can be easily expanded to outpatient services for future consideration.

VA's complex billing structure uses the diagnostic related groups (DRGs) for classification on encounters the trainees and specialists complete. The data were taken from a fiscal report from 2016 where I undertook the pilot project. The approximate cost of a Title 38 RN and a GS (professional coder) are the costs for two FTEs. The cost of training was approximate based on previous inquiries. The potential net savings of this cost benefit analysis was underappreciated. The actual return on investment is likely higher, especially if this pilot study is expanded and implemented in all service lines, including the outpatient setting.

The business office provided me with an example of the actual cost of an AIS. I coded the encounter with the ICD-10 CM category for stroke, unspecified, which is I63.9. Medicare was unable to be billed because the VA is the agency's federal equivalent. Encounters, however, are still created and a 'dummy bill' is sent for accounting purposes and VERA allocation. This example's secondary insurance paid standard rates that included VA inpatient copay, ED charges, radiology, labs, and consults. The total charges noted on the claim was \$12,225.59 and the reported down-coded payment was \$3,948.78, and subsequently, decreased to \$1,288.00, which was the VA inpatient copay at the time the claim was submitted. This example of one patient diagnosed and treated for AIS only represented a very small fraction of the actual patients admitted to the VA. The PTF abstracted was inaccurate and had the documentation been complete and the coders able to capture all the required information, including this veteran's complex comorbidities, the payers would not likely have reduced the payment.

External factors of the study. Despite the drive to privatization, the VA is responsible for safe and value-driven care for the veteran population. D'Costa and Whitworth (2017) noted poor clinical, payment, and quality outcomes were a direct result of missing or inaccurate PTF notation. Even though the VA is a federal institution, there is still oversight demanding

transparency of taxpayer spending. The VA is beholden to healthcare governing boards including the Office of the Inspector General (OIG) and the Joint Commission (TJC), to name two that ensure policies and directives related to care are followed (U.S. Department of Veterans Affairs, 2018).

Private sector hospitals require well-structured and fiscally responsible models of care management. The VHA outlined the same overarching mission. The VA is a federal department equivalent to the Centers for Medicare and Medicaid Services (CMS) and therefore utilizes the same directives as the private sector when caring for veterans. Clinical documentation integrity is a challenge throughout the United States in the private and public sectors. Implementing a model using CDIS RNs is a proven model in the private sector. A small test of change validated the value of the program at VA Connecticut. Implementing the CDI program effectively enforced accurate documentation which, in turn, likely decreased denials, but more importantly, reflected documentation integrity.

Patient safety has never been more acutely scrutinized by governing bodies and third-party payers than it is now. The collective VA takes caring for veterans safely and with fiscally responsible models very seriously. Implementing an RN-led CDI program for patients hospitalized with AIS and TIA likely had a positive impact on patient safety and financial solvency as the VHA experiences a drive toward privatization.

Research Questions

Q1. Will the concurrent registered nurse (RN) submitted query form increase the trainee and specialist response rate to 100%?

Q2. Will the customized query form enable the capture of the national metrics by the trainee and specialist at the level of VA documentation integrity?

Q3. Can the information located in the PTF allow for the accurate identification of the VERA classification by the business office at the VA?

Clinical documentation impacts the entire patient experience throughout the delivery of care by trainees and specialists. The population identified for this study were the trainees and specialists who cared for the veterans diagnosed with AIS and TIA. The VA acute care hospital was in the Northeast region of the United States. This group included neurologists and a nurse practitioner who were responsible for accurate and compliant patient treatment filing as the patient moves through the continuum of care. The first of a three-pronged intervention approach was an RN-generated query form specific to AIS and TIA that recommended accurate clinical indicators and significance that supported the diagnosis and clinical care of hospitalized patients. This process was concurrent, meaning the patient remained in the hospital where the metrics were captured that supported best practice. The current process does not have a clinical liaison. The coders who capture the information after a patient is discharged from the hospital email the attending provider up to 30 days with requests for further clarification, which raises the risk of abandoned queries and no change in documentation by the trainees and specialists.

The CDIS program satisfied the Triple Aim outlined by engaging and transforming traditional nursing roles. The CDIS role improved the patient care experience by ensuring fiscal responsibility to the taxpayers by bridging the gap between the trainees and specialists and the business of healthcare. Improving the health experience of the veteran while in hospital was accomplished by understanding the clinical trajectory of the patient's condition and accurately reflected the need for testing and coordinating care. Finally, growth in health care costs has become unsustainable and aligning patient care with evidence-informed pathways ensured resource utilization. The VA is experiencing a slow culture shift from treating episodic illness to prevention, and nursing was well-placed to track these changes and educate the trainees and

specialists of care (Salmond & Echevarria, 2017). These changes were necessary given the push to privatize the VA.

This pilot project also empowered staff nurses by utilizing the shared governance model employed by the VA in caring for our veterans. Historically, nursing notes do not impact the diagnoses of hospitalized patients, but the care given by nurses supported the entire care plan throughout the patient stay. This, in turn, became a collaborative effort as the patients diagnosed with stroke moved through the continuum of care.

There were obvious challenges with this process. The attending trainees and specialists were already caring for new patients, the residents and interns had already moved on to another clinical rotation, and the time it took to research and address a query was time-consuming and not mandated by VHA directives. The expected outcome of the RN-driven concurrent review was increasing accuracy and compliance and capturing veterans equitable resource allocation (VERA) complexity. The VA data were available pertaining to the financial impact of the proposed pilot project. The timeframe for this plan-do-study-act (PDSA) was three months for the PTF review of an admission of a patient diagnosed with AIS or TIA and the diagnosis code support documentation.

The stepwise process of this pilot project remained the same throughout the timeframe. The review of the PTF for the metrics on admission included the patient's prior medical history and admission documentation. I completed the customized query form with the recommendations for change. The query form was then sent via encrypted email to the attending provider and the PTF was re-abstracted to locate the missing or inaccurate information in an addendum note attached to the daily progress note or to the original history and physical (H&P). The review of the PTF occurred daily until the hospital discharged the veteran. Additional stakeholders included the professional coders, the nursing department, and the business office.

The coders were responsible only for what is noted in the PTF. Their query process allowed them to contact the trainees and specialists for up to 30 days past patient discharge, but many trainees and specialists do not respond to these queries for various reasons. Nurses responsible for patient care contribute to the data supporting patient care. The business office is responsible for the complex billing process contained within the VA and outside managed care companies.

PICOT Question

The comparison was an abstraction of the PTF's preintervention of a random sample of 86 patient PTFs diagnosed with either AIS or TIA. The information was then input into the data collection tool embedded in the Research Electronic Data Capture (REDCap®) database and analyzed using SAS software. I then offered the education to the team and once the intervention went live, I collected the data for a period of three months. Educational information for the 11 neurologists and one nurse practitioner included a one-page brochure that contained the necessary information for complete documentation, presentations during each two-week rotation at rounds, and the modified query forms delivered via encrypted email at the initial identification of missing or inadequate information (Appendix F).

This study was longitudinal in nature. I assessed the data in the PTF for additional education. This was a continuous evaluation throughout the project timeframe. The study continued for the three-month period. Once I obtained IRB approval from ACU and VA, the pilot started on September 3, 2019, and finished on November 20, 2019, for adequate collection and analysis of the data.

In the Neurology Department at VA Connecticut, will a RN generated query form improve clinical documentation of AIS and TIA patients, compared to no intervention, increase the number of queries, impact the national metrics in the PTF, and increase VERA classification accuracy within a three-month plan-do-study-act (PDSA) cycle? Bridging the information gap

between coders and the clinical trainees and specialists was an objective of a CDIS program led by nurses. This was an important foundational pilot for future endeavors to increase PTF integrity.

- **P** - Neurology department physicians and nurse practitioner;
- **I** - RN generated query form;
- **C** - No query form (or query form generated after discharge by coders);
- **O** - Increase the query response rate to 100%, increase the accuracy rate of the PTF according to national metrics, and increase the accuracy of VERA category;
- **T** - A three-month PDSA cycle

Hypotheses

This quality improvement pilot project impacted the clinical outcomes by using a three-pronged intervention and education. The predicted findings were statistically and clinically significant. The alternate hypothesis of this pilot project was that an RN-led CDI program would increase the query response of the trainees and specialists, capture nationally mandated metrics, and reduce denials for patients diagnosed with AIS and TIA. The null hypotheses were no change in provider responses to queries, metric documentation in the PTF, and accurate VERA classification of veterans diagnosed with AIS or TIA.

Evaluating measurement tools for the pilot project was imperative in determining evidence-informed documentation integrity. Based on a search for validated tools, the proposed questionnaire was the PDQI-9® (Appendix A). This tool offered me insight about the effectiveness of the patient treatment file accuracy preintervention and postintervention. The preintervention academic tools included the diagnosis specific query form with required metrics, a one-page “cheat sheet,” and a brochure highlighting the categorical documentation. I presented

these resources to each resident during weekly rounds until the initiation of the pilot project and continuously reevaluated.

Theoretical Framework Discussion

For several reasons, I chose Donabedian's framework, also known as the Donabedian model, to compare the quality of the system (Agency for Healthcare Research and Quality, 2015). Healthcare improvement, according to Donabedian (1966), "proposed a triad of structure, process, and outcome to evaluate the quality of healthcare" (p. 206). This framework spoke directly to measured metrics and how collaborative models might lead to a change in provider documentation. Donabedian's simple approach spoke to structure, process, and outcomes. Accomplishing documentation integrity took a structural change by adding the RN as a subject matter expert during the initial rotation of the residents and at the inpatient rounds. I modified the process by creating a standard operating procedure, designing a process flow map, and integrating this into daily practice once the pilot project was complete. Outcomes relevant to the results of this pilot project included increased response to clinical queries, data capture of metrics, and accurate VERA classification.

Together this pilot project equaled a true interdisciplinary collaboration between the professional coder, the RN, and the trainees and specialists caring for AIS and TIA patients. Medical trainees and specialists have lengthy academic journeys. The learning process builds skills as trainees travel the long road to success. The art of telling the story of patients and their hospital care was a focus of this pilot project. Communication was the strongest determining factor between the success and failure of this endeavor.

Structure. The structure of the CDI model aligned with my experience and understanding. The trainees and specialists' performance was indirectly related to their ability to tell the story of the care offered to patients. I completed and sent the query form to the trainees

and specialists with the missing or inadequate information. I did not repeatedly send the query form, which denoted the specialists' demonstrated mastery of the language of documentation. When the individuals understood the context of one scenario, they then translated the required pieces of the equation to other diagnoses. Future considerations included the CDI model as best practice in all areas of the hospital, including the outpatient setting.

Process. I was able to easily translate Donabedian's concept of process to the pilot project. Rodenberg et al. (2019) noted that "CDI specialists hope to educate physicians and other healthcare trainees and specialists to enhance their documentation skills to the point where queries and audits are no longer needed" (p. 1). I measured these against performance outcomes and the abstraction of patient PTFs demonstrated their grasp of the intervention. Several studies outlined CDI model specifics and the consequences of not forming a collaborative effort (Britt et al., 2015; Buttner, 2018; D'Costa & Whitworth, 2017). I grouped together groups of trainees as they rotated through service lines at any facility. The challenge, however, was teaching the attending specialists, because, historically, these trainees and specialists have not participated in documentation evaluation. The VERA reimbursement system is based in the complexity of veteran care and trainees and specialists historically have not been beholden to fiscal responsibility apart from documenting their workload or relative value units (RVUs). This pilot project's focus on process change impacts the veteran care and facility solvency by meeting long-term goals for future expansion and growth.

The trainees and specialists participating in this study felt challenged because of the level of detail required for documentation integrity. Some exhibited signs of fear or anger or vulnerability as they learned. This was very important to understand, and I presented the information concisely, clinically, and diplomatically without punitive responses. I emphasized this is a change in process and not an assessment of individual knowledge. Once I observed that

the process and outcomes started changing, then one could only hope that this would be, according to Donabedian, the correct set of guidelines, protocols, and pathways to care in achieving documentation integrity.

Outcome. Practice improvement using theory is not unique to nursing, but meaningful in a way not found in other professions. Dahnke and Dreher (2011) argued that the health profession is differentiated from other disciplines. The furthering of that same wisdom was taking me on a journey that blended the clarity of science with the beauty of artistry in outcome achievement. Donabedian's model suited this CDI endeavor pilot project at the VA Connecticut Neurology Department. The outcomes of this pilot project may still add to the literature of CDI models (Monica, 2017; Rodenberg et al., 2019; Stetson et al., 2012). I acted as a subject matter expert that bridged the gap between the professional coders and the clinical trainees and specialists that affected the outcomes of this pilot project.

Duran and Cetinkaya-Uslusay (2015) noted that "the process requires nursing students to internalize the knowledge, skills, attitudes, values, and ethical standards of nursing to make them a part of their professional behavior" (p. 308). The model that combines the structure, process, and outcomes of this pilot project (see Figure 1) may impact the VA facility's mission and vision.

Operational Definitions

CDI is a complex process that involves terms and concepts that are unfamiliar to new medical residents and interns as they rotate through the neurology service caring for patients with AIS and TIA.

Acute ischemic stroke (AIS). Occurs when a blood vessel supplying blood to the brain is obstructed. It accounts for 87% of all strokes (American Heart Association/American Stroke Association, 2019).

Centers for Medicare and Medicaid services (CMS). The federal agency that runs the Medicare, Medicaid, children's health insurance programs, and the federally facilitated marketplace (USA.gov, n.d.).

Clinical documentation improvement (CDI). The core of every patient encounter, and to be meaningful it must be accurate, timely, and reflect the scope of services provided (American Health Information Management Association, 2010).

Clinical documentation improvement specialist (CDIS). This person is responsible for competency in coordinating and performing day-to-day operations, providing concurrent and/or retrospective review, and improving documentation of all conditions, treatments, and care plans to ensure highest quality of care is provided to the patient (American Health Information Management Association, 2010).

Coder. An individual who translates the descriptions of diseases, injuries, and procedures into numeric or alphanumeric designations for reimbursement, morbidity, clinical care, research, and education.

Coding. Establishes coding criteria for conditions or events using the documentation from trainees and specialists and offer training on using these criteria (Agency for Healthcare Research and Quality, n.d.).

Computerized patient record system. Provides clinicians, managers, support staff, researchers, and others an integrated patient record system (VA.gov).

Concurrent. Prior to discharge; the patient is in-house.

Diagnosis: ICD-10-CM. International Classification of Diseases, 10th edition, Clinical Modification; information for patients and consumers about getting diagnosed with an acute or chronic condition, having surgery, taking medicines, and using hospitals and clinics (Agency for Healthcare Research and Quality, n.d.).

Diagnostic related groups. Diagnostic related groups are a patient classification scheme which provides a means of relating the type of patients a hospital treats (i.e., its case mix) to the costs incurred by the hospital (Agency for Healthcare Research and Quality, n.d.).

Documentation. Establish information or documentation criteria for trainees and specialists, including specific diagnostic terms that are consistent with clinical definitions and compliant with coding regulations (Agency for Healthcare Research and Quality, n.d.).

Electronic health record (EHR). The EHR is composed of the electronic patient treatment file (PTF) and typically includes functionality for computerized order entry, laboratory and imaging reporting, and medical device interfaces (Agency for Healthcare Research and Quality, n.d.).

History of present illness. Documentation includes but is not limited to prior strokes and diagnosis of atrial fibrillation.

Ischemic stroke. Ischemic stroke occurs when an artery in the brain is blocked.

Neurologist (attending) physician. Board-certified in neurology who cares for inpatients and is responsible for documenting care plans.

Nurse practitioner. An advanced practice RN who cares for inpatients and is responsible for documenting care plans.

Payer source. Veteran's benefits; third-party payer source of payment for care.

Query. A question posed to a provider to obtain additional, clarifying documentation to improve the specificity and completeness of the data used to assign diagnosis and procedure codes in the patient's health record (American Health Information Management Association, 2010).

Query process. Establish an effective process that CDI specialists and coders can use to obtain clarification from physicians, nurse practitioners, or physician assistants on

documentation issues that may affect the coding process (Agency for Healthcare Research and Quality, n.d.).

Registered nurse (RN). RN with clinical understanding of the ischemic stroke pathway who is generating the query form requesting more supportive evidence of a diagnosis.

Transient ischemic attack (TIA). A transient episode of neurologic dysfunction caused by focal brain, spinal cord, or retinal ischemia without acute infarction.

Type of stroke. Ischemic stroke occurs when an artery in the brain is blocked. Hemorrhagic stroke occurs when a blood vessel in the brain bursts and spills blood into or around the brain.

Veterans integrated system technology architecture. VISTA is a read-only intranet web application that delivers a uniform, well-defined suite of objects from the medical domain such as patient, provider, progress note, lab results, prescriptions, allergies, and imaging (VA.gov).

Scope of Project

The scope of the RN-led CDI pilot project focused on achieving documentation integrity for veterans diagnosed with AIS or TIA. The population targeted is a group of trainees and specialists who care for these veterans at an acute VA hospital located in the Northeast United States. This pilot project's duration was three months and included a three-part intervention, which included the customized query form, the homegrown data collection tool embedded in a database, and a validated survey tool that measures PTF accuracy. Increasing trainee and specialist response to the customized query form, capturing VA metrics, and ensuring accurate VERA classification were the project questions identified during the design phase of the pilot project. I made assumptions based on my experience as a utilization management reviewer when designing the project's model and limited by sample size, time, and resources.

Summary

The care for veterans diagnosed with AIS or TIA is complex. Documentation of care is an integral piece of the foundation of this care. The need for accurate documentation impacts veteran safety and fiscal responsibility of trainees and specialists. I considered this a high-priority project topic. Improving the integrity of the care of hospitalized veterans dramatically improves efficiency, may decrease errors, and reduce costs. Communication has always been challenging in any healthcare setting and a robust CDI model may help mitigate risk because the PTF receives all of the information necessary to care for veterans diagnosed and treated with AIS or TIA. The CDI pilot project may provide data so that a model can impact veteran care across the healthcare continuum.

Chapter 2: Literature Review

Literature Search Strategy

Research began with the following electronic databases: Cumulative Index to Nursing and Allied Health Literature (CINAHL), Medline Plus on the Ovid platform, and EBSCO Host. I used Google to extrapolate current business knowledge pertaining to documentation integrity benchmarks using the terms “clinical documentation improvement specialist,” “CDI RN,” “registered nurse-led CDI programs,” “clinical documentation improvement models,” and “clinical and financial CDI outcomes.” The combination of research, opinion articles, and briefings came from subject matter experts in the private sector. There is no relevant research offered by investigators within the VHA or the VA. Also, the use of business blogs and opinion pieces offered a clear limitation of the scholarly application of this topic.

A search for Donabedian’s framework categories of structure, process, and outcomes (1966) resulted in salient articles that helped me develop of a pilot project for clinical improvement of documentation. The database search also included Medline with complete text, which offered supplemental material supporting diverse details used in enhancing the information shared by the subject matter experts. In total, I identified approximately fifty articles and studies that met inclusion criteria appropriate to the subject of CDI. This review of literature synthesized various research and current business approaches highlighting the need for a solution to clinical documentation inaccuracy. The evidence furthers the need for studies designing and implementing a model providing CDI. Finally, consulting the literature, I outline the future implications and considerations as well as the limitations of the evidence-based research on the topic of CDI. The search limiters used in the search were studies and articles that were less than 20 years old, full-text online articles written in English, and scholarly and peer-reviewed articles.

Findings

Three broad domains emerged from the literature search. The first domain offered background information pertaining to CDI. The second group of articles was from a business perspective, how a CDI model looks in the real world, and business opinion about fiscal and facility impact. The final domain's theme was from the evidence-informed research available including the measurement tool used for determining PTF accuracy.

Background

Cheng , Gilchrist, Robinson, and Paul (2009) reviewed the literature pertaining to the problems that inaccurate coding causes. The researchers reported that “issues surrounding coding errors have long been recognized, and despite the fact that their consequences can be far-reaching there remains a paucity of literature on the matter of clinical coding audits themselves” (p. 36). The authors recommended internal audits to maintain the skills of the coders. Accurate clinical documentation assures revenue for infrastructure growth, workforce planning, and management of the entire health care setting. Clinical coding knowledge for trainees and specialists is necessary, but accuracy of documentation is essential. Various business entities espoused a CDI model and offered opinions and arguments in favor of a concurrent, nurse-led program.

Natale (2012) offered compelling reasons to implement a CDIS program in a hospital. First, accurate documentation supports coding which is the basis of correct revenue and reimbursement. Second, quality benchmarks are met with proper documentation. In addition, compliance is increased. Finally, health care professionals follow policies and protocols if the entire story is meticulous; otherwise a hospital could be losing revenue (Natale, 2012). The overarching VA mission of patient quality, safety, and value was the impetus I had for designing and implementing initiatives that improve outcomes.

Population. Three articles that resulted from the search specific to provider-centered education and model development were a blend of business opinion and research. Leventhal (2013) noted that “CDI implementation is not a “one-size-fits-all” scenario (para. 3). The remaining two studies used a literature review and an analysis survey as the research design. Lake , Jackson, and Hardman (2015) found that medical education required a new perspective because of the lifelong learning that trainees and specialists must endure (p. 770). Practitioners, according to Ryan, Patena, Judd, and Niederpruem (2013), needed education via subject matter experts, and job-analysis, validated surveys were distributed to industry professionals via email on topics including relevant tasks pertaining to knowledge, skills, and abilities. The response rate was 14.7%, with 733 respondents completing the survey. The sampling error was +/- 1.1% at the 95% confidence interval. This small sample limited the outcomes and the authors recognized the need for a wider representation. Another business acumen piece supported the creation of a CDI model; the central theme was that provider education did not include specific terminology and details about patients diagnosed and treated for AIS and TIA, and which required clear and complete thoughts.

Solution. Thoughtful design and implementation of a provider-centered CDI model may achieve success (Mitchell, 2016). While Mitchell’s profession was outside health care, he argued that the steps taken during development of any model designed as a shift in culture is important (Mitchell, 2016). The first step was identifying model definition and requirements. The CDI model must define the purpose, skill requirements of the staff, and areas of intended use of each model. This case was the VA Connecticut Neurology Department. I factored regulatory and business requirements into model development. Next is the model design. Following operational and regulatory directives and processes that align the model was foundational. Defining clear parameters of the model and the associated requirements allowed those tasked with the daily

operations who collect, examine, and present the data to evaluate the design of the model. The CDI model implementation was a severe culture change for trainees and specialists and their engagement and participatory willingness. Step three in the creation of a CDI model was data management. Arguably, this was the most important step. The recent change from ICD-9 to ICD-10 (International Statistical Classification of Diseases and Health Related Problems) was much more specific and targeted. The proper data management plan was essential for success in answering the research questions asked. Results analysis was my next consideration in model development. Patient PTFs are a legal document and while queries are not an official part of the actual record, there were strict patient safety measures taken when protecting private health information. Hospitals should test and monitor a model's effectiveness and use as conditions and applications change.

This process determined whether resources were being used appropriately. Continuous data collection and analysis led to feedback and improvement. Model users were uniquely qualified as subject matter experts who determined whether this pilot project's statistical and clinical significance deemed this worthwhile as a permanent intervention when caring for all patients in the inpatient and outpatient setting.

In addition, Russo, Fitzgerald, Eveland, Fuchs, and Redmon (2013) asserted the theory that creating a CDI program increases self-efficacy of the trainees and specialists which, in turn, increases accuracy. Successful integration of any skill requires engagement. CDI coding professionals, four physicians, and a nurse constructed a survey instrument that had been previously validated. Russo et al. offered the survey to 22 physicians. The modest sample size, while statistically insignificant, was clinically significant. The trainees and specialists accomplished content validity of the clinical documentation quality (CDQ) and self-efficacy measures by reviewing the tool independent of each other. I implemented the pilot, and an

exploratory factor analysis suggested a single-factor structure as expected ($\alpha = 0.87$, $M = 0.73$) and all items were retained as the intervention. According to Russo et al. (2013), it is not possible to generalize these findings, but further study by larger academic institutions will likely engender a similar result. This pilot project's design served as a baseline for future research pertaining to documentation integrity.

Reyes, Greenbaum, Porto, and Russell (2017) furthered the hypothesis by creating a CDI program with lectures, reviews of PTFs, and emailed query forms that had a major positive impact. Finding service line champions and leadership support was a must. The working relationship between the neurology department and me has worked well since 2015 regarding changes in documentation. The overarching mission of the VHA is caring for the veteran population in a way that satisfies quality, safety, and value. Trainees and specialists acting as fiscal stewards captured the *zeitgeist* of that strategic plan, in part.

The return on investment, as outlined by Krauss (2016), can be immediate and robust when health care professionals implement a successful CDI program. Krauss presented an actual case study regarding a patient with a pancreatitis diagnosis. The author outlined potential opportunities that offset the avoidable days and denials through a robust CDI program. And finally, Krauss offered suggestions about the best use of technology that achieve maximum success. The VA's strategic planning involves updating and modernizing the information technology infrastructure. The timing offered an impeccable design and implementation opportunity of a nurse-led CDI model. Understanding the needs of a facility required the right people, or in this case, the right person leading the improvement initiative with the neurology department.

Dover (2013) outlined the need for the right person for the job. Success begins with a critical evaluation of potential employees. The training of a current employee is ideal because

they usually know the key stakeholders and the day-to-day operations of the facility. Dover (2013) also emphasized that the development team should look for additional strengths in a person being considered because the experience a person brings to a new model may make the difference between success and failure. Diverse experience may ultimately bring a different perspective and a positive impact (2013). There are many qualities an effective team member must possess. Communication and enthusiasm, combined with diverse experience, can produce sustainable change.

The evidence-informed studies pertaining to nurse-led models of documentation improvement necessitated the implementation of this pilot quality improvement pilot project. Asakura and Ordal (2012) noted the challenges with meeting the very strict and complex rules that maintain compliance in a CDI program. Leading queries, or those that specifically dictate what the provider is to document is highest on the list of challenges a program may experience. Nurses have a specific scope of practice and queries stating the exact documentation is outside that scope. Verbal queries are equal to leading queries because then nothing is documented that proves the nurse is usurping clinical judgment. Multiple choice options are similarly challenging because unless the choice is offered, the accuracy may not be optimal. While selective queries were part of the initial pilot phase, as in the case of the neurology department trainees and specialists, the holistic program did not allow selective queries. The hospitals do not only see one type of patient and that might be considered fraud if specific, high-dollar diagnoses become isolated. Finally, health care administrators should never promote incentive-based performance improvement strategies. The clinical CDI initiative provides education to the trainees and specialists that enhance quality and fiscal responsibility and offering incentives is counterintuitive to the care of our nation's veterans.

Intervention. The three-pronged intervention used in this pilot project required an extensive search using validated measurement tools. While there were few articles that measure PTF accuracy, there was evidence that addressed professional learning community education, technology, and the challenges a researcher may encounter. The alpha and beta case studies used in Trudel, Pare, and Laflamme's (2012) research espoused IT integration into health care. The authors found in their cross-case analysis that mindful innovation engendered positive outcomes that aligned with the IT-driven CDI pilot project (p. 40). Monica's (2017) opinion favored the EHR technology leading to success of a well-designed CDI model. The opinion piece, a clear limitation, was the message shared across the board regarding the need for an embedded CDI model in the acute-care setting.

The use of a customized query form was the second of the intervention tools. Jolly , Bowie, Price, Mason, and Dinwoodie (2018) sought data regarding the use of a survey-based educational program designed for remediation of legal cases in their practice. While this was not a strictly defined query form, the survey captured three themes: personal and professional impacts and actions, comprehension and validity of educational interventions, and feedback. The authors designed qualitative, semi-structured telephone interviews with a convenience sample of doctors with a high number of legal cases. Of the possible 79 doctors, 20 were recruited (25.3%) and the major findings from the coding of the transcripts included some evidence that the evaluation was insightful in terms of improving the design of the intervention (Jolly et al., 2018).

The concurrent use of a form is the topic of another study identified during a query as an intervention search. Medlock et al. (2017) conducted a study at a tertiary-care, university medical center staffed by 11 doctors and five to seven residents, an equivalent to the demographics of the neurology department involved in this CDI pilot project. The researchers evaluated the email-based intervention, designed for patient continuity of care, in a randomized controlled trial. They

established a baseline: A total of 9.3% of the 8173 visits were greater than 90 days overdue for a letter ($X^2 = 0.25, p = 0.62$). The secondary outcome results of the before-and-after offered a major finding. Over the year of the intervention, 598 of 4550 visits resulted in overdue letters in the control group (13.1%, baseline = 9.5%), compared to 253 of 3140 in the intervention group (8.1%, baseline = 9.1%). According to the authors, there was a significant increase in overdue letters in the control group during the trial ($X^2 = 0.31, p = < 0.0001$). In the intervention group, overdue letters decreased significantly ($X^2 = 2.17, p = 0.14$). The reminders can be aligned with the idea that a customized query form is addressed when the clinical trainees and specialists improve documentation (Medlock et al., 2017).

The number of interventions in this pilot project assisted in the evaluation of the PTFs of stroke and TIA in impacting clinical integrity. Agoritsas et al. (2014) conducted a three-intervention study aimed at increasing the quality and quantity of best-practice search that answered clinical questions. The randomized controlled trial included eligible medical doctors ($N = 904$) in a Canadian hospital. The researchers conducted a power analysis with an 80% power to detect an increase of 0.9 in the mean number of searches. The data indicated a baseline of 0.46 searches per month by postgraduates ($SD = 1.42$) and 0.20 searches by faculty per month ($SD = 0.83$), which offered evidence that medical students, interns, and residents research evidence-informed data as a skill enhancer. The major finding was that concurrent best evidence searches have the potential of decreasing the knowledge gap when it came to documentation improvement (Agoritsas et al., 2014). The CDI pilot project's academic endeavor likely affected that knowledge gap positively.

Tracking the quality of care required that I look closely at data in the form of metrics and revenue integrity. There was a large evidence-informed gap that included research designed specifically for VERA capture. Andrus et al.'s (2001) study demonstrated that provider workload

capture and VERA cost of tertiary care was similar to an HMO payment model and the results showed a decreased correlation when compared to the VA model (p. 153). The third research question of this pilot project's focus was accurate VERA classification, and that can only happen by aligning the care of the veterans with the metrics identified by VHA directives for patients hospitalized with AIS and TIA. Perhaps a recommendation that may arise out of this pilot project is Yaisawarng and Burgess's (2006) pay-for-performance provider incentive associated with documentation integrity. The authors noted that "our performance-based funding mechanism would encourage hospitals to become more efficient by continuously searching for a better way to provide health care service without sacrificing quality and access to care." My empirical analysis of the VERA system included quality measures and access, which remains an overarching goal of the VA.

The capitated VA reimbursement model, VERA, is complex, and if the documentation does not reflect the care given to patients, the reimbursement per patient is smaller. Reyes et al. (2017) provided a CDI curriculum to surgeons in an academic environment in a pilot study similar to this pilot project. The curriculum included lectures during their rounds. Using an unpaired *t*-test resulting in $p < 0.05$ values, the results demonstrated a significant improvement in documentation skills. A limitation of this study was the actual patient population studied. This research did not limit the procedure or diagnosis of the patient population. This CDI pilot project focused on the neurology department at the VA reflected that increase, despite the small size of the department, and did have practice implications. Measuring the impact of a CDI training module was an objective of the research performed by Russo et al. (2013). Russo et al. assigned the small sample size ($N = 91$) of medical residents to a control group and to an educational group. The Russo et al. study also used a three-pronged approach, but my study used questionnaires which included a quality proficiency test, a self-efficacy assessment, and

demographic questions for their preintervention analysis. The substantive findings showed large and significant positive effects for the pretests on the posttest using chi-square statistics (Russo, et al., 2013). The practice implications were favorable for hospitals investing in a CDI model that impacted quality of care, coding, and health care costs (Russo et al., 2013).

In the current study, the PDQI-9® measurement tool tested the accuracy of the PTF by using a Likert-scale questionnaire that was concise, validated, and reliable. I evaluated internal consistency using Cronbach's alpha and assessed interrater reliability by a two-way mixed model, noting that I considered each segment evaluated as a fixed effect and each rater as a random effect. The criteria making up the measurement tool validity ($r = -0.678$ to 0.856), the difference between the best and worst note ($t = 9.3$, $p = 0.003$), internal consistency reliability ($\alpha = 0.87$ to $\alpha = -0.94$), and inter-rater reliability ($ICC = 0.83$, $CI = 0.72$ to $CI = -0.91$). Stetson, Bakken, Wrenn, & Siegler's study aligned with the CDI pilot project in that it likely took the same amount of abstraction time I found during the intervention phase, approximately 60–90 minutes per PTF. The limitations included a paper PTF, as opposed to an established VA EHR, the raters were unfamiliar with the patients and relied solely on the documentation, no training was provided to the raters, internal medicine attending trainees and residents, as opposed to specialists, and two sites affiliated with the same medical school (Stetson et al., 2012). This project's limitations were also that I used only one specific group of neurologists, but the reframing and implementation of this project on a larger scale may affect better outcomes in practice.

Comparison. Current documentation practices at the VA involved in this study were substandard. A recent presentation by the former director of strategic analytics for improvement and learning value (SAIL) model opined that the Northeast VA's complexity of patients was trending down not because the veterans were less ill, but because documentation did not support

the care received by the inpatients. Britt et al. (2015) used a case study as a guide for implementing a revenue integrity model, and compared the VA's model of low provider query response and high services provided that are not medically necessary, according to best-practice. Providing case studies to the trainees and specialists at the onset of this project addressed current deficiencies in AIS and TIA PTFs. Asakura and Ordal (2012) reported that "documentation is a subjective exercise" (p. 98). They showed that residents and interns were especially susceptible to poor documentation if their attending trainees and specialists were not savvy to the process (2012).

Data. Documentation integrity within the PTF was the overarching outcome of this pilot study. The first research outcome of the study was increasing the provider response to the queries to 100%. The barriers of successful CDI implementation included provider engagement, infrastructure compliance, the right team members, and available funding for model building that achieves best practice (Asakura & Ordal, 2012; Cheng et al., 2009; Dover, 2013; Krauss, 2016). Metrics are another component of the PTF a CDI model can address (American Health Information Management Association, 2010; Everett-Thomas et al., 2018; Leventhal, 2013; Loughlin et al., 2012; Natale, 2012; Shephard, 2018; Snell, 2019). Finally, researchers have showed that VERA classification accuracy is primarily concerned with the reimbursement to the facility's bottom line (Britt et al., 2015; Buttner, 2018; D'Costa & Whitworth, 2017; Monica, 2017; Rosenbaum et al., 2014).

Outcomes. Direct and indirect cost reduction, in addition to offering quality care, was an important objective of this CDI pilot project. Demaerschalk et al. (2010) performed a literature search for stroke-specific cost burdens in the United States. Their results found that a majority of the care was offered in the acute care setting, aligned with their documentation improvement pilot project of patients hospitalized with AIS or TIA. This offered an excellent cost savings

opportunity as complex care was reimbursed by a third-party payer or accurately classified by the VA.

Rodenberg et al. (2019) used claims data as a starting point to evaluate CDI programs from a data and analytics' perspective. The authors noted "similar studies may be used to develop and validate consistent institutional definitions of clinical scenarios or to offer objective rebuttals to denials of payment" (2019, p. 6). The researchers were interested in length of stay and used a convenience sample of the claims data for fiscal year 2016. They analyzed the population using paired-sample, two-tailed *t*-tests with a significant ($p < 0.5$) difference in hospital charges specific to morbid obesity as a refined diagnosis. The discussion could bring about a hypothesis that complications from stroke or TIA could statistically and clinically impact the length of stay of veterans. While this may not be directly applicable to this CDI pilot project during the design phase, the drive toward privatization of the VA may ultimately require CDI skill-building during the transition. Charlton et al. (2016) used chi-square and *t*-tests for a univariate analysis of categorical variables. The results demonstrated that of the 16,330 eligible veterans, 54% used both VA and non-VA services, 39% used non-VA only, and 5% used VA only. The massive number of claims resulted in a significant finding in the service-connected veteran ($N = 6,033$) and were younger (50.3 versus 52.6, $p < .0001$). This was significant in that the risk factors associated with stroke include the younger population of individuals. In this CDI pilot project, I computed the reliance as the metrics captured by abstractor and placed in the REDCap® data collection tool historically and then compared that to prospective data. Jha et al. (2003) used chi-square for trending whether the performance of the services within the VA improved during the sampling period, which resulted in statistically significant improvements in 12 out of the 13 measures (for trend: $p < 0.001$, by the chi-square test).

Summary

This literature review spanned the problem identification, building a model that focused on business process, structure, and outcomes, and evidence-informed studies about how CDI fit into the data and analytics world. The articles and opinion pieces offered the most encouraging advice to facilities considering the design and implementation of a CDI model. But opinions are not data and facilities cannot make decisions based on opinions. This was a clear limitation of many of the articles from the business side of health care. The gaps in literature were primarily from the public sector. The private sector's centrifugal department is finance, whereas the department of quality, safety, and value is central to the VA's mission and vision.

Chapter 3: Research Method

The care of patients in hospitals offers many challenges. Managed care companies require that proof of care be provided at acute care institutions. Oversight bodies, including the Joint Commission and the Office of the Inspector General that survey facilities, want proof that institutions that provide care offer safe, quality, valuable care of patients while hospitalized. Stetson et al. (2012) noted that “serious attempts to understand documentation and its value began in the late 1960s and early 1970s in anticipation of computerization of the record, including physician’s notes” (p. 165). These provider notes serve as a communication channel, or barrier in some cases, and the evidence a care plan demonstrates effectiveness for patients diagnosed and treated for AIS. Care given by trainees and specialists ideally aligns with the overarching strategic initiative of providing for veterans and active military. This RN-led CDI model bridges the gap between the professional coders and the trainees and specialists providing care to AIS patients hospitalized at the VA.

Pilot Project Design/Program Development

The VA encourages original programming, but that is not always possible. Leadership needs a reliable return on investment, but because of federal funding cuts, systemic changes were not possible (Trudel et al., 2012). However, as the VA begins the move from the Microsoft disk operating system (MS-DOS) to a more current IT platform, a design and implementation process is necessary before a system-wide implementation. American Health Information Management suggests the benefits outweigh the costs and risks when creating an effective CDI program (2010). The return on investment may not be immediate, but the accuracy of patient treatment files aligns with national initiatives surrounding patient safety, quality, and value. The query form, delivered via encrypted email to the trainees and specialists, ensured the trainees and

specialists were made aware of the missing or inadequate supportive documentation. And important objective of the pilot project was education about the components of PTF integrity.

The CDI pilot project educated the VA Neurology Department trainees and specialists using a concurrent query form highlighting details missing or insufficient in the PTF of patients admitted to the hospital with the diagnosis of AIS and TIA. This study's historical PTF abstraction provided baseline preintervention data and compared the prospective concurrent PTF abstraction after the three-pronged intervention and presentations. I analyzed administrative data from a sample size of 86 veterans admitted as an inpatient to the VHA Connecticut hospital with a stroke in calendar years 2017 and 2019 as a baseline. An administrative data collection tool captured each measure from the PTF and I placed them into domains. The domains consisted of metrics aimed at the trainees and specialists providing care to the veterans, the coders who extrapolate the information from the PTF, and the VHA national metrics captured by PTF abstraction. The CDIS program is IT-dependent. The VA does not have software in place supporting the additional workload of a team of RNs querying trainees and specialists. There were limitations and, as the VA moves to update the older platform, the existing software and processes challenged implementation. Trudel et al. (2012) identified the gaps IT had between successful implementation and those that failed. Hospital executives fear failure after a substantial investment (Trudel et al., 2012). I investigated whether a structured query form impacted the accuracy and compliance and developed operational definitions of patient PTFs after providing education to the neurology department trainees and specialists. This was a longitudinal study, where the RN, myself, collected the data and continuously readdressed any deficiencies on the part of the trainees and specialists for three months of the PDSA pilot project cycle.

Instruments/Measurement Tool

A validated tool must be used when demonstrating accountability and removing bias in evidence-based research. Based on a search for validated tools, the questionnaire I identified was the Physician Documentation Quality Instrument (PDQI-9®; Stetson et al., 2012; see Appendix A). This tool offered insight about the effectiveness of the PTF accuracy pre- and postintervention. Based on the research of Stetson et al. (2012), “the results support the criterion-related and discriminant validity, internal consistency reliability, and inter-rater reliability of the PDQI-9® for rating the quality of electronic physician notes” (p. 164). This brief survey demonstrated importance by measuring the outcomes of the study as they related to the accuracy of patient PTFs.

This validated measurement tool categorized what defines provider PTF accuracy. This short form used a Likert-type scale that identified PTF accuracy from ‘not at all’ to ‘extremely accurate’ scale from one to five. The principal investigator, Dr. Peter Stetson, granted me permission to use this measurement tool, with the caveat that the final study be sent to him and future publications include the team’s work to date (Appendix B). The ease of this tool, combined with the Research Electronic Data Capture (REDCap®) user-friendly database and one-page query form, allowed this study’s simple introduction to other service lines (VA Information Resource Center [VIREC], 2016; Appendix E). The preintervention academic tools included the diagnosis specific query form with required metrics, a one-page ‘cheat sheet,’ and a brochure highlighting the categorical documentation. Presentation of the original documents occurred during rounds throughout the pilot project timeframe of September 3, 2019, through November 20, 2019, when new trainees rotated through neurology.

Data Collection, Management, and Analysis Plan

For the baseline data, I abstracted 86 PTFs for metrics captured by the VA annually. The sample size calculation, using an online calculator setting the study's power to 80%, the Type I error to 0.05, and pre- and postintervention values to 30% and 50%, respectively, resulted in 91 PTFs per group (Select Statistical Services, 2019). There was a small number of individuals presenting to the Northeast VA with AIS or TIA. The historic data from years 2015 to 2019 presented a challenge because these numbers were also small. These metrics included the National Institute of Health Stroke Scale (NIHSS), a dysphagia screen on admission, and the indications or contraindications of a tissue plasminogen activator (tPA). Other measures were categorized into three domains and reflect national metrics collected by the VA showing improvement in patient care. A chi-square test of independence analyzed differences of independent variables (McHugh, 2013). The chi-square test of independence tested relationships between independent variables and when the cells were smaller than five, a Fisher's exact test provided outcomes. The independent samples identified in this pilot project represented an individual patient PTF ($N = 97$) for the pre- and postteaching. The historic preintervention data compared with the three-pronged postintervention prospective nominal data—a different set of PTFs in which the trainees and specialists documented. The pre- and posttest interventions identified whether the metric was present in the file or not—either yes or no (nominal). As an example, the historic PTFs revealed that only 50% of them contained the metrics. Then the educational presentations that I gave reduced that to 30%, which produced statistical significance and clinical significance. The variables abstracted from the PTFs included the following: NIH stroke scale, the vessel impacted in stroke, the dominance (left hand or right hand) of the patient, whether a dysphagia screen was performed, and whether tPA was administered or not and whether those contraindications were documented. The predicted sample size ($N = 91$) in the

prospective sample was limited because of the small number of AIS or TIA patients admitted to the hospital. Thus, I completed the power analysis again.

Data collection. The neurology department trainees and specialists at the VA caring for patients hospitalized with AIS and TIA were the focus of this pilot project. The concurrent query forms sent by the RN with identified missing or inaccurate information was one part of the intervention that increased the chance that a provider would respond to the recommendations and addend the H&P or the progress note. This query form was sent at patient admission, or within 24 hours of admission because the RN tour is Monday through Friday and weekend reviews are not required by VA directives. This review process occurred at the VA acute care hospital located in the Northeast of the United States. The query form and responses were sent via encrypted email to the trainees and specialists. I have 10 years of utilization management experience in analyzing the data and ensuring the proper care delivery processes and fiscal obligations based on CMS and VA standards.

Data management. I collected data from the query forms sent to the trainees and specialists and reviewed each PTF for changes if the trainee and specialist agreed with recommended changes. I then entered the returned query forms onto an Excel spreadsheet addressing one outcome of the pilot project, increasing the provider query response rate to 100%. I then entered the identified metrics into REDCap® database (Appendix E) and reviewed them using the PDQI-9® measurement tool for accuracy. I abstracted these PTFs at admission and through the entire length of the veteran's hospitalization. This concurrent review occurred at the VA hospital during off-tour hours and during predetermined academic clinical hours. The database was accessible at all hours and all days and not restricted by location. This study may add to the practice currently being considered by the VA Central Office letting hybrid RN roles bridge the gap between trainees and specialists and coders. I housed the data on my assigned VA

laptop and it could not be accessed by anyone else. The REDCap® database was available only to myself and the administrator. Access was not granted to anyone other than the preceptor and the neurologist overseeing this pilot project. The data will be retained on Google docs at ACU with restricted access for three years following the completion of this pilot study.

Data analysis. I used the chi-square test of independence to analyze data on SAS software for my pilot project's outcomes. The collective data included the query response forms, the metrics, and the VERA category determination in the final analysis. I have over 10 years of utilization management experience abstracting PTFs and aligning the information present in the PTFs with formal hospital inpatient guidelines using Interqual® criteria. The pilot project finished on November 20, 2019, for fiscal years 2019 and 2020.

Methodology appropriateness. The query form introduced instructions on responding and placing an addendum in the PTF if the documentation was not present in the PTF. The trainee received the query form via encrypted email and I entered the returned responses onto a spreadsheet and used REDCap® for analysis and compared the results with historical data collected on AIS and TIA veterans admitted to Connecticut VA from 2015 to 2019 ($N = 97$). While the number of patients admitted to the VA with a diagnosis of AIS and TIA was small for the prospective PTFs ($n = 86$), the impact of the information sent to the trainees and specialists was likely documented, thus the culture change began during the pilot project's duration.

The strengths of this study included a very engaged neurology department. Education has been provided in the past very successfully with important outcomes pertaining to documentation. The neurology department is small, and all personnel were engaged in robust research and amenable to further study. This study required a more rigorous understanding by the trainees and specialists of quality documentation and the physicians and nurse practitioner were eager learners. Another strength of the study was the diverse ethnicities represented by the

veterans and active military. The veteran population ethnicity categories included White, African American, American Indian/Alaskan Native, Asian, Native Hawaiian, and a mixture of two or more ethnicities. The gender identification has become very fluid in recent years, categorizing the traditional male and female as well as self-identified and transgender (Veterans Health Administration, 2016). Veterans and active military possess a higher incidence of risk factors associated with AIS and TIA secondary to deployment and psychosocial diagnoses like posttraumatic stress disorder (PTSD; Veterans Health Administration, 2016). The VA has a big data set available and a very robust research component.

Research limitations included a small sampling of patients hospitalized with AIS or TIA at the Northeast VA. Women veterans represented a small part of the entire demographic. Chi-square test of independence and Fisher's exact test demonstrated statistically insignificant outcomes using SAS software.

Feasibility and Appropriateness

The stakeholders were numerous for this pilot project. The attending physicians were interested in capturing workload. The trainees and specialists were continuously learning and honing assessment skills. The nurse practitioner visited all hospitalized AIS and TIA patients and ran several outpatient stroke clinics. Additionally, the robust AIS studies currently funded are many. The outpatient setting offers an excellent documentation improvement setting, especially if the political future of the VA is privatization. The impact of this study raised the query responses by trainees and specialists, improved the accuracy of the PTF, and improved the appropriate Veteran Equitable Resource Allocation (VERA) classification. This data collection process ultimately may change culture and improve quality, safety, and value metrics for veterans and active military hospitalized with AIS and TIA.

IRB Approval and Process

Before the pilot project began, the ACU's Institutional Review Board (IRB) determined this project exempt (Appendix I). Once the defense proposal was approved, I completed the IRB application and submitted it for review of the ethics, pilot project design, and hypotheses by the IRB. The VA culture is very rich in research. The IRB application described the quasi-experimental, quantitative study outlining the comparison of the historical AIS and TIA data and the prospective data using the three-pronged intervention. The request was for a quality improvement project as this pilot study did not directly recruit individuals for original research. This was essentially a project abstracting PTFs after I had given an educational presentation to the neurology team at the Northeast VA. Once the IRB granted approval, the project started on September 3, 2019. I then completed the National Institute of Health Training for Human Subjects training. In addition, I completed and submitted the Collaborative Institutional Training for Human Subjects (Appendix H).

Multidisciplinary Collaboration

Implementing change can happen during relationship-building between professions. This study's success required enthusiasm and engagement. I have been successful in offering education incorporated into practice over the last four years. The neurology department members included 11 board-certified neurologists, a nurse practitioner, medical residents, interns, and medical students. The VA is a teaching institution and these individuals were willing and enthusiastic participants in this new endeavor. They do want what is best for the veterans and the facility, understanding that the future of the VA is tenuous. Each participates in their own research endeavors and looked forward to the results of this qualitative pilot project.

Practice Setting

I collected the data for the CDI pilot project in a 90-bed VA hospital located in the Northeast. The target population was a 12-provider inpatient service line. I collected the demographic information, trainee and specialist name prior to the initiation of the pilot project and used them for identification in the data collection tool when I abstracted the PTF. The participants signed consents prior to, or concurrent with, the presentation and education.

Target Population

The neurology department trainees and specialists of care were the intended target of this pilot project. The department consisted of 11 physicians who rotated service and a nurse practitioner. Trainees initially assessed the veterans on admission, reviewed their findings with the specialists, and then completed H&Ps based on the daily assessment and treatments plans decided.

Inclusion Criteria

Inclusion criteria for this qualitative study included veterans with a primary discharge diagnosis of AIS or TIA between January 2015 through November 2019. The patients were over 18 years of age. The patients were all veterans. Inclusion criteria consisted of those veterans who had third-party payers in addition to the VA benefits. The veterans were admitted to the VA hospital with a diagnosis of AIS or TIA using the International Statistical Classification of ICD-10-CM of I63. These veterans were admitted to any service line in the hospital, but neurology had to be consulted in the case of patients who were admitted to the ICU if tissue plasminogen activator (tPA) was administered, according to VA directive and protocol.

Exclusion Criteria

Exclusion of patients for studies, especially in this study where the predicted number of total patients was few, was a necessary part of the study's projections. Patients that left against

medical advice and patients that did not receive the AIS or TIA work-up were excluded. Those factors were documented in the PTF. I excluded veterans who were not diagnosed with AIS and those placed under observation status. The study site did not perform endovascular interventions, so I excluded those veterans who were transferred to the local non-VA hospital that performed the procedures. Alteplase was only administered from 8:00 a.m. to 4:00 p.m., Monday through Friday, and CT scans were only available during the first shift at this VA. I also excluded from the study hospice patients and those veterans who expired during hospital stay. Last, I excluded veterans diagnosed with hemorrhagic stroke.

Risks/Benefits

Studying humans can be a challenge for researchers. This pilot project, however, was academic in nature and required PTF audits for data collection. A great deal of preliminary discussion about the nature and the process for this pilot project occurred with the chief of neurology. The outcomes were of considerable interest to the entire department as it spoke to the workload capture and fiscal stewardship, communication between trainees and specialists, and the maintenance of quality care of hospitalized veterans. The trainees and specialists did not experience any personal benefits from participating in this study. The education I offered engendered CDI for the trainees throughout the matriculation continuum and, one can hope, to independent professional practice.

Ethical Risks

The ethical risks for this pilot project were few. The trainees were learning their craft in the hospital. Part of that learning process is understanding how documentation impacts patient quality, safety, and value. The trainees and specialists each had a responsibility when planning for patients diagnosed with AIS and TIA while hospitalized. A low risk of external bias did not impact the material understanding. Overwhelmed with clinical and administrative information,

very little time is devoted to VA-specific computer training, which posed a challenge to my endeavors. These trainees were not taught how to document as part of their core curriculum. This misunderstanding of my recommendations did not have a negative impact on the outcomes. Another risk associated with the study could have been the potential embarrassment or perceived negative impact on the physician's/nurse practitioner's professional reputation if the information garnered a negative or poor performance. The data collected from the encounter have not yet become available to colleagues, service line chiefs, or administration, but the risk remains low. Risk reduction included not identifying the clinician documenting the information. I took steps to minimize the risks associated with this study. However, if the trainees and specialists experienced any problems, I availed myself via email to the department administrative officer (AO). I continuously assessed risks and prevented any problems that could occur because of the design or implementation of the pilot project.

Timeline

Once I received the approval from the committee after my defense proposal, I then obtained IRB approval from ACU. When that process was complete, the baseline PTF abstraction began. The ($N = 97$) AIS and TIA patients were identified by the VA coder, stratified down based on diagnosis, and each veteran's PTF was reviewed using the inclusion and exclusion criteria. I abstracted for the metrics and entered the data into the REDCap® database. Once I reviewed and entered the 86 historical random PTFs, the preintervention data analysis began. Simultaneously, the academic intervention began with the trainees and specialists. I offered reminders and alternate presentation times regularly during the first tours of trainees and specialists throughout the duration of the pilot project. The PTF concurrent review and sending the customized query form, via encrypted email, occurred after my first academic presentation to the neurology department at the VA facility.

The pilot projected length of study was three months. This predicted small number of patients admitted with AIS and TIA was an expected limitation of this study, based on my recent participation in a research study as co-investigator. The pilot project, based on proposal defense and ACU's IRB determination, began on September 3rd, 2019, and finished on November 20th, 2019. I analyzed the compiled data, and then wrote and submitted the final chapters of the scholarly pilot project for committee review.

Currently, the VA only recognizes CDIS individuals as a general schedule worker who has time in grade. According to Robert Hodges (personal communication, January 31, 2019), Clinical Lead VISN 10, the role of coder, ironically, requires clinical knowledge, but is not accepted by the VA as a role for a Title 38 workers. This academic endeavor was the beginning of a paradigm shift the VA is already experiencing.

Summary

Patient PTF abstraction is important for quality, safety, and value. These overarching missives of the VA demand a model of PTF review and query process to those providing care to AIS and TIA veterans throughout their hospital stay. CDI specialist coders send concurrent query forms by encrypted email to trainees and specialists noting missing or inadequate information in a PTF. By sending this query form, I captured clinical information not identified by coders that had the ability maximize receivables. This tool helped me communicate the inaccurate or missing information documented by the trainees and specialists in an addendum to the progress note or the original H&P. This information also helped me identify failures across multiple service lines and allowed the AIS or TIA veteran's PTF to be accurate and compliant according to VA policy.

Chapter 4: Results

The complexity of caring for hospitalized veterans necessitates subject matter expertise in clinical documentation for comprehensive and accurate PTFs. The fundamental purpose of this CDI pilot project was addressing integrity by systematically focusing on clarification of missing or inaccurate data in the hospital PTFs at the VA. This problem has been identified in practice and was aligned with the three research questions posed. This chapter also includes the discussion that I conducted in the pilot project aligned with industry guidelines pertaining to CDI for AIS and TIA patients, the methodology, and how the analysis connects with the research questions. The chapter also includes the study demographics in table form presented in the summary. This chapter also contains the results of the CDI pilot project. In it, I describe the details of the three-pronged intervention, the population, and the analysis.

Research Questions

Q1. Will the concurrent RN-submitted query form increase the trainee and specialist response rate to 100%?

Q2. Will the customized query form enable the capture of the national metrics by the trainee and specialist at the level of VA documentation integrity?

Q3. Can the information located in the PTF allow for the accurate identification of the VERA classification by the business office at the VA?

Purpose of the Project

The purpose of the CDI pilot project was whether a formal presentation, along with written human resources, would improve the documentation integrity of veterans diagnosed and treated for AIS or TIA while hospitalized. The cost of caring for veterans diagnosed with stroke is increasing and the need for documentation integrity is increasing in importance as patient safety and fiscal stewardship become institutional strategic initiatives (U.S. Department of

Veterans Affairs, 2018). AIS remains a leading cause of mortality and morbidity in the United States. Ensuring the trainees and specialists understand and comply with documentation standards is an extension of that strategic plan. Clinical documentation accuracy is an overarching strategic goal for the VA, according to the latest national release (Veterans Health Administration, 2016). An RN-led CDI program may assist in achieving part of the mission of the VA by offering subject matter expertise, along with certified coders and the trainees and specialists.

Project Analysis

For the baseline data of this pilot project, I abstracted 116 PTFs for metrics captured by the VA annually. I excluded nineteen PTFs because they did not meet the inclusion criteria outlined previously. The number of individuals that presented to the Northeast VA with AIS were modest. The prospective data presented a challenge because these numbers too were small. The independent samples identified in this pilot project represented an individual patient PTF ($N = 97$) for the pre- and postteaching. I compared the historic preintervention data to the three-pronged postintervention prospective nominal data. I then compared the historic PTFs with the prospective PTFs using the PDQI-9® survey, a validated tool used to assess PTF accuracy, to determine whether the trainees and specialists' notes demonstrated understanding after the presentations were given.

The process of obtaining the PTFs for the historical population was different from identifying the prospective population. A coder, working as a CDI specialist, ran a report starting January 1, 2015, through September 1, 2019, for veterans admitted with a neurologic condition. The coder then stratified the PTFs and included only those with AIS or TIA ICD-10-CM codes. The coder then abstracted the PTFs for the metrics that included veteran personal history, metrics collected by the VA, and administrative data assessing whether documentation integrity was

achieved.

The prospective PTFs required a concurrent process and one that made this population generalizable because the predicted number of AIS or TIA patients admitted historically is small compared to the larger population of veterans admitted with other diagnoses. I increased the confidence in the generalizability by identifying the veterans diagnosed and treated for AIS or TIA, which then became the prospective population. I then deployed the process for abstracting the same data. During the data collection process, I presented the educational material to the trainees and specialists.

Attendance to the presentations was mandatory, as they occurred during the morning rounds. I took no attendance or identifying information. The data source was the PTFs of veterans diagnosed and treated for AIS between 2015 and 2019. The historic PTFs ($n = 86$) represented 89% of the population, and the prospective PTFs ($n = 11$), representing 11% of the population, were from the EHR utilized by the VA (Table 1). There were 19 patient treatment files excluded because they did not meet inclusion criteria. I excluded these PTFs thus ensuring this was not a convenience sample. The excluded veterans included three that expired, three admitted to hospice, two transferred to another institution, one that did not have a complete AIS work-up, and 10 that were classified as other neurology conditions. I analyzed the data using SAS® software, which provided output summaries for each metric outlined.

Table 1

The FREQ Procedure

Group	<i>f</i>	%	Cumulative <i>f</i>	Cumulative %
1	86	88.66	86	88.66
2	11	11.34	97	100.00

The statistics used in this study were chi-square tests of independence and Fisher's exact tests when the cells were smaller than 5, and ANOVA for the validated tool. I used ANOVA for the PDQI-9® to test the difference in the means between the Group 1 (historic PTFs) and Group 2 (prospective PTFs). This was statistically significant ($p = <.0001$).

Statistical analyses. Statistical analyses of the CDI pilot project showed that the educational intervention made no statistically significant difference apart from the PDQI-9® survey. There was a clinical significance, though, because each of the captured metrics move toward documentation integrity, according to VA guidelines. The PTF for the prospective veterans diagnosed and treated for AIS ultimately ended up satisfying all of the metrics collected by the VA that define documentation integrity.

Part of the holistic care of veterans admitted and treated for AIS is the classification of the individual based on their medical conditions so the facility can receive the capitated payment—the Veteran Equitable Resource Allocation (VERA). The correct classification is based on the documentation of the trainees and specialists (Table 2). The CDI pilot study demonstrated compliance with the VERA classification, but a limitation of this project was that the final assignment was not determined until after the business office closed the encounters, which this timeline did not support. Perhaps an expanded design would include a way for the creation of a crosswalk based on the extant information in the PTF. The pilot demonstrated that the VERA classification is true in baseline and perspective. This was a lesson learned as this would not have been known without assessing the classification of each PTF. Research question 3 pertains to information from the PTF providing the assignment of the accurate VERA category. The results are inconclusive, however. I found that there was a classification assigned to each veteran PTF, but the accuracy can only be determined outside the scope of this pilot project because of the time required from veteran hospital discharge through its complex billing system.

Table 2

VERA Classification

VERAClas	<i>f</i>	%	Cumulative <i>f</i>	Cumulative %
1	97	100.00	97	100.00

Data collection. The 97 PTFs represented veterans who had been diagnosed and treated for AIS or TIA, and the customized query form, sent to the neurology department trainees and specialists concurrently, served as the primary source of data for this pilot project. The PDQI-9® and the REDCap® data collection tool provided supporting information that led to the outcomes of the project. I deployed the supporting tools throughout the entire project timeline. There were no changes made to any of the intervention tools. Collaboration between disciplines was exceptional. Because the attending trainees and specialists were affiliated with an Ivy League medical school, they were all well-versed in research and the expectations pilot projects demand.

Data management. I sent the customized query form to the trainees and specialists, entered the data on the Excel spreadsheet, and reviewed the PTF for the changes based on the initial missing or inadequate information. These changes in the PTF were the trainee and specialist responses and directly impacted research questions 1 and 2 by increasing the trainee and specialist response rate to the queries sent by the RN and capturing the metrics collected by the VA.

I entered the metrics identified into REDCap® database (Appendix E) and reviewed using the PDQI-9® measurement tool for accuracy. I abstracted the PTFs at admission. The data for the CDI pilot project will remain housed in Google Docs storage for a period of three years with restricted access granted only to myself and the chair of this project as required by ACU's IRB.

Data analysis. I used a chi-square test of independence for final analysis. The collective

data included the query response forms, the metrics, and the VERA category accuracy in the final analysis. I have had over 10 years of utilization management experience abstracting PTFs and aligning the information present in the PTFs with formal hospital inpatient guidelines using InterQual® criteria. The pilot project started on September 3, 2019, and finished on November 20, 2019, for fiscal year 2019. The results demonstrated that the research hypotheses must be rejected and no difference between the historical and prospective group could be identified. There may have been flaws in the design and implementation of the pilot project. Professional instructional design may have had a stronger impact on the neurology department trainees and specialists and the changes could then be more easily identified. Various biases were also threats to the internal validity of the pilot including the selection of patients and the sample size. The prospective patients were not randomized and few in number.

The frequencies run in SAS were group one that contained 86 PTFs from the historic perspective (19 were excluded for various reasons), which represents 89% of the population of patients admitted and treated for AIS. The PTFs abstracted were from years 2015 to 2019. The power analysis completed during the design phase of the pilot project revealed a need for 91 PTFs to show statistical significance pre- and three-pronged postintervention implementation. As expected, group two only contained 11 PTFs because the number of veterans admitted and treated for AIS at the Northeast VA is historically small. The prospective PTFs represent 11% of the cumulative population studied. Each domain and their results follow.

The three-pronged intervention included a one-page educational brochure, the REDCap® data collection tool, and the PDQI-9® validated survey that measured PTF accuracy. There were two groups identified for the comparison. Group 1 represented the historic PTFs abstracted for all the data points noted in the design of the pilot project. Group 2 represented the prospective PTFs of the veterans who were diagnosed, admitted, and treated for AIS postintervention. There

were 97 total PTFs abstracted and $N = 86$ represented 89% of the abstracted PTFs and were historical. The 11 PTFs abstracted represented the prospective PTFs that represented 11% of the abstracted PTFs postintervention.

The first domain consisted of the personal histories of the veterans (Table 3). This included coronary artery disease (CAD; Group 1 was 62%; Group 2 was 27%), diabetes mellitus (DM; Group 1 was 34%; Group 2 was 55%), hypertension (HTN; Group 1 was 62%; Group 2 was 82%), TIA (Group 1 was 5%; Group 2 was 27%), atrial fibrillation (AFIB; Group 1 was 19%; Group 2 was 18%) and prior cerebrovascular accident (CVA; Group 1 was 31%; Group 2 was 27%).

Table 3

Veteran Personal History: Domain #1

Variable	Group 1	Group 2	Chi-square p -value	Fisher's exact Two-sided $Pr \leq p$
CAD	62%	27%	0.9039	1.000
DM	34%	55%	0.2037	0.3198
HTN	62%	82%	0.2130	0.3190
TIA	5%	27%	0.0063	0.0300
AFIB	19%	18%	0.9727	1.000
CVA	31%	27%	0.7806	1.000

Research question 2 pertains to the national metrics identified by the VA for capture, analysis, and reporting. The veteran personal history domain revealed that the risk factors for AIS and TIA were captured and this may contribute to predictive stratification in the primary care setting. Identifying this information may not have been statistically significant during this pilot project, but the clinical implications were valuable.

Table 4 shows the second domain that was administrative in nature and included the admission service (Adm_Srvc). Group 1 results included the following: 77% of the patients were

admitted to the Neurology Service, 20% were admitted to the Medicine Service, and 3% were admitted to the Surgery Service. Group 2 results were the following: 100% of the veterans were admitted to the Neurology Service.

Table 4

Admission Team: Domain #2

Variable	Group 1	Group 2
Neurology	77%	100%
Medicine	20%	0%
Surgery	3%	0%

Table 5 reports the following data: payer source (PayerSour) and the variables for that were Medicare, Medicare (Advantage), third-party payer, VA benefits only, and no insurance. Payer source is important to identify because of the complex billing structure of the VA. The funding from Congress is the largest portion of the annual budget, but the veterans and active military personnel are employed and carry third-party insurance through their jobs. Maximizing the allowable is imperative as the VA continues to struggle to be a viable institution offering quality and fiscally responsible care to veterans and active military personnel.

Table 5

Payer: Domain #2

Variable	Group 1	Group 2
Medicare	64%	64%
Medicare (Advantage)	16%	18%
VA Benefits Only	11%	18%
Third Party Payer	3%	0%
No Insurance	6%	0%

Table 6 reports the following data: the ICD-10 CM code (ICD-10CM; Group 1 was 64%; Group 2 was 82%), the workload capture (Wrk_Load; Group 1 was 59%; Group 2 was 82%) or relative value units (RVUs) that capture the patient care, rehabilitation evaluation for discharge

planning (RehabEval; Group 1 was 86%; Group 2 was 82%), patient education (CVAEduc; Group 1 was 53%; Group 2 was 9%).

Table 6

Financial Metrics: Domain #2

Variable	Group 1	Group 2	Chi-square p -value	Fisher's exact Two-sided $Pr \leq p$
ICD-10 CM	64%	82%	.02390	0.3228
Workload	59%	82%	0.1477	0.1967
Rehab Evaluation	86%	82%	0.0170	NO VALUE
CVA Education	54%	9%	0.0002	NO VALUE

Abstracting the fiscal metrics that determine payment is important to the facility and to the veterans seeking care at the VA. No healthcare institution is viable without a strong bottom line. Capturing the correct diagnosis codes and workload of the trainees and specialists is the foundation of the mission of the VA when caring for veterans diagnosed and treated for AIS and TIA.

Research question 2 revolves around captured metrics and includes fiscal benchmarks. The outcomes reveal that trainees and specialists captured the metrics and spoke to PTF accuracy and veteran's safety initiatives and focused needs to be placed elsewhere. Opportunity for improvement always exists, but this portion's directional hypothesis was a positive association, apart from the CVA education in the prospective group.

The final domain consisted of the coding and documentation specific metrics collected by the VA. These national metrics include the documented dysphasia screen, Alteplace administration, or not, and the National Institute of Health Stroke Scale. The facility metrics are also collected which include the type of stroke, the impacted vessel, the veteran's dominance, either left- or right-handed, the CT scan within 25 minutes, whether the patient was discharged

on an antithrombotic, if an order was present for the veteran to be prescribed a venous thromboembolism on admission, discharged on an anticoagulant if the patient had a personal history of atrial fibrillation, and discharged on a statin (Table 7).

Table 7

Coding and Documentation Metrics: Domain #3

Variable	Group 1	Group 2	Chi-square <i>p</i> -value	Fisher's exact Two-sided Pr $\leq p$
Vessel	59%	64%	0.7825	1.000
Laterality	71%	64%	0.6188	0.7285
Type of Stroke	100%	91%	0.0003	NO VALUE
Dysphagia Screen	77%	91%	0.2828	0.4471
Dominance	9%	0%	0.2909	0.5910
Alteplace Administration	6%	9%	0.0145	NO VALUE
Alteplace Administration	48%	9%	0.0255	NO VALUE
Contraindication				
NIHSS	57%	28%	0.0020	NO VALUE
CT Scan within 25 minutes	39%	18%	0.3734	NO VALUE
DC	93%	100%	0.0136	NO VALUE
Antithrombotic VTE Prophylaxis on Admission	95%	100%	0.4651	1.000
AFIB	86%	100%	0.4160	NO VALUE
Anticoagulation on DC				
DC Statin	88%	100%	0.2324	0.5978

The last component of research question 2 is the coding and documentation domain.

Overall, the outcomes were not statistically significant, but redesign and implementation could be a successful solution. A collaborative effort between a specialist champion, an RN, and a professional coder would allow a higher probability of successful implementation and sustainability in a CDI model at the VA.

Independent variables included the validated tool, signified by the ®-symbol on each of the abstracted PTFs. An ANOVA was run for the dependent variable, the PDQI-9® survey. The large ratio ($F = 22.73$; $p < .0001$) between the populations means that the null hypothesis is rejected and the model had a statistically significant impact on the documentation of AIS patients, as evidenced by the PDQI-9® results (Figure 1).

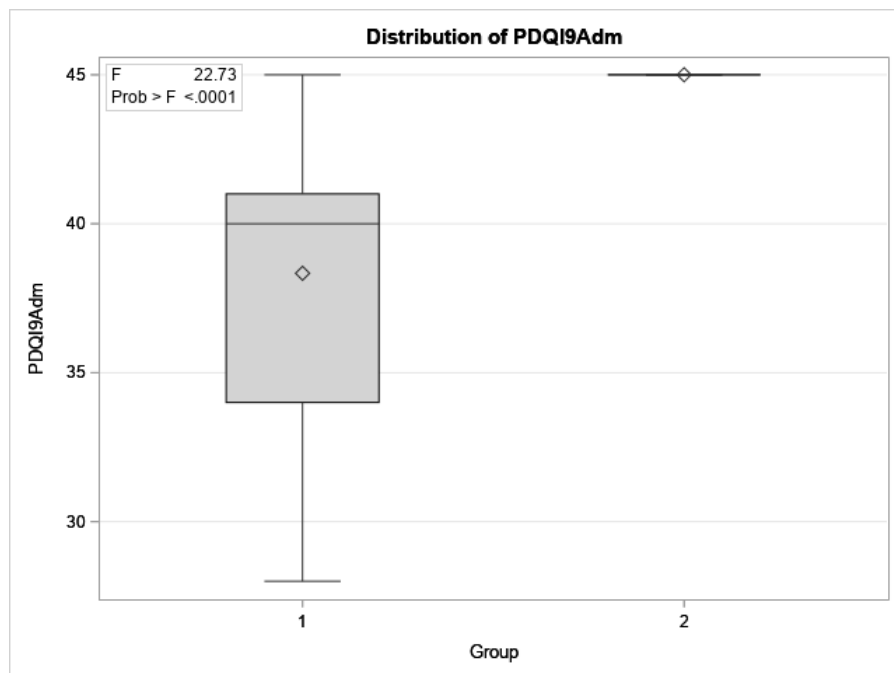


Figure 1. Graph of PDQI-9® distribution.

The VERA classification is an important fiscal component in the care of veterans diagnosed and treated with AIS. Fortunately, each of the PTFs were placed in the correct capitated product category and will only be accurately assessed in the future because the assignation of a final category only happens retrospectively. The analysis only revealed that the VERA classification was identified for each patient, but not the accuracy. This is a limitation of this pilot project. The time it takes for the VA to accurately reflect the classification is beyond the scope of this pilot. This is a baseline, however, and researchers can easily redesign and

implement future studies for more robust and accurate outcomes, especially if researchers expand pilot projects to other service lines and outpatient.

Data Analysis

Analytic methodology. I abstracted for metrics collected by the VA and compared them to historic and prospective PTFs of veterans diagnosed and treated for AIS. The chi-square test of independence was the original statistical test, but there were incidents where the cells were smaller than five and I then calculated the Fisher's exact. I categorized the outcomes according to three domains, including veteran care provided by the trainees and specialists, data extrapolated by the professional coders, and the national benchmarks collected by the VA.

I introduced the query form to the Neurology Service Line, along with the process of responding to the query and placing an addendum in the patient PTF. I sent the query form to the attending specialist and trainee via encrypted email and entered the responses onto a spreadsheet and Research Electronic Data Capture (REDCap®) for analysis and compared this data with baseline data collected on AIS and TIA veterans admitted to the VA hospital from 2015–2019 ($N = 97$). I then identified whether the change in the PTF satisfied research question 1, which increased the trainee and specialist response.

The intended target of this pilot project was the Neurology Service Line trainees or specialists of care. The department consisted of 11 physicians who rotate service and a nurse practitioner. Trainees consult with and assess the veterans, review their findings with the attending specialist, and then complete progress notes based on the daily assessment and evidence-informed treatments plans. I designed the CDI pilot project to educate trainees and specialists using a concurrent query form highlighting details missing or insufficient in the PTF of veterans admitted to the hospital with the diagnosis of AIS and TIA. This study was a historical PTF abstraction, provided baseline preintervention data and ultimately compared to the

prospective concurrent PTF abstraction of the three-pronged postintervention and presentations. I analyzed administrative data from a sample size of ($N = 97$) veterans admitted as an inpatient to the VHA hospital with the diagnosis of AIS or TIA in calendar years 2015 and through 2019 as a baseline. An administrative data collection tool captured each measure from the PTF and I entered the data into a restricted database. This pilot project was a longitudinal study where I collected the data and continuously readdressed identified missing metrics on the part of the trainees and specialists for three months of the PDSA pilot project cycle. The cycle started on September 3, 2019, and finished on November 20, 2019.

Appropriateness for the project. Comparing the historic and prospective data and analyzing the data with chi-square tests of independence for the historic population and Fisher's exact tests for the prospective population were appropriate to examine the relationship between the categorical independent variables. ANOVA for the PDQI-9® was the most statistically significant part of this research and compared the means of the normally distributed groups. The validated tool showed that this tool was an excellent measure of accuracy. The limitation, however, was that there was only one individual completing the survey and bias could be argued. There was a suggestion that the PDQI-9®'s degrees of freedom (*df*) and the *p*-value were very specific ($p < .0001$; see Table 8).

Table 8

Dependent Variable: PDQI9Adm

The ANOVA Procedure					
Source	<i>df</i>	Sum of Squares	Mean Square	<i>F</i> -value	<i>Pr</i> > <i>F</i>
Model	1	432.944018	432.944018	22.73	<.0001
Error	95	1809.220930	19.044431		
Corrected Total	96	2242.164948			

R-Square	Coeff Var	Root MSE	PDQI9Adm Mean
0.193092	11.16317	4.363993	39.09278

Source	<i>df</i>	Anova SS	Mean Square	<i>F</i> -value	<i>Pr</i> > <i>F</i>
Group	1	432.9440182	432.9440182	22.73	<.0001

Special observations about the data set. The number of individuals admitted to the VA acute care hospital was very small. The inability of the neurologists to administer Alteplace (tPA) was limited because the CT scan was not available 24 hours. Another challenge was that trainees and specialists were not educated on the rules of coding. Removing barriers of limited time interventions and continuous education of the trainees and specialists would enhance the documentation integrity and safe veteran care at the VA.

Reliability/Validity

There is always a consideration when the number of prospective subjects is small and that is the case in this CDI pilot project. Dr. Stetson and associates tested the validity of the PDQI-9® and chose it as the tool for measuring accuracy of a veteran diagnosed and treated for AIS or TIA. The REDCap® tool is homegrown, but the metrics collected are standard to the VA national benchmarks that define documentation integrity.

How I conducted the project. I conducted the CDI pilot project with an educational objective as the outcome. Donabedian's framework was the conceptual framework of this pilot project. The conceptual framework was difficult to align with the pilot project's implementation. I designed this project to address the veteran problems including the collective welfare, economic activity, and human issues that cannot be quantified by mandated metrics. The documentation by trainees or specialists tells the story of an individual's care while hospitalized, but often the trainees and specialists do not translate the clinical knowledge retained in their heads to the PTF. Donabedian's framework's approach to theory directly aligns with the CDI pilot project in structure, process, and outcomes. During the implementation phase, the design demonstrated flaws. The most relevant is the entire presentation process. Department buy-in is key to successful transfer of information. The chief of neurology and individual neurologists were enthusiastic about this project, but a team approach would have been a better way to disseminate the information. The process was the simplest part of this project to manage, apart from the dissemination of the information required for robust clinical documentation. The medical students, interns, and residents were already used to rigorous academic environments, but the attending specialists, while supportive of research in general, were much more reticent when asked to participate. Results of this pilot were not as robust as hoped, but they did result in documentation integrity, as evidenced by the survey results using the validated tool that measures PTF accuracy.

The first objective of this pilot project was increasing the number of query responses of the trainees and specialists to 100%. The response rate increased to the goal, but this was not sustainable because the number of queries sent to the neurology department trainees and specialists was 11. If the nurse practitioner was replaced, another individual may not continue her stellar work. The only way for this model to be successful is if there is a team of individuals

continuously monitoring and informing the trainees and specialists of the missing or inadequate metrics.

The second objective of this project was assessing whether an intervention would educate trainees and specialists who capture national metrics collected by the VA that fit documentation integrity guidelines. There were varying degrees of accuracy in the historic population abstracted. And that depended on whether the documenting trainees and specialists used the standard note title “Neurology Stroke/TIA Admission Note.” The use of a consult note does not integrate the metrics for AIS into the template where the treatment plan is captured.

The third objective of this project pertained to the VERA classification of the veterans, according to their documented acute and chronic conditions. This research question would be better-suited in a retrospective design research study. The complexity of the VA financial system does not allow for concurrent data access. Financial reporting is often on a quarterly basis, not completed by the leadership team, and difficult for front-line employees to review.

Numbers and types of participants. The neurology department trainees and specialists were the stakeholders and the subject of this research. The department consisted of 11 physicians who rotated service and a nurse practitioner. Residents, interns, and medical students who see the patients, review their findings with the attending physicians, and then complete progress notes based on the daily assessment and treatments plans decided were the targeted population for this endeavor. There was 100% participation of the attending specialists and the residents, but a weakness of the pilot project was the reliance on the nurse practitioner to update the PTFs based on the missing or inaccurate clinical data.

Limitations

The limitations of this study were more than I originally predicted. First, the low number of PTFs abstracted prospectively was small. This small population is not generalizable. Second,

the program is not sustainable with one trainee or specialist being responsible for the documentation changes. The residents who did not have encrypted email did not receive the query form. The attending specialists, however, were all excited about the prospect of generating more RVUs and achieving clinical documentation integrity than first anticipated. Third, the design of the educational presentation could have been better. The program needs to have an initial presentation for a longer period of time and directed primarily to the specialists. The trainees only have a short rotation, but the specialists are permanent. The information could then trickle down to the trainees as they document the care of veterans diagnosed and treated for AIS. Fourth, the RN leading the program must be well-versed and ideally certified in the coding language to effectively design and implement the CDI model. Coding assistance was available throughout the design and implementation phase, but my limitations may have contributed to the pilot falling short of expectations. This pilot study, however, will serve as an excellent foundation for additional research.

Chapter Summary

There is a lack of extensive empirical research on the impact that poor documentation has on patients diagnosed and treated with AIS. This pilot project attempted to build a foundation that could fill in some of the knowledge gaps. The CDI pilot project performed at a Northeast VA hospital on patients diagnosed and treated with AIS was, at first, an exercise in futility. Historically, the hospital admits only a few patients diagnosed and treated with stroke annually. But, in the end, the pilot has served to foreshadow the VA's new strategic goal of improving clinical documentation across all service lines. The audience for the pilot project's findings is primarily administrators of VA hospitals, but the trainees and specialists of care and the education department would benefit from this research as the VA moves forward in its endeavor

in modernizing the institution and providing safe and fiscally responsible care to our nation's veterans.

Chapter 5: Discussion, Conclusions, and Recommendations

The purpose of this CDI pilot project was to improve the quality, safety, and value of care offered to veterans diagnosed with AIS or TIA. Evidence-informed practice improves the care of veterans who are diagnosed with AIS, but the paucity of the documentation of relevant, specific research places the burden on institutions like the VA to design and implement high-quality studies. This RN-led CDI pilot project may serve as a foundation for future studies that add to evidence-based practice in all areas of healthcare.

The first research question posed was that the trainee and specialist response to the queries reached 100%. That goal was reached, primarily because the nurse practitioner responded to the queries in the form of an addendum to the query and reflected the deficiencies that I noted. The leadership team must emphasize that the ability to receive encrypted email is not optional.

The second research question refers to the clinical benchmarks for care of veterans diagnosed with AIS and whether they existed in the PTF. The pilot project had no significant impact when the historic PTFs were compared to the prospective abstractions. The education did not emphasize using the correct admission template, which is a clear limitation of the initial presentation given to the attending specialists and residents.

The third research question pertains to the VERA classification of the veterans into the complex capitated revenue bundle. The data revealed that 100% of the veterans were assigned a classification. The caveat, however, was that the accuracy of the classification cannot be extrapolated immediately after hospitalization. The assignment is done at a regional level of the Veteran Integrated Service Network, retrospectively.

Recommendations for Future Research

The VA has been historically a leader in healthcare research. While the subject of the research on CDI is not novel, the design and implementation of a model has the potential to be original. Future research must include expanding the program to all service lines, including outpatient. The private sector has been successful in the implementation of a CDI program and the VA must undertake the necessary steps to design an industry- and organization-specific program that meets all of the necessary needs of the VA's mission of modernization. This pilot is an excellent foundation for future research endeavors.

The pilot project's outcomes warrants specific guidance. The redesign of the model has to include a more structured and all-inclusive educational presentation before implementation hospital-wide and include services like education and health information management (HIM) where the current CDI program is housed. Further empirical research is necessary that bridges the current knowledge gap of how CDI improves patient care. Financial considerations would strengthen future endeavors. Perhaps the business office would be able to provide the payables and the hypothesis may align directly with the CMS fee schedules, and thus, identifying whether the accuracy of the documentation impacted the payment and whether the service line taking care of the veteran makes a difference. The proposed research is necessary to see if the outcomes can impact patient safety, fiscal stewardship, and meet strategic goals of the VA.

Essentials of Doctoral Education for Advance Practice Nurses

Nursing practice continues to evolve and understanding and employing the doctoral education essentials underscores a strong foundation as students transition to leadership roles. The DNP Essentials I-VIII are addressed by this project at the individual and systems level. This academic endeavor sets the nursing profession apart from other doctoral programs. As the largest allied health profession, nurses must make the shift to rise to the level of our colleagues.

Outlining the DNP essentials effectively focuses on several issues that speak to the foundation of this important vocation. While the individual's journey through practice varies, the essentials must be honored during the development of skills relative to doctoral-level education.

Essential I: Scientific underpinnings for practice. Research and evidence-based practice are important components of the nursing profession. CDI is not a well-researched topic, but this pilot project may serve as a foundation using theory to improve veteran advocacy through education of trainees and specialists caring for individuals diagnosed and treated for AIS and TIA across the entire healthcare continuum.

Essential II: Organizational and systems leadership for quality improvement. The choice to perform a pilot project in documentation improvement seems unconventional at first, but understanding the VA's strategic mission of improving patient safety with documentation integrity is necessary to achieve success. This endeavor to promote high-quality, safe care allows the RN researcher to heighten awareness of the importance of clinical documentation integrity according to VA standards. Also, the collaborative effort between disciplines stimulates creativity in a rapidly changing healthcare environment.

Essential III: Clinical scholarship and analytical methods for evidence-based practice. The profession of nursing's foundation is a combination of clinical scholarship, critical thinking, and evidence-informed practice. The doctoral student's journey must incorporate all of these to become a well-rounded and informed leader. The rigorous academic journey, combined with a strong personal theoretical framework, and adding mentorship by faculty, fulfills the DNP student's overarching pursuit of clinical scholarship using evidence-informed research. Because the CDI pilot project had few high-quality studies from which I could choose, there exists an important potential resource that adds to the extant resources available to VA's leadership.

Essential IV: Information systems/technology and patient care technology for the improvement and transformation of health care. Electronic health records (EHRs) are necessary in the successful delivery of contemporary healthcare. The CDI pilot project's delivery mode was primarily electronic. Understanding that healthcare quality, safety, and value depends on documentation integrity obtained electronically.

Essential V: Healthcare policy for advocacy in health care. Veteran advocacy is a concept taken very seriously at the VA. The mission and vision align to emphasize how the care of the men and women who have risked their lives to protect our nation and people. The CDI pilot project may appear to be nonclinical in nature, but the documentation in PTFs speaks to the care given to veterans diagnosed and treated for AIS and TIA.

Essential VI: Inter-professional collaboration for improving patient and population health outcomes. The CDI pilot project spanned multiple service lines including trainees and specialists, nursing, professional coders, and billing office personnel. The only way contemporary healthcare systems can function is collaboratively. The future of the VA depends on this important team, especially because the drive toward privatization appears to be strengthening.

Essential VII: Clinical prevention and population health for improving the nation's health. The care of veterans diagnosed and treated for AIS or TIA requires documentation integrity that tells the story of their care. This story involves metrics and data, but a simple reason is that knowledge is power. Understanding the best practice of those diagnosed and treated for AIS and TIA helps improve outcomes and reduce cost.

Essential VIII: Advanced nursing practice. My journey toward a terminal degree has demonstrated obstacles, feelings of frustration and fragility, but has garnered small victories along the way. Leadership skills in specialized areas fulfills Essential VIII. The science of

nursing incorporates a variety of settings, expertise, and enthusiasm to be an advocate. The CDI pilot project weaves each essential together that builds on the foundation of the DNP student researcher in preparation for autonomous leadership opportunities.

Chapter Summary

The findings of the CDI pilot project supported my extant theoretical position. The statistical significance, however, was not as strong as originally prognosticated. The clinical significance prediction was upheld because the PTF ultimately was amended to ensure the capture of patient metrics and fiscal responsibility.

The core of patient care in hospitals is clinical documentation. Excellent documentation reflects patient safety, quality care, and fiscal stewardship. Trainees and specialists are not taught how to document with integrity and an RN-led program may benefit an institution by improving metrics capture, patient and trainee and specialist satisfaction, and financial resources. In addition, improved documentation may offer medical students, interns, and residents an increased level of competency as they move toward independent practice. The goal of the CDI pilot project was to improve the care of veterans diagnosed and treated with AIS and TIA and measure a potential for systematic change in behavior through the VA's neurology department trainees and specialists.

Elevator Speech

Clinical documentation impacts patient safety and hospital revenue. I designed and implemented the CDI pilot project to improve documentation integrity systematically. I abstracted a total of 116 PTFs for missing or inaccurate information. I excluded nineteen of those PTFs because they did not meet criteria. The final analysis demonstrated clinical, but not statistical, significance due to the small prospective generalizable sample. This foundation may

add to the paucity of extant research, especially if the design includes all service lines, including the outpatient setting, for future studies.

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Appendix A: PDQI-9®

Appendix: Physician Documentation Quality Instrument (PDQI-9)

Date: _____ Author: _____ Reviewer: _____

Note Type (circle): Admit Progress Discharge

Instructions: Please review the chart before assessing the note. Then rate the note on each of the following attributes:

Attribute	Score	Description of Ideal Note
1. Up-to-date	Not at all 1 2 3 4 Extremely 5	The note contains the most recent test results and recommendations.
2. Accurate	Not at all 1 2 3 4 Extremely 5	The note is true. It is free of incorrect information.
3. Thorough	Not at all 1 2 3 4 Extremely 5	The note is complete and documents all of the issues of importance to the patient.
4. Useful	Not at all 1 2 3 4 Extremely 5	The note is extremely relevant, providing valuable information and/or analysis.
5. Organized	Not at all 1 2 3 4 Extremely 5	The note is well-formed and structured in a way that helps the reader understand the patient's clinical course.
6. Comprehensible	Not at all 1 2 3 4 Extremely 5	The note is clear, without ambiguity or sections that are difficult to understand.
7. Succinct	Not at all 1 2 3 4 Extremely 5	The note is brief, to the point, and without redundancy.
8. Synthesized	Not at all 1 2 3 4 Extremely 5	The note reflects the author's understanding of the patient's status and ability to develop a plan of care.
9. Internally Consistent	Not at all 1 2 3 4 Extremely 5	No part of the note ignores or contradicts any other part.
Total Score:		

(Version 1: 11/21/2011)

Appendix B: PDQI-9® Permission Letter

Lisa Keefner, RN MSN
Abilene Christian University
Measurement Instrument Permission Request
1/29/2019
NURS 752
DNP Pilot project 1

Peter D. Stetson, MD, MA
Chief of Health Informatics Officer
Memorial Sloan Kettering Center
Columbia University, Graduate School of Arts and Sciences
New York, NY

Good afternoon Dr. Stetson,

I am a Doctor of Nursing Practice student from Abilene Christian University writing my scholarly pilot project titled *Utilization of a Concurrent Query Form to Improve Clinical Documentation for Patients Admitted to VA Connecticut with the Diagnosis of Stroke*, under the direction of my pilot project committee chaired by Dr. Sandra Cleveland who can be reached at xxxxxxxxxxxx.

I would like your permission to use the Physician Documentation Quality Instrument (PDQI-9®) questionnaire instrument in my research study. I would like to use and print your survey under the following conditions:

- I will use the surveys only for my research study and will not sell or use it with any compensated or curriculum development activities.
- I will include the copyright statement on all copies of the instrument.
- I will send a copy of my completed research study to your attention upon completion of the study.

If these are acceptable terms and conditions, please indicate so by replying to me through e-mail: xxxxxxxxxxxx.

Sincerely, Lisa Keefner, RN MSN

Note: After two attempts to send to the address listed in the citation, both emails were returned undeliverable. I then attempted to contact Dr. Stetson via LinkedIn and below is his response to my request.

Dr. Peter Stetson's Response:

Date: 1/29/2019
Subject: RE: PDQI-9® Permission for DNP Research Study

Lisa, thanks for reaching out! I'm very supportive of its use for your study. Go for it! Just also kindly cite our published work if you do any publications, if it's relevant. Good luck! – Pete

Appendix C: VA Cost Benefit Analysis FY2016

Cost Benefit Analysis for RN-led CDI Program

	FY 2016	CY +3	CY +4
Costs			
Registered nurse (Title 38)	\$ 100,000.00		
Training	\$ 10,000.00		
Professional Coder (CDIS)	\$ 45,000.00		
Training	\$ 10,000.00		
Total Costs (Future Value)	\$ 165,000.00	\$ -	\$ -
Total Costs (Present Value)	\$ 165,000.00	\$ -	\$ -
Benefits			
MED NEC-OTHER	\$55,919.63		
NO DIAGNOSIS/SYMPTOMS IN NOTE	\$4,863.21		
NO DOCUMENTATION	\$17,849.47		
RESIDENT SUPERVISION NOT MET	\$24,923.86		
STUDENT NOTE ONLY	\$90,942.22		
UNSIGNED DOCUMENT OUT OF NETWORK (PPO)	\$19,106.77		
FILING TIMEFRAME NOT MET	\$79,083.49		
Total Benefits (Future Value)	\$ 295,194.88	\$ -	\$ -
Total Benefits (Present Value)	\$ 295,194.88	\$ -	\$ -

Cost Benefit Analysis	
Total PV Benefits	\$ 295,194.88
Total PV Costs	\$ 165,000.00
NET BENEFIT	130,194.88

Present Value Discount Rate

2%

Appendix D: Customized Query Form

VHA Customized Inpatient Query Form

FACILITY: XXXXXX

DATE of QUERY:

VASSN:

PATIENT NAME:

ADMISSION DATE:

Dear _____

Additional documentation is requested as appropriate for accurate coding, to enhance continuity of care, and to reflect the overall severity/acuity of illness and risk of mortality. Please exercise your independent professional judgment. The fact that a question is asked does not imply that a particular answer is desired or expected. A review of the patient's clinical documentation dated indicated a diagnosis of **stroke/cerebral vascular accident and associated residual/sequela due to the stroke/CVA**. If known, please provide the **type** and **site**, of the stroke/CVA suspected or being treated (for example):

Type:

Site:

Hemorrhagic	Ischemic	Unknown	Hemisphere, subcortical	Multiple, localized	Intraventricular
Thrombotic	Postoperative		Hemisphere, cortical	Brain Stem	Other
Embolic	Other		Hemisphere, unspecified	Cerebellum	Unknown

Vessel:

Carotid: Interval, External, Siphon, or Bifurcation
Cerebral: Cerebellar, Middle, Anterior, or Posterior
Communicating Artery: Anterior or Posterior
Pre-Cerebral: Vertebral or Basilar

Location of Original Stroke or Infarction:

Intracranial	Intracerebral	Subarachnoid
Cerebral	Other (specify)	Unable to Determine

Sequela or Late Effects due to Stroke/CVA with side impacted (left vs. right; dominant vs. non-dominant). Possible sequela includes, but are not limited to:

NOTE: Please document any acute or residual symptoms related to the stroke/CVA that may have been present on admission even if resolved at discharge.

Please document if left or right side is affected and if the patient is left or right handed. Note: if dominance is not specified and the right side is affected it will default to the dominant side for coding purposes. Possible sequela includes but not limited to:

Please document any additional information as an addendum to your existing note or as a new note in the health record.

A response is requested by _____ to meet performance measures.

If you have any questions, please do not hesitate to contact me.

Thank you for your assistance.

Lisa Keefner, MSN RN Extension: 3303

Version: September 14, 2018

Appendix E: REDCap® Data Collection Tool

	<input type="radio"/> No
ICD-10 CM Captured	<input type="radio"/> I63.449 <input type="radio"/> R47.81 <input type="radio"/> I63.9 <input type="radio"/> I63.539 <input type="radio"/> Other <input type="radio"/> Not Captured
Laterality Documented	<input type="radio"/> Yes <input type="radio"/> No
Vessel Documented	<input type="radio"/> Yes <input type="radio"/> No
Dominance Documented	<input type="radio"/> Yes <input type="radio"/> No
Type of Stroke	<input type="radio"/> Ischemic <input type="radio"/> Hemorrhagic
Dysphagia Screen Documented	<input type="radio"/> Yes <input type="radio"/> No
NIHSS Documented	<input type="radio"/> Yes <input type="radio"/> No
tPA Administered	<input type="radio"/> Yes <input type="radio"/> No

Appendix F: Letter of Support



DEPARTMENT OF VETERANS AFFAIRS

VA Connecticut Healthcare System
xxx xxxxxxxxxxxx xxxxxxxxxxxx

xxxxxxxxxxxx xxxxxxxxxxxx

February 28, 2019

To Whom It May Concern:

This letter is written confirmation of my intended support for the project proposed by Lisa Keefner regarding Utilization of a Concurrent Query Form to Improve Clinical Documentation for Patients Admitted with a Diagnosis of Stroke. The ability to identify in real time when inaccurate or incomplete data are present will help to improve the accuracy of the information on the patient's record which will result in improved care and outcomes.

I understand ACU's mission as dedicated to educating students for leadership and service throughout the world. With that in mind, it is my pleasure to support this project which supports the VAS mission of service and scholarship in providing care to our nation's Veterans.

It is my privilege to support Lisa in her initiative to engage and develop this capstone project. If you have questions or concerns, please do not hesitate to contact me.

Sincerely,

Sincerely,

Michael J. Pineau, S, RN, VHA-CM

Chief of Quality

VA Connecticut Healthcare System - MEMBER OF THE VA NEW ENGLAND
HEALTHCARE SYSTEM

Appendix G: NIH Protecting Human Subjects Certificate



Appendix H: IRB Approval Letter

ABILENE CHRISTIAN UNIVERSITY

Educating Students for Christian Service and Leadership Throughout the World

Office of Research and Sponsored Programs

320 Hardin Administration Building, ACU Box 29103, Abilene, Texas 79699-9103
325-674-2885

Dear Lisa

On behalf of the Institutional Review Board, I am pleased to inform you that your project

(IRB#9-) is exempt from review under Federal Policy for the Protection of Human Subjects.

If at any time the details of this project change, please resubmit to the IRB so the committee can determine whether or not the exempt status is still applicable.

I wish you well with your work.

Sincerely

Megan Roth

Megan Roth,
Director of Research and Sponsored