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Implementation of an Evidence Based Screening Protocol to Improve the Diagnosis of Dementia in a Home-Based Primary Care Setting

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Abstract

Dementia is a major public health concern that is both debilitating and deleterious to those afflicted with its various forms. The number of those living with dementia is increasing exponentially as the population continues to rise, with 46.8 million people worldwide currently afflicted with dementia (Chow et al., 2018). Dementia causes cognitive impairment that is severe enough to affect everyday function (Chow et al., 2018). The impairment and disability resulting from dementia indicates a significant health problem in primary care. Findings from research studies indicate that prophylactic and periodic screening for dementia can heighten provider suspicion and translate into earlier establishment of interventions to improve patient outcomes (Chow et al., 2018). The purpose of this project was to promote consistent implementation of an evidence based screening protocol to increase the timeliness of assessment and accuracy of dementia diagnoses in a home-based primary care setting. Based on a review of the literature, a protocol was designed and conducted to guide consistent and early dementia diagnoses. Outcome evaluation was based on pre- and post- data regarding the number of screenings administered, diagnoses given, and follow-up care initiated. Results included an increased understanding of administration of the MoCA, standardization of techniques for administration, and an increased number of appropriate dementia diagnoses made by providers within the practice. The project showed that improving health care provider's knowledge about prophylactic dementia screening increases their likelihood to diagnose dementia, initiate appropriate care planning, and make referrals that will improve patient's mental health, and improve patient outcomes.

Keywords: dementia, adult, elderly, cognitive disorder, outcomes, primary care

Table of Contents

Abstract……..……..……..2
Introduction….....5
Assessment of the Organization …….....……7
Framework……..……8
Current State …..……..…10
Ethics and Human Subjects Protection…….……..……..…....11
Stakeholders…….……..…12
SWOT……...……...……..12
Clinical Practice Question……...…….…..14
Literature Review…….....15
Method…….……..15
Summary of Results…….……..16
Evidence to be used for Project…….……18
Model to Examine Phenomenon …….....20
Project Plan……..……..23
Purpose of Project and Objectives…….……23
Design for the Evidence-based Initiative.……...…… ……...…..……..…23
Objectives……..……25
Setting & Participants …….…….……....26
Proposed Practice Change……..……27
Implementation Strategies & Elements.…..……...……...……27
Data Collection Procedures……..…...……...30
Data Management……..……31
Analysis Plan……...…….……31
Resources & Budget…….…….…….……...…33
Timeline…….…….…….…….34
Results……...…….……34
Discussion……..……..……..37
Sustainability Plan…….……38
Limitations……..…….……..39
Implications……...……40
Reflection on DNP Essentials……..……..41
Dissemination Plan……..…….…45
Conclusion…...……..……45
References.....47
Appendices……...……..51
Appendix A: Burke-Litwin Model……...……..51
Appendix B: IRB Approval Letter……...……..……52
Appendix C: XXX Organizational Chart ……..……53
Appendix D: SWOT Analysis of XXX……..…….……..54

Appendix E: PRISMA Flow of Literature……...……..……55
Appendix F: Results of Literature Review……...…….……56
Appendix G: Montreal Cognitive Assessment……...…...63
Appendix H: Chronic Care Model.....……64
Appendix I: PARiHS Framework…….……..…….……..65
Appendix J: Project Timeline…….…….……66
Appendix K: Project Budget…….……..…….……..67
Appendix L: Data Collection Table……..68
Appendix M: Data Collection Key……...….……70
Appendix N: Dementia Screening Protocol (Final)…....….…….……71
Appendix O: Data Output…...…….…….……78
Appendix P: Data Tables…….…….……80

Implementation of an Evidence Based Screening Protocol to Improve the Diagnosis of Dementia in a Home-Based Primary Care Setting

Dementia is a general term used to diagnose the loss of cognitive functioning and behavioral abilities that affect individuals to such an extent that it interferes with their daily life and activities (National Institute on Aging, 2017). The functions impacted by dementia include memory, language skills, visual perception, problem solving, self-management, and the ability to focus and pay attention (NIA, 2017). Dementia is a major public health concern, acknowledged universally as a problem that will increase substantially as the world population grows (Larner, 2011). In 2015, approximately 46.8 million people worldwide had dementia; this figure is expected to double every 20 years (Chow et al., 2018). In fact, more than 131.5 million people are predicted to have dementia by the year 2050 (Chow et al., 2018).

As a result of the increasing prevalence of dementia, the significant economic impact from this illness will also continue to grow (Chow et al., 2018). In 2015, the total estimated global cost of dementia was $818 billion, which accounted for 1.09% of the world's gross domestic product. Current Medicare beneficiaries with dementia account for 34% of Medicare spending, even though they only constitute 13% of beneficiaries aged 65 and older. By the year 2050, Medicare spending related to dementia will surpass $1 trillion (Chow et al., 2018).

The motivation to improve processes of care for dementia diagnoses stems from the drive to improve outcomes and decrease financial burdens associated with the disease. Poor outcomes associated with dementia include high morbidity and mortality, decline in function and cognition, loss of independence, increased isolation, poor quality of life, and admission to care facilities (Alzheimer's Association, 2018). The current state of research and practice points

toward the need for heightened provider screening and diagnosis of dementia, as well as early implementation of interventions and support to ultimately improve patient outcomes. Unfortunately, many primary care practices struggle to address this need due to lack of time, poor motivation, and providers' lack of expertise and confidence in making accurate diagnoses. Thus, the need for a timely, feasible, and accurate screening protocol is evident.

Implementation of a screening protocol is a potential solution to improve the accuracy and appropriate early diagnosis of dementia that will allow for appropriate referrals and care planning to proceed in a timely manner. A comprehensive review of the literature provided insight into the existence and efficacy of dementia screening tools. The Montreal Cognitive Assessment (MoCA) is a rapid screening instrument for cognitive dysfunction (Nasreddine et al., 2005). The MoCA is used to assess different cognitive domains including attention and concentration, executive functions, memory, language, visuoconstructional skills, conceptual thinking, calculations, and orientation (United States Department of Veterans Affairs, 2015). Time to administer the MoCA is approximately 10 minutes. The total possible score is 30; a score of 26 or higher is considered to be normal.

The diagnosis of dementia includes the presence of cognitive decline and functional limitations. Therefore, the aim of this project was to identify and define scores derived from the MoCA and guide clinicians in next steps to provide an accurate diagnosis. One such step was be the administration of the Functional Assessment Staging Tool (FAST), which is a scale designed to evaluate patients' level of functional decline while determining the stage of dementia (Reisberg, 1988).

Primary care practices are frequented by older adults, thus they present an opportunity to screen for and diagnose dementia prior to deleterious events taking place. Geriatric primary care practices are an ideal setting for the assessment and care of clientele seen who are at a higher risk of developing dementia. A Midwestern home-based geriatric primary care practice had identified the need for the introduction of a screening protocol to enhance the diagnostics and care planning for dementia patients. Prior to the project intervention implementation, the practice provider's documentation was assessed according to current protocols for dementia care and the electronic health record was audited. Based on a random 20-patient chart audit, providers in the practice were only screening 50% of patients for cognitive dysfunction using the MoCA. Additionally, there were no standards in place for next steps in the diagnosis, referral, and care planning process once a positive MoCA screen was completed. Therefore, a Doctor of Nursing Practice (DNP) project was developed and implemented to address the organizational need for an evidence-based protocol for the timely assessment, accurate diagnosis, and appropriate follow-up for dementia patients in a home-based primary care setting.

Assessment of the Organization

In order to establish dementia diagnoses sooner and improve patient outcomes, it is necessary to have an understanding of the practices and culture within an organization. An organizational assessment of a geriatric primary care practice along with an analysis of the barriers and facilitators to implementing practice change was completed with the guidance of the Burke-Litwin Causal Model of Organizational Performance and Change (Spangenberg & Theron, 2013).

The Burke-Litwin Causal Model is comprised of 12 variables that are grouped into transformational and transactional components. The transformational variables include the external environment, leadership, organizational culture, mission and strategy which determine individual and organizational performance. The transactional factors include management practices, systems, structure, work unit climate, task and individual skills, motivation, individual needs and values, and again funnel into individual and organizational performance.

The organizational needs assessment was completed at the aforementioned clinic. The 21 providers at the clinic provide care to assisted living, long-term care, and rehabilitation facilities and clinics. The clinic is housed within a much larger healthcare system. Specifically, the practice manager oversees a total of 54 staff members including 6 physicians, 13 nurse practitioners, 2 physician assistants, 11 licensed practical nurses, 7 registered nurses, 7 medical assistants, 4 social workers, 1 secretary, 1 supervisor, 4 patient services representatives, and 1 biller. The primary care practice is a small facet of an overarching system that guides its structure and ultimate mission. The practice specializes in geriatric care throughout multiple cities in the surrounding area. In total, the practice provides care to 2,144 patients who are frail elders. The care provided to the patients is done by a combination of traditional clinic visits, home visits, telehealth, and bedside visits throughout the various facilities. T

Framework for Assessment

To implement and support organizational change, the foundation of organizational function must be understood and present within an entity. The Burke-Litwin Causal Model was designed with the intent to be used as an organizational development tool. The model identifies and dissects 12 organizational variables that interact to drive change (Appendix A). Burke and

Litwin published this tool as a leadership, change, and performance model used to diagnose organizational effectiveness (Spangenberg & Theron, 2013).

The organization's mission is to enhance the health of the communities served by providing exceptional care to every patient. They intend to achieve this by working closely with one another to create a better culture, better value, and enhanced experiences for their customers. The result of these efforts is by definition a highly collaborative system of care that offers the best possible outcomes. The epicenter of the organization's focus is always the patient first. The highest commitment is to consider patient's physical and emotional needs, tailor care, and heal the whole person. Diagnosing dementia early in the disease process and thereby introducing earlier care and interventions fits into the goals of providing effective, patient-centered care.

Additionally, establishing care earlier and identifying patients with dementia is a priority for leadership. Both the physician lead of the practice and the practice manager believe that identifying dementia earlier enables establishment of interventions and support sooner in the process and will lead to improved patient outcomes. Further, the culture within the geriatric primary care practice places an emphasis on the diagnosis and monitoring of dementia symptoms. Currently, providers are applying the Montreal Cognitive Assessment (MoCA) to many of their patients in order to make a dementia diagnosis and monitor cognitive decline over time.

Finally, motivation was found to be a significant driving force in continuously working to improve the care provided to geriatrics patients within the practice. Observations and interviews of many staff members were completed. Based on these interactions, motivators for working within the practice are passion for caring for elderly patients and a strong sense of teamwork.

The staff were motivated to address dementia screenings and shortcomings related to current practice as they care deeply about the population and want to do anything in their power to improve outcomes of their patients.

Current State of Dementia Diagnosis

To assess the current state of diagnosis rates and practices a de-identified, randomized retrospective chart review was completed. The review took place in the primary care practice by auditing the electronic health records of 20 random patients. The charts were assessed for the presence of a prior dementia diagnosis, whether or not a MoCA screening had ever been administered, and when it was administered. De-identified patients who receive care from the home based group were included in the review. In addition, only patients who had been seen at least once between January-June 2018 were included.

Information gathered was specific to the patient's history of dementia and the practice's efforts since the patient assumed care from the providers. The presence of any diagnosis of cognitive impairment prior to joining the geriatric practice was noted. The timing of the first MoCA screening was determined as well as the most recent evaluation. This was done to determine whether the screening was completed within the first year of care, or otherwise. Any MoCA completed by outside providers not in relation to a referral made by the primary care team was excluded as the review sought to uncover the alacrity with which the providers within the practice in question administer screenings.

Of the 20 patients audited, 6 (30%) had a previous diagnosis of dementia from an outside provider. Only one of those with a previous diagnosis had a MoCA completed upon his or her

initial visit with the home based primary care team. Two of the patients with a previous diagnosis had a MoCA completed within 2 years of their entry to the primary care practice.

Fourteen of the 20 patients (70%) whose charts were reviewed did not have a previous diagnosis of dementia. Of these, only 7 (50%) had a MoCA administered by providers within the organization. Of those patients, 5 received the MoCA at the first visit with a provider. In total, only eight of the 20 (40%) patients were asked to complete a MoCA within the first year of their assumed care. Finally, 10 of 20 (50%) were given MoCAs within the first three years of their care within the practice. This data provides insight into the practice and the need for a standardized and evidence-based screening protocol. Only 50% of the patients are currently being screened for dementia, which indicates that the other 50% are not. This is an identified gap in care within this organization with not only a lack of timely screening, but also no consistent follow-up care protocol after diagnosis. Additionally, many providers mentioned various functional deficits, but there was no standardized approach to the assessment or documentation of the impairment.

Ethics and Protection of Human Subjects

To ensure protection of the data that was to be obtained in this process, an application for review and approval or exemption of this project was submitted to the organization's Institutional Review Board. The determination by the IRB was that this project is considered a quality improvement project (see Appendix B). The purpose and scope of this project was limited to evidence-based quality improvement strategies. No patient identifiable information was collected. No physical, social, psychological, legal, or economic threats or risk to patients

was associated with this project. All members of the team have completed human subjects protection training via the Collaborative Institute Training Initiative.

Stakeholders

There are many stakeholders within this large geriatric primary care practice who work to identify patients experiencing symptoms of dementia that would be impacted by practice change. The medical providers include a team of physicians, physician assistants, and nurse practitioners who provide care in clinics, assisted living facilities, long-term care facilities, and rehabilitative facilities. In each of those areas, the providers assess patients and administer cognitive screening tools to determine the presence or absence of cognitive impairment. There are also licensed practical nurses (LPNs), medical assistants (MAs), and social workers who administer cognitive screening tools periodically. Patients and their families are the most affected by the physical, cognitive, and emotional impact of dementia and therefore have the most to gain from earlier diagnosis and intervention. Finally, there is an office supervisor and a practice manager who are jointly responsible for controlling staffing, answering to budgetary demands, and the supporting morale and quality of the practice that are vested in any practice changes that occur (See Organizational Chart in Appendix C).

SWOT

A strengths, weaknesses, opportunities, and threats (SWOT) analysis was performed within the geriatric primary care practice regarding the ability to successfully implement and sustain practice change (Appendix D). SWOT is a tool that analyzes internal strengths and weaknesses and external opportunities and threats that can help or hinder an organization, process, or project regarding a phenomenon of interest (Moran, Burson, & Conrad, 2017).

Strengths

There were many strengths evident within the geriatric primary care practice. The culture of the practice was focused on providing safe and effective care to elderly patients. Each of the staff members surveyed shared their passion of caring for elderly patients which gives them purpose and enhances patient care. The practice had frequent meetings between various staff members and management in which staff can air grievances and share ideas for improving patient care and outcomes. All staff members considered the accurate and timely diagnosis of dementia to be a priority and were invested in finding solutions and building to processes to address the issue. Additional strengths included staff engagement, staff satisfaction, patient satisfaction, management buy in, and appropriate resources (access to screening tools, communication strategies, and ability to introduce staff education as needed).

Weaknesses

One weakness of the practice impacted the ability to screen patients was time. On any given day, providers saw between 10-15 patients. The population served was subject to multiple comorbidities, extensive medication lists, and many needs. This resulted in long visits with patients which tended to accumulate for the providers. Each acute condition must be addressed to maintain safety simultaneously to considering chronic conditions and mental status changes. Additionally, patient specific factors such as visual and auditory deficits which impeded their ability to be accurately screened were weaknesses. Finally, the practice lacked an evidence based protocol to intentionally screen and diagnose elderly patients with dementia and make appropriate recommendations for follow-up appointments and care after diagnosis.

Opportunities

There were many opportunities in existence for the practice to enhance quality improvement in regards to dementia diagnoses and care of elders. These opportunities included informing both patients and families of their goal and the excellent level of care provided within the practice. Further work with multiple disciplines and local specialty practices such as neurology practices bolstered improvement efforts and informed strategy. There was also an opportunity for enhanced coordination of care between the practice and specialty care if follow-up is needed. Specialty practices like occupational therapy assess the patient's safety in the home while neurology and neuropsychology make a definitive diagnosis as to the type of dementia should the primary care providers be unable to make a determination. This follow up care was built into a protocol to promote these important steps following the timely diagnosis of dementia.

Threats

One of the largest threats to success in dementia screening is lack of time. Although the diagnoses were of importance to all staff members, the ability of providers to accurately and comprehensively screen patients was impacted by the amount of patients seen and level of complexity with regards to their care needs. An additional threat existed with the patients themselves. A patient's unwillingness to be screened based on stigma or fear of a diagnosis impacted the provider's ability to provide high quality care. Finally, the practice was not reimbursed for providing dementia screenings at the enrollment visit. The providers bill for a comprehensive visit, and in doing so are reimbursed at a higher rate than when implementing a specific dementia screening code.

Clinical Practice Question

Accordingly, an evidence-based project to answer the following clinical question was proposed and implemented: What is an efficient and evidence based protocol for the timely assessment, accurate diagnosis, and appropriate follow-up for dementia patients in a home-based primary care setting?

Review of the Literature

There is an internationally recognized need for clinicians to be more proactive in dementia diagnosis (Walters et al., 2016). Most patients with dementia are cared for in primary care settings with the majority of cases going unrecognized and underdiagnosed. Primary health care plays an important role in early detection of cognitive dysfunction (Kvitting, Wimo, Johansson, & Marcusson, 2013). Early detection of dementia through screening enables providers to identify reversible causes of the impairment, initiate early pharmacological and non-pharmacological interventions, enhance patient and caregiver education, avert admissions into long term care facilities, decrease morbidity and mortality, and improve the physical and emotional welfare of the patient (Fowler et al., 2014). A comprehensive review of existing literature was completed between May-July 2018 to determine current state, identify strategies and tools in existence, and understand future needs. The review sought to answer the following questions: Are there proven screening tools shown to increase the appropriate incidence and accuracy of dementia diagnoses in the older adult population within primary care, and are there evidence-based screening protocols in primary care that improve early detection and accurate diagnosis of dementia?

Method

The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guideline served as the framework for this review (Moher, Liberati, Tetzlaff, Altman, & PRISMA Group, 2009). A comprehensive electronic search was conducted in CINAHL, PubMed, and PsycINFO databases (Appendix E). These searchers were limited to reviews in the English language during the period of 2013 to 2018. The search took place in July of 2018. Keywords were dementia, Alzheimer's, cognitive impairment, memory loss, stigma, screening, assessment, test, diagnosis, evidence-based, primary care, and home-based primary care.

Inclusion and exclusion criteria were identified and followed to narrow results throughout the review. Included were results that featured adults aged 55 and older, seeking care from primary health care centers with no previous diagnosis of dementia. Interventions that were comprised of or measured screening tools for the diagnosis of dementia were included, as well as reviews that reported the components of the tools. Articles that were chosen for this review compared the results of various screening tools for the diagnosis of dementia. Finally, outcome measures that were included were diagnosis of dementia, evaluations of screening tools, communication, and teamwork. Any articles that did not fit the above listed inclusion criteria were excluded from this review.

Summary of Results

Eight articles met the inclusion criteria and are included in this review (see Appendix E). These articles include three meta-analyses (Carson, Leach, & Murphy, 2017; Chow et al., 2018; Beauchet et al., 2016), 1 cluster randomized controlled trial (Van Den Dungen et al., 2016), two cohort studies (Kvitting, Wimo, Johansson, & Marcusson, 2013), 1 prospective trial (Hessler et al., 2014), and 1 systematic review (Mukadam, Cooper, Kherani, & Livingston, 2014). All 8

articles were published in peer reviewed articles.

Each of the articles discussed various difficulties and barriers to recognizing, diagnosing, and treating dementia. All of the studies and reviews were focused on primary care practices. One cohort study gathered data from across the United Kingdom and developed a risk algorithm model for becoming afflicted by dementia later in life (Walters et al., 2016). The authors of this study sought to determine the likelihood a patient would have dementia by using routinely collected data from their primary care physician's practice. The second cohort study determined the efficacy and usefulness of A Quick Test of Cognitive Speed in dementia evaluations in primary care (Kvitting, Wimo, Johansson, & Marcusson, 2013). The author's determined efficacy by measuring the tool against the Mini-Mental State Examination and the Clock Drawing Test (Kvitting, Wimo, Johansson, & Marcusson, 2013). The prospective trial mapped the suitability of the Six Item Cognitive Impairment Test for dementia diagnosis in primary care (Hessler et al., 2014). The cluster randomized controlled trial implemented a two-component intervention of case finding and subsequent care of patients with dementia (Van Den Dungen et al., 2016). The study assessed whether educational levels of practitioners impacted the amount of dementia diagnoses and then studied the mental health effects of case findings of dementia and follow-up care (Van Den Dungen, 2016). One meta-analysis reviewed 25 countries' national dementia strategies, the second reviewed studies that determined whether poor gait performance predicts the risk of developing dementia, and the third reviewed the diagnostic accuracy of the Montreal Cognitive Assessment (Beauchet et al., 2016; Carson, Leach, & Murphy, 2017; Chow et al., 2018). Finally, the systematic review evaluated existing literature for interventions intended to increase the detection of dementia or suspected dementia (Mukadam, Cooper,

Kherani, & Livingston, 2014).

Evidence to be used for Project

Upon completion of the literature review, three tools were found to be feasible for use. In one cohort study, risk algorithms for predicting a newly recorded dementia diagnosis in two age groups was developed (Walters et al., 2016). This study was the first to make this determination based entirely from routinely collected health data and did not require the collection of any additional information from the patient (Walters et al., 2016). This validation study yielded good results in the 60-79 year old age group, but not the 80-95 year old age group (Walters et al., 2016). In those aged between 60-79, the dementia risk score included records of depression, stroke, high alcohol consumption, diabetes, atrial fibrillation, aspirin use, smoking, decreasing weight, and untreated high blood pressures (Walters et al., 2016). Ultimately, the collection and analysis of this data from patients aged 60-79 years old can predict the 5-year risk of developing dementia (95% CI, 1.95-2.11).

The results of the second cohort study showed that A Quick Test of Cognitive Speed is usable for diagnostic dementia evaluations in primary care settings (Kvitting, Wimo, Johnasson, & Marcusson, 2013). When compared to the Mini Mental Status Examination and Clock Drawing Test, the AQT showed better sensitivity (0.783), specificity (0.667), and negative predictive values (69%) (Kvitting, Wimo, Johnasson, & Marcusson, 2013). The AQT serves to detect dementia and is unable to subcategorize the type of dementia occurring (Kvitting, Wimo, Johnasson, & Marcusson, 2013). Further, AQT requires minimal administration training, which is a desirable quality for a primary care instrument (Kvitting, Wimo, Johnasson, & Marcusson, 2013).

Meta-analytic evaluation of validation studies including data from the original MoCA study revealed an optimal cutoff score of 23/30 (Carson et al., 2017). The cutoff of 23 was found to optimally balance sensitivity and specificity and provided the highest diagnostic accuracy (Carson et al., 2017). Sensitivity was 1.00 and specificity was 0.98 (Carson et al., 2017). Further, the positive predictive accuracy score was 0.79, indicating that 79% of those who scored less than 23 on the MoCA were accurately diagnosed with dementia (Carson et al., 2017). The negative predictive accuracy was 0.91, meaning that 91% of those who scored higher than a 23 were correctly diagnosed as healthy (Carson et al., 2017). The MoCA is a screening measure that addresses one aspect of the clinical criteria required to make a dementia diagnosis (Carson et al., 2017). Use of the tool in combination with functional testing, clinician determination, and clinical criteria yields appropriate dementia diagnoses (Carson et al., 2017). Ultimately, the MoCA showed the highest sensitivity and specificity at 1.00 and 0.98, respectively. Therefore, it is recommended that the MoCA be adopted and administered in primary care settings to increase the amount of accurate dementia diagnoses and it will be used to guide this DNP project (See Appendix G).

According to the National Institute of Neurological Disorders and Stroke (2018), dementia is the loss of cognitive functioning to such an extent that it interferes with a person's daily life and activities. One of the most significant functions impacted is an individual's ability to perform self-management in the form of activities of daily living, or ADLs (National Institute of Neurological Disorders and Stroke, 2018). Dementia can be appropriately diagnosed and staged when cognitive decline is paired with a decreased ability to perform ADLs (NINDS, 2018). Therefore, one must assess functional decline in conjunction with cognitive decline to

accurately diagnose and manage dementia. The FAST employs a seven-stage system based on one's level of functioning and ability to perform activities of daily living (Reisberg, 1988). Concurrent validity for the first portion of the FAST was demonstrated in relation to the Mini-Mental State Examination and was observed to be 0.8 (Auer & Reisberg, 1997). The FAST focuses on an individual's level of functioning and activities of daily living rather than cognitive decline, and when used in conjunction with cognitive screening tools, such as the MoCA, can prove the presence of dementia.

There are three key findings to this review. First, there are a few proven screening tools that can increase the amount and alacrity with which dementia diagnoses are made in primary care settings. These tools include a risk algorithm, A Quick Test of Cognitive Speed, and the Montreal Cognitive Assessment. Second, prophylactic screening is not shown to cause undue mental health harm to patients or their families (Van Den Dungen et al., 2016). Third, there are no specific identified strategies for initiating dementia screening in primary care. However, barriers to provider application of screening tools were identified such as stigma, lack of confidence, diagnostic discomfort, and time constraints (Koch & Illife, 2010). Therefore, any provider trainings or programs initiated in primary care should work to mitigate each of those barriers and thus allow for ease of adoption.

Phenomenon Conceptual Model

The conceptual model used to organize the approach to this project was the Chronic Care Model (Appendix H). The Chronic Care Model (CCM) is an organizational approach to caring for people with chronic disease in a primary care setting (Institute for Healthcare Improvement, 2018). The CCM identifies essential elements of a healthcare system that encourage high quality

chronic disease care and includes the community, the health system, self-management support, delivery system support, and clinical information systems (Improving Chronic Illness Care, 2018). Within each of these elements, there are specific concepts that healthcare teams use to inform their improvement methods.

The first concept is to mobilize community resources to meet patient needs. These resources include schools, government, non-profits, and faith-based organizations among others (Improving Chronic Illness Care, 2018). The geriatrics primary care practice did not have a standardized approach to encouraging patients to participate in community programs, form partnerships with those organizations, and advocate for policies that improve patient care. To inform this process, clinicians must develop an understanding of what is available within the community, what is most important to the patients, and which services best fit that need. This can only help to improve outcomes as the patients are playing a central role in their own individualized care. The next concept is to create a health system that provides high quality, safe care. Fortunately, the practice in question housed effective clinician leaders who were visible, promoted effective improvement strategies, encouraged open and systematic handling of errors, and facilitated care across organizations (Improving Chronic Illness Care, 2018). This strength aided the organization in the abatement of their dementia practice phenomenon.

A third concept of the CCM is self-management support in the form of empowering and preparing patients to manage their health care. Early recognition and diagnosis of dementia empowers patients to make their own decisions while lucid and prepares them for the future. This facet of the CCM was lacking, but was accomplished within the organization by encouraging the patient's central role in managing their own health, and organizing internal and

community resources to provide ongoing support to patients (Improving Chronic Illness Care, 2018).

A fourth change concept is that of delivery system design and assuring effective, efficient care. Regular and proactive visits which incorporate screenings and patient goals help individuals to maintain optimal health and allow health systems to better manage their care and resources. This approach guided the organization in mitigating the phenomenon of poor screening and diagnosis of dementia. Another change concept is decision support. This concept promotes care that is consistent with scientific data and patient preferences. This concept requires that clinicians embed evidence-based guidelines into daily practice, share information with patients and families, use proven provider education materials, and integrate specialist expertise into primary care (Improving Chronic Illness Care, 2018). The screening protocol consisted of the best and most up-to-date evidence to ensure proper application and best practice.

The final change concept of the CCM is clinical information systems, achieved by organizing data to facilitate efficient and effective care. This concept encompasses a system that provides timely reminders for providers and patients, identifies relevant subpopulations for proactive care, facilitates individual patient care planning, shares information with patients and providers to coordinate care, and monitors the performance of practice teams and care systems (Improving Chronic Illness Care, 2018). During implementation, certain facets of the protocol were embedded into the electronic health to facilitate documentation and assist clinical decision making.

The Chronic Care Model allowed thorough assessment of the phenomenon of poor dementia screening and lack of follow-up approaches within the home-based primary care

organization. The CCM identified essential elements within the healthcare system that had to be understood and either emphasized or mitigated to successfully address the phenomenon. Further, the CCM allowed for the inclusion of interdisciplinary teams, emphasis on evidence-based practice initiatives, and high quality approaches to caring for patients with a chronic disease in primary care.

Project Plan

Purpose of Project

The purpose of this DNP project was to design and implement a quality evidence-based protocol for the accurate and timely diagnosis of dementia into the standard of care in an urban home-based primary care setting while also addressing follow-up care and needs of patients after diagnosis. The intent of this project was to answer the following clinical question: What is an efficient and evidence based protocol for the timely assessment, accurate diagnosis, and appropriate follow-up for dementia patients in a home-based primary care setting?

Design for the Evidence-based Initiative

The design for this quality improvement project was guided by the Promoting Action on Research Implementation in Health Services (PARiHS) framework (Appendix I). The design utilized the three core elements of evidence, context, and facilitation.

Evidence. Evidence is defined as a combination of research, clinical expertise, and patient choice (Kitson, Harvey, & McCormack, 1998). The plan for this project was based on evidence supporting the indoctrination of a standardized approach to the timely screening, methods for diagnosis and appropriate follow-up of dementia patients. Evidence was clear that utilizing feasible and proven screening tools increases provider suspicion and translates into

earlier diagnosis and improved patients outcomes long term (Hessler et al., 2013; Kvitting, Wimo, Johansson, & Marcusson, 2013; Mukadam, Cooper, Kherani, & Livingston, 2014; Walters et al., 2016). This evidence guided the incorporation of a standardized screening protocol to improve dementia diagnosis timeliness and accuracy as well as follow-up care. Further, the evidence supported education of staff members to increase levels of confidence and support sustainability (Fowler et al., 2014).

Context. Context is defined as the environment or setting where the proposed change will occur (Kitson, Harvey, & McCormack, 1998). This quality improvement effort sought to maintain the organizational culture which strived to provide patient centered quality care to the geriatric population. The focus on implementing and utilizing a dementia screening protocol required patients, families, and caregivers to be involved which enhanced patient centered care. Clinicians involved gained a better understanding of the patients and their families, and also may have improved the patient's quality of life long term by making accurate and timely diagnoses.

Facilitation. Facilitation refers to the technique by which one person, the facilitator, can make things easier for others (Kitson, Harvey, & McCormack, 1998). This person is one who provides support to help others change their attitudes, habits, skills, ways of thinking, and workflows in order to make the change easier (Kitson, Harvey, & McCormack, 1998). This quality improvement project allowed the DNP student to enact the role of the facilitator. The educational session and support was provided by the DNP student. Data extraction, plan creation and maintenance, and development of the protocol was also provided by the DNP student. Additionally, the physician lead, practice manager, and providers will facilitate the continued education and delivery of the protocol to the pilot location after completion of this effort.

Objectives

Objectives for this DNP project were aimed at promoting regular and intentional screenings for all patients and a standardized approach to the diagnosis, follow-up, advanced care planning, and referrals as appropriate. Following are the objectives and the strategies that were used to implement this project.

1. Evaluate the current state of MoCA screenings and follow-up care applied to all patients (n=500) cared for within the geriatrics home-based primary care group by November 30, 2018 by completing a de-identified retrospective chart review of the electronic health record.
2. Develop a pilot study to inform an evidence-based quality protocol to be presented to staff on November 19, 2018.
3. Gain approval for initial proposed protocol by November 19, 2018 prior to staff presentation.
4. Educate the providers, nurses, social workers, and medical assistants who administer MoCA screenings on November 19, 2018.
5. Begin evidence based protocol implementation on December 1, 2018.
6. Continued assessment of the practice to determine any barriers and facilitators that exist regarding this project and intervention (October 2018 – March 2019).
7. Perform weekly audit and feedback for 60-days after implementation, starting after December 1, 2018. Weekly reminder emails with progress dashboards were sent to all applicable staff members. The emails served to promote open communication, answer

any questions, and ensure that the implementation of the project took place on schedule

8. Deliver a final report regarding whether the above objectives were met and were successful in answering the clinical question, a standard of work document, as well as the completed protocol by March 17, 2019.
9. Develop the final quality protocol based off this pilot study by March 17, 2018.
10. Disseminate final report to advisory committee, Grand Valley State University, and upload into Scholarworks by March 17, 2019 (see Appendix J for project timeline).

Setting

The organization specialized in geriatric care throughout multiple cities in the surrounding area. In total, the practice provided care to 2,144 patients. The care provided to the patients was done by a combination of traditional clinic visits, home visits, telehealth, and bedside visits throughout the various facilities. This DNP project was granted administrative approval to be conducted at this primary care practice.

Participants

The participants in this DNP project were the newly enrolled home-based patients cared for by the organization (N=54). The organization is averaged eight new enrollees per week. The providers, nurses, social workers, and medical assistants who administer MoCA screenings (n= 26) are also participants, and they were educated and encouraged to screen patients at initial visits, annually, and whenever a need is identified.

Proposed Practice Change

The proposed change of this DNP project was to design and implement an evidence based protocol that guided providers through the accurate and timely diagnostic screening for dementia in their patients over the age of 65, as well as appropriate follow up appointments and referrals. This protocol began with an educational session intended to standardize the approach to administering the Montreal Cognitive Assessment and outline further steps to take based on the score given. All medical professionals who administered the MoCA screenings within the home-based primary care group were in attendance of the educational session. These medical professionals included physicians, nurse practitioners, physician assistants, social workers, and medical assistants. The protocol then directed the clinicians to administer the MoCA screenings to all patients over the age of 65 at their initial visit with the practice, annually, and when it is clinically indicated. Clinical indication was defined as when there is a noted change to a patient's behavior, memory recall, affect, mood, or there has been a complaint from the patient or family in regards to memory. Finally, the protocol assisted the clinicians in determining the best course of action based on the scoring given. Options included further screening with functional assessments to accurately diagnose dementia, referrals to community resources and interprofessional teams, follow-up appointments, and supportive services.

Implementation Steps and Strategies

Steps for the implementation of this project were as follows (Appendix J).

1. Evaluate the current state of MoCA screenings and follow-up care applied to patients (n=20) cared for within the geriatrics home-based primary care group by November 30, 2018 by completing a de-identified retrospective chart review of the electronic health record.

   a. Retrospective chart review to include average MoCA score, presence of dementia diagnosis, and initiation of follow-up care was completed.

2. Develop a pilot study to inform an evidence-based quality protocol to be presented to staff on November 19, 2018. The protocol included the following:
   a. A standard process to educate existing clinicians who administer MoCA screenings was developed.
   b. Defined cutoff scores and the appropriate follow-up (i.e. referral to specialty practice, application of FAST, advanced care planning conversation) based on the score given were identified.
   c. A decision tool to guide clinicians in the defined follow-up steps was created.
3. Gain approval for initial proposed protocol by November 19, 2018 prior to staff presentation.
   a. Presented and approved protocol was delivered to physician mentor on November 12, 2018.
4. Educate the providers, nurses, social workers, and medical assistants who administer MoCA screenings on November 19, 2018.
   a. Education of the providers, nurses, social workers, and medical assistants (n=26) who administer dementia screenings took place during a dedicated meeting on November 19, 2018. A 30 minute session about the evidence supporting MoCA screenings, administration techniques, accurate scoring, strategies to promote screening practices into standard care, and opportunities for questions and input was held.

   b. Additional education was provided during this session in regards to application of the Functional Assessment Screening Tool, appropriateness of referrals, scope of practice based on clinician role, and timeliness of advanced care planning.

5. Gathered current data from retrospective chart audits to determine current state of dementia screening practices and follow-up care by November 30, 2018.
6. Began evidence based protocol implementation on December 1, 2018.
7. Continued assessment of the practice took place to determine any barriers and facilitators that exist regarding this project and intervention (October 2018 – March 2019).
8. Performed weekly audit and feedback for 60-days after implementation, starting after December 1, 2018. Weekly reminder emails with progress dashboards were sent to all applicable staff members. The emails served to promote open communication, answer any questions, and ensure that the implementation of the project took place on schedule.
   a. Met with practice manager to create email distribution list including all staff participants on November 19, 2018.
   b. Utilized the best measure from patient's electronic health records to determine current screening frequency and interventions.
   c. Audited charts weekly using the measure and sampling from December 8, 2018 through February 8, 2019.
   d. Sent weekly data dashboards to key stakeholders and staff members who were responsible for administering the screening protocol.

9. Delivered a final report regarding whether the above objectives were met and were successful in answering the clinical question, a standard of work document, as well as the completed protocol by March 17, 2019.
    a. Distributed results to practice manager, site mentor, key stakeholders and staff members at a dedicated meeting on March 11, 2019. Results were also sent in an email for those staff members not able to attend.
10. Develop the final quality protocol based off this pilot study by March 25, 2018. The finalized protocol will include:
    a. A standard process to educate new clinicians who administer MoCA screenings.
    b. Standardized work documents which may be utilized by staff to inform the process and define expectations.
    c. Defined cutoff scores and the appropriate follow-up (i.e. referral to specialty practice, application of FAST, advanced care planning conversation) based on the score given.
    d. A decision support tool to guide clinicians in the defined follow-up steps.
    e. Monitor changes in MoCA administration, diagnostics, and follow-up procedures
    f. Monitor quality performance.
11. Disseminate final report to advisory committee, Grand Valley State University, and upload into Scholarworks by April 15, 2019.

Data Collection Procedures

The process for data collection was regimented and purposeful. The author of this DNP project was the sole collector of data. The initial data collection occurred during November 2018 via the electronic health record. The author audited 20 randomized home-based primary care

patients for their age, presence of dementia diagnosis, and whether or not a MoCA screening had been completed. Also during the month of November an educational session was be held for all clinicians that were responsible for administering MoCA screenings. The project was implemented from December 1, 2018 through February 1, 2019. Audits of all patient visits from the prior week were completed each weekend beginning December 8, 2018. These audits determined the age of the patient, presence of s dementia diagnosis, whether or not a MoCA screening was completed, whether or not a FAST score was indicated, and whether follow-up care was initiated (referrals, future appointments scheduled). All data retrieved from the electronic health records was de-identified. The sample size during the 60 day implementation period was 54 patients.

Data Management

The individual responsible for the data to be collected was the DNP student. The data was generated through excel documents. The data had no patient identifiers, and was analyzed using SPSS statistics software upon completion. A statistician affiliated with Grand Valley State University generated the analysis. The data was organized within SPSS based on the variables previously identified. Additionally, the data was secured in a password protected computer and M drive file within the organization. To ensure that the data was entirely de-identified ages were only listed as over 65 or under 65, no gender or diagnoses other than dementia was recorded. Dates of diagnosis were not recorded and the only data point gathered was whether a diagnosis was given following assessment.

Analysis

Data for this quality improvement effort was systematically collected, analyzed, and presented (Appendix L). The exploratory data included descriptive information determining the current state of the practice. Next, outcomes were evaluated and included both descriptive and statistical analysis.

Each objective was measured (See Appendix M for data collection key). First to assess for readiness and identify both facilitators and barriers to change, an organizational assessment and SWOT analysis was performed. Second, a coalition was established as multiple providers and nurses were willing to champion the project. In addition, the home based nurses who triage calls from patients and families were willing to advocate for the project and prompt clinicians to administer screenings during the pilot period. Third, time was spent prior to implementation and during the pilot period of this project at local cognition clinics and attending local dementia screening and care taskforce meetings to have the ability to both share and gain knowledge. Fourth, a quality weekly monitoring system was constructed with the aid of the practice manager. This was accomplished by completing audits of electronic health records of patients seen weekly. Finally, reminders were sent to clinicians weekly. These reminders contained progress reports of the prior week's EHR audit as well as tips for moving forward.

The DNP student collected data to answer the clinical question. First, data surrounding dementia diagnosis and practices was gathered. The DNP student identified whether patients had an existing dementia diagnosis, whether a MoCA was completed or not, how long after initiating care with the practice a MoCA was completed, the age of the patient, and whether any type of follow-up care or further screenings (FAST) were completed. Next, the DNP student identified whether or not the role of the provider impacted the amount of screenings completed and

whether follow-up care was initiated or not. This was completed by identifying the role of the clinician who administered the MoCA, if one was completed, and whether or not follow-up care was initiated as appropriate. Finally, weekly dashboards were completed to disseminate progress reports to stakeholders and staff participants and sought to determine whether participation and staff buy-in increased with weekly reminders. The dashboards included information regarding whether increases in dementia diagnosis, screening, and follow-up care were initiated or not. All data was reported by use of descriptive statistics and visually with graphs, tables, and charts as appropriate.

Measurement of data was integral in the assessment and evaluation of the project objectives and the clinical question. Data was collected by use of surveys, electronic health record chart review, and observations.

Resources & Budget

The budget for this DNP project is found in Appendix K. Most of the costs were based on time spent with stakeholders and experts. The student acted as facilitator and all time spent was in kind donation. Donated time was spent creating an educational simulation (20 hours), introduced the intervention and provided education at a staff meeting (1 hour), and spent 8 hours per week auditing through data collection (9 weeks total). The student is a registered nurse with 4 years of experience whose time was calculated at $27.00 per hour (Glassdoor, 2018). The total donated cost for the student's time was $2,511. In addition, a statistician student from Grand Valley State University donated time to analyze data outcomes (4 hours). His time was estimated at $25.00/hour for a total of $100.00. Additionally, the cost of paper to disseminate surveys was approximated at $3.00 total for 30 sheets, and the ink cost $14.

Staff within the organization took one hour of their time to listen to the educational session provided by the student. This amounted to six physicians at $96.00/hour, 13 NPs at $45.00/hour, 2 PAs at $45.00/hour, 11 LPNs at $23.00/hour, 7 RNs at $27.00/hour, seven MAs at $13.00/hour, and four social workers at $26.00/hour totaling $1,888. Additionally, 60 hours was donated by a local neurologist who was estimated to make $117.00/hour, totaling $7,037.

Timeline

This DNP project was subject to time constraints. All objectives were met within the timeline. See Appendix J for the visual timeline that was followed.

Results

The implementation of this quality improvement project began with an educational session which was completed during a dedicated meeting on November 19, 2018. During the session, the initial proposed protocol was introduced to the project participants which included 6 physicians, 13 nurse practitioners, 2 physician's assistants, 11 licensed practical nurses, 7 registered nurses, 7 medical assistants, and 4 social workers. In addition, the Functional Assessment Screening Tool and Montreal Cognitive Assessment were discussed to ensure standardization of administration procedures. All follow-up care options included in the protocol were discussed and all questions that staff members had were answered. Following the educational session, project implementation began on December 1, 2018. Data output is listed in Appendix O and displayed graphically in Appendix P.

The de-identified data sought to answer each part of the clinical question: What is an efficient and evidence based protocol for the timely assessment, accurate diagnosis, and appropriate follow-up for dementia patients in a home-based primary care setting? Data points

collected to determine whether timely assessment took place included evaluation of age at first MOCA screen, whether a MOCA was completed at the first visit or not, and whether or not a FAST was completed based on indication. To determine accurate diagnosis, presence of dementia or cognitive impairment diagnoses both pre- and post- enrollment was collected. Finally, follow-up plans were assessed as to the presence of future appointments, referrals, advanced care planning, and resources provided to patients and family members.

During the 60 day implementation period, 54 new enrollees were seen by the home-based primary care group. Based on the Clinical Frailty Score, the average frailty of the patients seen was 6 which is much lower than what is expected in the general population. This score indicates a moderate level of frailty that occurs when assistance with activities of daily living is needed and it is difficult to leave the home without outside help. In total, 94% of the newly enrolled patients were over the age of 65. For the remaining 6% of patients, the protocol was followed as it was clinically indicated. The clinical indications in these instances were multiple comorbidities, functional decline, pre-existing early onset Alzheimer's disease, and reports of cognitive changes per patients and family. In those instances, data was coded a "3" or not applicable, which specified an outlier. Since all 6% of the outliers were in fact put through the protocol appropriately, the cumulative percent that MOCA screenings were administered to patients over age 65 was 100%.

The next data point assessed whether a patient was over the age of 65 when diagnoses of dementia or mild cognitive impairment were given. The population was largely over the age of 65 (n=18, 95%). Initially, 73% (n=37) of patients were given a MoCA at the first visit, increasing to 98% at the second visit. The remaining patients were either outliers in that they

were given diagnoses prior to the age of 65, or patients who did not have a diagnosis and therefore could not be counted as such. The first step in the implemented protocol is to administer a MOCA screen to any patient over the age of 65 and those with whom it is clinically indicated. Of note, reasons for not administering a MOCA to patients at the enrollment visit were fairly well documented. Reasons included patient refusal, advanced memory impairment and other comorbidities rendering patients unable to complete the screen, and the presence of a previous MOCA score completed outside of the practice within the past year. Ultimately, there were only 2 instances in which MOCA screens should have been given at enrollment, but were not. However, the lack of assessment was documented by staff as "needs MOCA" and follow-up appointments were scheduled.

The next data point compared dementia/cognitive impairment diagnoses both pre- and post- enrollment. On enrollment day, a total of 26% of patients had a prior diagnosis of dementia or cognitive impairment. Following enrollment, this number increased to 37%, showing a statistically significant improvement (Pr>S 0.0143). The average MOCA score during pre-implementation was 20, and the average score post- implementation was 19 indicating that the level of decline was consistent both pre- and post-implementation.

Based on the MOCA score given, the protocol then directs clinicians to assess for any functional decline by administering the FAST as appropriate. In total, 59% of patients were screened with the FAST. Of the remaining 41%, a total of 13 patients (43%) did not have an indication to complete the FAST. Notably, 85% of the total patients were scheduled for follow-up care either in the form of referrals or future appointments with providers of the geriatrics practice. Further, in the instances in which the protocol was administered by a clinician who

could not diagnose dementia or cognitive impairment, a follow-up appointment with a physician or nurse practitioner was scheduled in 71% of the cases. Due to the small sample size of 54 and only 6 new diagnoses, the presence of accurate diagnoses cannot be determined as statistically significant.

In total, nurse practitioners saw 52% of the new enrollments while registered nurses (care managers) saw the remaining 48%. Of the 37 MOCAs completed, NPs were responsible for 65% while RNs completed 35%. Additionally, of the 24 FAST scores documented, NPs were responsible for 75% while RNs completed 25% of completed screens. In all 6 of the instances in which a new diagnosis of dementia or cognitive impairment was given, both a MOCA and a FAST were completed and follow-up care initiated. Additionally, of the 14 patients with preexisting diagnoses of dementia or cognitive impairment, the diagnoses remained the same after the protocol was applied.

Discussion

During implementation, six new diagnoses of dementia or mild cognitive impairment were given. The screening and diagnostic protocol was followed in each of these instances and appropriate follow-up care was then initiated. The number of new diagnoses assigned after following the protocol was found to be statistically significant and indicates that use of standardized can increase provider suspicion and result in higher rates of diagnosis. Notably, each of the FAST scores of these patients indicated functional decline and was not related to a prior diagnosis impacting function such as Rheumatoid arthritis or Parkinson’s disease.

Throughout implementation, weekly data dashboards were distributed and communication occurred with various staff members. During this period, it was discovered that

the addition of the FAST to the clinician's new enrollment template in the electronic health record resulted in higher rates of compliance. Staff reported that without the FAST in the template, they were less likely to remember to complete it. The data also supports this change, as the amount of FAST scores did increase as the weeks went on as more clinicians added it to their personal templates. Further, pre-implementation data demonstrated that staff were completing MOCA screens on 50% of patients. However, post-implementation data elucidates that MOCA screens are currently being completed 98% of the time. This increase indicates that learning from the educational session provided by the student did occur. Additionally, this evidence further shows that the addition of an evidence-based protocol increases rates of screening and diagnosis of cognitively impaired patients.

Based on chart audits and discussions, most staff members were not completing FAST screenings prior to the education and implementation of this protocol, however, post-implementation nearly all staff members were contemplating and/or administering the tool. Cited barriers to implementing the dementia screening protocol included lack of face to face staff education, lack of time, and deteriorating patient conditions. One barrier that was successfully addressed related to patient variances. It was discovered that the initial protocol did not account for illiterate or blind patients. Therefore, the protocol was amended to include augmented screening tools for these instances and was then successfully implemented.

Sustainability Plan

At the beginning of this DNP project, stakeholder support was identified from the practice manager and physician mentor of the geriatrics primary care practice. Both were committed to improving dementia patient's outcomes within their practice. Multiple staff

members also voiced their support and excitement for the practice change as well as their passion for caring for the geriatric population.

Regardless of this support, sustainability can be difficult to maintain after the project facilitator leaves. The success of this project was an important indicator of its chance for sustainability. One tactic that enhanced sustainability was the involvement of the staff members in altering the proposed protocol to better fit their needs. Next, a standard of work was created and will remain in place as an expectation once the facilitator leaves. The results of the weekly audits and final project were reported to the staff members and final protocol delivered for understanding and discussion. Additionally, the possibility of embedding the protocol into the electronic health record was explored and completed. Finally, handoff to the practice manager and physician mentor took place. The practice manager will ensure the continued education of new staff members and the physician mentor will determine the need to further weekly dashboards for the enhanced application of this protocol. This protocol will be indoctrinated into the standard of work for clinicians within the geriatrics primary care practice.

Additionally, handoff of this project to an incoming DNP student took place on March 15, 2019. Continued iterations and study of the impact of this protocol will be completed over the next year by this student. At the conclusion of this project, the final protocol and report were disseminated to the key stakeholders within the organization, presented to the clinicians involved, defended to advisory committee, and uploaded into Scholarworks. Additional exploration in regards to the presentation of this project to professional organizations and the possibility of publication will be explored.

Limitations

Although the implementation of this protocol is promising, there are several limitations. First, this project had a short implementation period of 60 days which made it difficult to obtain some outcome data. A significant lapse in outcome data collection was follow-up care. It was noted that most of the patients had follow-up appointments made, but there is no way to know whether more diagnoses will be made at those appointments, what counseling may occur, and whether or not additional follow-up care will then be initiated. Second, there was a small sample size of 54 which made it challenging to evaluate statistical significance in the accuracy of diagnoses. Additionally, the small sample size consists of only home-based geriatric patients, which is a very specific population. These home-based patients are unfortunately very frail, with an average Clinical Frailty Score of 6. It remains to be seen whether this protocol and the reported results are reproducible in varying populations. Third, patient condition and refusals were not expected and resulted in the lack of ability for staff to successfully complete the full protocol. Some patients were subject to advanced cognitive impairment and multiple comorbidities that made it impossible to administer screening tools to produce accurate results. Fourth, it should be noted that the previously reported statistically significant McNemar's Test will always be significant due to the result being equal to 6. This is due to the small number of divergent pairs; the probability is not well approximated by a chi-square distribution. Finally, clinicians were motivated to follow the protocol and while they felt that the steps did not add time or difficulty to the enrollments, the 60 day time period was not sufficient to determine sustainability of the practice change.

Implications for Practice

This DNP quality improvement had multiple practice implications. Application of a standardized protocol can generate new and earlier diagnoses of dementia. By initiating the diagnosis sooner, patient's quality of life can be positively impacted, outcomes improved, and healthcare costs decreased. Evidence supports the notion that the inclusion of a dementia screening and diagnostic protocol will increase rates of diagnosis. Each component and screening tool utilized in the dementia screening protocol was a success. This protocol has the potential to positively impact cognitively impaired patients in the future.

Further education and coaching for clinicians regarding the importance of and steps to implementation of the protocol and its screening tools could be beneficial in the future. Although many clinicians are now completing most components of the protocol, further work on connecting patients to community resources is needed. Finally, according to literature, successful care of cognitively impaired patients requires interprofessional and multi-disciplinary teams. Consequently, the initial screening and diagnosis by the clinicians must only be one component of dementia management and care. A comprehensive policy and plan should include all disciplines in the organization working to improve these patients' lives.

Reflections on DNP Essentials

The American Association of Colleges of Nursing (AACN) guides DNP educated students through eight Essential competencies (AACN, 2006). Each of the Essentials was met through various activities which are reviewed below.

I: Scientific Underpinnings for Practice

The scientific underpinnings of the practice doctorate in nursing education reflect the complexity of practice at the doctoral level and the rich heritage that is the conceptual foundation

of nursing (AACN, 2006). This Essential was achieved by performing a comprehensive literature search on dementia, cognitive impairment, diagnosis of dementia, and follow up care. The knowledge gained from this search was then used to create a screening and diagnostic protocol intended to improve patient outcomes.

II: Organizational and Systems Leadership

Organizational and systems leadership are critical for DNP graduates to improve patient and healthcare outcomes (AACN, 2006). Thus, advanced nursing practice includes an organizational and systems leadership component that emphasizes practice, ongoing improvement of health outcomes, and ensuring patient safety (AACN, 2006). This Essential was demonstrated by first meeting with organizational leadership and mentors and conducting a full organizational needs assessment. Further, a quality improvement project was created and completed within a limited timeframe. Leadership and communication skills were used throughout implementation to assess barriers and facilitators to change, listen to and encourage stakeholder ideas and needs, educate on the protocol, and work with clinicians to ensure successful implementation. Communication took place through one-on-one and group conversations, presentation, and e-mail. Ethical and cultural sensitivity was demonstrated during the project, and the project was submitted to the organization and university HRRC committee and ultimately deemed non-research. Additionally, this Essential was met by attending applicable webinars and local dementia taskforce meetings.

III: Clinical Scholarship and Analytical Methods

Scholarship and research are the hallmarks of doctoral education (AACN, 2006). This Essential was met by utilizing analytical methods during literature review to determine the best

evidentiary support for screening tools and interventions. The project included implementation of an educational session on dementia screening standards and diagnosis. This quality improvement project was developed to provide safe, patient-centered care. Information technology in the form of the electronic health record and Excel was used to extract, organize, and analyze data related to dementia diagnosis and management.

IV: Information Systems Technology

Knowledge and skills related to information systems/technology and patient care technology prepare the DNP graduate to apply new knowledge, manage individual and aggregate level information, and assess the efficacy of patient care technology appropriate to a specialized area of practice (AACN, 2006). For this project the organization's electronic health record was utilized to gather data both pre- and post- implementation. E-mail was the main form of communication with stakeholders during implementation and was also used for continued education of staff members. Microsoft Excel program was then used to organize and analyze data. Finally, new enrollee templates were created within the electronic health record for all NPs and support staff that included space to chart MOCA and FAST scores.

V: Advocacy for Health Care Policy

Engagement in health care policy by means of designing, influencing, or implementing is an expectation of DNP students. Health policy influences multiple care delivery issues, including health disparities, cultural sensitivity, ethics, the internationalization of health care concerns, access to care, quality of care, health care financing, and issues of equity and social justice in the delivery of health care (AACN, 2006). During this project the organization's current policy to provide safe and efficient care was taken into account. This project did not include a policy

change, but rather working to move current practices toward improvements. Additionally time was spent at the state's capitol for learning about current healthcare policies impacting nurse practitioners, and lobbying for needed change.

VI: Interprofessional Collaboration

Today's complex, multi-tiered health care environment depends on the contributions of highly skilled and knowledgeable individuals from multiple professions (AACN, 2006). In order to provide high quality care, interprofessional collaboration must occur. Much collaboration occurred throughout this project. Communication with the organization, stakeholders, experts, providers, staff members, leadership, and faculty members was ongoing and integral to the success of the project. Additionally, close work occurred with staff members, a local task force, and local outpatient neurologist practices. Staff member occupations were diverse and included management, nurse practitioners, registered and licensed practical nurses, medical assistants, care managers, and social workers. The local task force was also diverse and included gerontologists, neurologists, nurses, a division chief of psychiatry and of family practice, and psychologists. Finally, the neurology practice included neurologists, nurse practitioners, pharmacists, and neuropsychologists.

VII: Clinical Prevention and Population Health

The implementation of clinical prevention and population health activities is central to achieving the national goal of improving the health status of the population of the United States (AACN, 2006). The DNP has a foundation of health promotion and disease prevention instilled throughout the educational program. Additionally, patient health status in relation to diagnoses

and screenings was analyzed. The project itself aims to increase early identification of cognitive impairments thus enabling providers to prevent adverse outcomes and promote health.

VIII: Advanced Nursing Practice

The increased knowledge and sophistication of healthcare has resulted in the growth of specialization in nursing in order to ensure competence in these highly complex areas of practice (AACN, 2006). DNP prepared nurses have the ability to: conduct comprehensive and systematic assessments in complex situations; design, implement and evaluate interventions; develop and sustain relationships with patients and other professionals in order to provide optimal care; demonstrate systems thinking in order to improve patient outcomes; and educate and guide others through situational transitions (AACN, 2006). This project addresses each of the aforementioned competencies. An organizational assessment was conducted and systems thinking was applied to design, implement, and study a dementia screening and diagnosis protocol. The success of this project included the building and sustaining of relationships with various stakeholders. Further, educational sessions were developed and held to guide staff through the practice change. Finally, the advanced practice role of the nurse practitioner was implemented by completing a comprehensive literature review, development of an evidence based quality protocol, implementation of the protocol with ongoing assessment, and analysis of the findings from the project.

Dissemination of Outcomes

Dissemination of this dementia screening, diagnosis, and aftercare protocol to staff and stakeholders occurred at a dedicated meeting on March 11, 2019. Additionally, the information was sent via email to all staff members who were not able to be in attendance at the dedicated

meeting. The final product of this quality improvement project was presented at Grand Valley State University in front of the advisory committee and other members who chose to attend the presentation on April 8, 2019. The final scholarly paper was uploaded to ScholarWorks. Additionally, dissemination via professional conferences and through publication will be explored.

Conclusion

A primary care practice that provides specialized treatment to elderly patients sought to address delays in the diagnosis and care of dementia patients hoping to improve outcomes long term. An organizational assessment of the culture and practices surrounding care of cognitively impaired patients was completed. This information was paired with an extensive literature review and led to the creation of a protocol designed to address the delays. The protocol consisted of two screening tools that when applied together can lead to an accurate diagnosis of dementia and cognitive impairment. The protocol was then designed to lead providers through follow-up care options with the intention of providing needed support as early as possible to improve outcomes long term. Implementation took place over 60 days, and results revealed a significant improvement in screening amount, efficiency, diagnosis, and follow-up care of newly enrolled patients. This type of protocol is important and needed as the world's population ages with rates of cognitive impairment ever increasing. Addressing deficits and providing needed resources and care early on can improve the health and quality of life of many patients, truly making a great impact on the communities served.

References

Alzheimer's Association. (2018). Changes in relationships. Retrieved from https://www.alz.org/i-have-alz/changes-in-relationships.asp

American Association of Colleges of Nursing (2006). The essentials of doctoral education for advanced nursing practice. Retrieved from www.aacn.nche.edu

Auer, S., & Reisberg, B. (1997). The GDS/FAST staging system. *International Psychogeriatrics, 9*(S1), 167-171.

Beauchet, O., Annweiler, C., Callisaya, M. L., De Cock, A. M., Helbostad, J. L., Kressig, R. W., ... & Allali, G. (2016). Poor gait performance and prediction of dementia: results from a meta-analysis. *Journal of the American Medical Directors Association, 17*(6), 482-490.

Burke, W. W., & Litwin, G. H. (1992). A causal model of organizational performance and change. *Journal of Management, 18*(3), 523-545. doi:10.1177/014920639201800306

Carson, N., Leach, L., & Murphy, K. J. (2018). A re-examination of Montreal Cognitive Assessment (MoCA) cutoff scores. *International journal of geriatric psychiatry, 33*(2), 379-388.

Chow, S., Chow, R., Wan, A., Lam, H. R., Taylor, K., Bonin, K., ... & Herrmann, N. (2018). National dementia strategies: what should canada learn?. *Canadian Geriatrics Journal, 21*(2), 173.

Cordell, C. B., Borson, S., Boustani, M., Chodosh, J., Reuben, D., Verghese, J., ... & Medicare Detection of Cognitive Impairment Workgroup. (2013). Alzheimer's association recommendations for operationalizing the detection of cognitive impairment during the

medicare annual wellness visit in a primary care setting. *Alzheimer's & Dementia*, *9*(2), 141-150.

Forsetlund, L., Bjørndal, A., Rashidian, A., Jamtvedt, G., O'Brien, M. A., Wolf, F. M., ... & Oxman, A. D. (2009). Continuing education meetings and workshops: effects on professional practice and health care outcomes. *The Cochrane Library*. doi: 10.1002/14651858.CD003030.pub2

Friedl, H. (2017). Swot analysis. In L. Lowry (Ed.), *The sage international encyclopedia of travel and tourism* (pp. 1204-1206). Thousand Oaks, CA: SAGE Publications, Inc doi: 10.4135/9781483368924.n442

Glassdoor.com (2017). Nurse salaries in grand rapids, MI. Retrieved from https://www.glassdoor.com/Salaries/grand-rapids-nursing-salarySRCH_IL.0,12_IM343_KO13,20.htm

Hessler, J., Brönner, M., Etgen, T., Ander, K. H., Förstl, H., Poppert, H., ... & Bickel, H. (2014). Suitability of the 6CIT as a screening test for dementia in primary care patients. *Aging & mental health*, *18*(4), 515-520.

Improving Chronic Ilness Care. (2018). *Steps for improvement: Models.* Retrieved from http://www.improvingchroniccare.org/index.php?p=1:_Models&s=363

Institute for Healthcare Improvement. (2018). *Changes to improve chronic care.* Retrieved from http://www.ihi.org/resources/Pages/Changes/ChangestoImproveChronicCare.aspx

Kitson, A., Harvey, G., & McCormack, B. (1998). Enabling the implementation of evidence based practice: A conceptual framework. *Quality in Health Care*, *7*(3), 149-158. doi: 10.1136/qshc.7.3.19

Koch, T., & Iliffe, S. (2010). Rapid appraisal of barriers to the diagnosis and management of

patients with dementia in primary care: a systematic review. *BMC family practice*, *11*(1), 52.

Kvitting, A. S., Wimo, A., Johansson, M. M., & Marcusson, J. (2013). A quick test of cognitive speed (AQT): usefulness in dementia evaluations in primary care. *Scandinavian journal of primary health care*, *31*(1), 13-19.

Larner, A.J. (2011). *Dementia in clinical practice: A neurological perspective.* New York, NY: Springer Publishing.

Moher, D., Liberati, A., Tetzlaff, J., Altman, D.G., & The PRISMA group (2009). Preferred reporting items for systematic reviews and meta-analysis: The PRISMA Statement. *Public Library of Science Medicine, 6*(7), 1-6. doi: 10.1371/journal.pmed.1000097

Moran, K., Burson, R., & Conrad, D. (2017). *The doctor of nursing practice scholarly project: A framework for success (2nd ed.).* Burlington, MA: Jones & Bartlett Learning.

Mukadam, N., Cooper, C., Kherani, N., & Livingston, G. (2015). A systematic review of interventions to detect dementia or cognitive impairment. *International Journal of Geriatric Psychiatry*, *30*(1), 32-45.

Nasreddine, Z. S., Phillips, N. A., Bédirian, V., Charbonneau, S., Whitehead, V., Collin, I., ... & Chertkow, H. (2005). The Montreal Cognitive Assessment, MoCA: a brief screening tool for mild cognitive impairment. *Journal of the American Geriatrics Society*, *53*(4), 695-699.

National Institute on Aging. (2017). *Basics of Alzheimer's Disease and Dementia.* Retrieved from https://www.nia.nih.gov/health/what-dementia

National Institute of Neurological Disorders and Stroke. (2018). *Dementia Information Page.*

Retrieved from https://www.ninds.nih.gov/Disorders/All-Disorders/Dementia-Information-Page

Powell, B.J., Waltz, T.J., Chinman, M.J., Damschroder, L.J., Smith, J.L., Matthieu, M.M.…Kirchner, J.E. (2015). A refined compilation of implementation strategies: Results from the Expert Recommendations for Implementing Change (ERIC) project. *Implementation Science, 10*, 1-14. doi 10.1186/s13012-015-0209-1

Reisberg, B. (1988). Functional assessment staging (FAST). *Psychopharmacology bulletin*, *24*(4), 653-659.

Spangenberg, H., & Theron, C. (2013). A critical review of the burke-litwin model of leadership, change, and performance. *Management Dynamics, 22(2),* 29-48.

Stakeholder. (n.d.) In *Merriam-Webster Dictionary online.* Retrieved from https://www.merriam-webster.com/dictionary/stakeholder

United States Department of Veterans Affairs. (2015). *Montreal Cognitive Assessment.* Retrieved from https://www.parkinsons.va.gov/consortium/moca.asp

Van den Dungen, P., van Charante, E. P. M., van de Ven, P. M., van Marwijk, H. W., van der Horst, H. E., & van Hout, H. P. (2016). Case finding of mild cognitive impairment and dementia and subsequent care; results of a cluster RCT in primary care. *PloS one*, *11*(6), e0156958.

Walters, K., Hardoon, S., Petersen, I., Iliffe, S., Omar, R. Z., Nazareth, I., & Rait, G. (2016). Predicting dementia risk in primary care: development and validation of the Dementia Risk Score using routinely collected data. *BMC medicine*, *14*(1), 6.

Appendix A
Burke-Litwin Causal Model

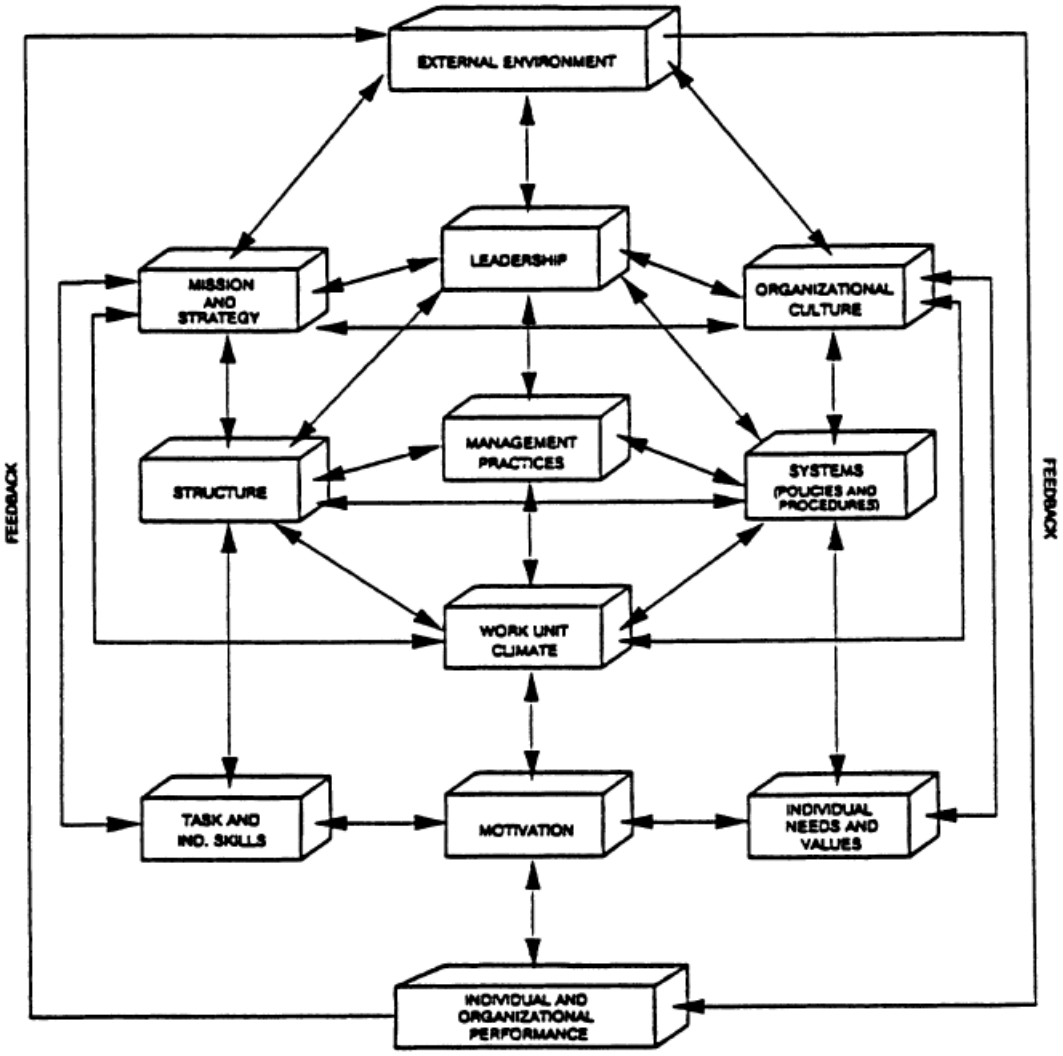


Figure 1. A model of organizational performance and change. Reprinted from "A Causal Model of Organizational Performance and Change," by W. W. Burke and G. H. Litwin, 1992, *Journal of Management, 18,* 528. Copyright 1992 by Southern Management Association.

Appendix B
XXX IRB Approval Letter

NON HUMAN RESEARCH DETERMINATION

June 25, 2018

Lauren Sutton. BSN

4118 Kalamazoo Ave SE
Grand Rapids, MI, 49508

SH IRB#: **2018-186**

PROTOCOL TITLE: **Utilization of a Functional Screening Tool for Diagnosis of Dementia in Home-Based Primary Care**

SPONSOR: Investigator

Dear Ms. Sutton,

On June 25, 2018, the above referenced project was reviewed. It was determined that the proposed activity does not meet the definition of research as defined by DHHS or FDA.

Therefore, approval by IRB is not required. This determination applies only to the activities described in the IRB submission and does not apply if changes are made. If changes are made and there are questions about whether these activities are research involving human subjects, please submit a new request to the IRB for a determination.

A quality improvement project may seek publication. Intent to publish alone is insufficient criterion for determining whether a quality improvement activity involves human subject research. However, please be aware when presenting or publishing the collected data that it is presented as a quality improvement project and not as research.

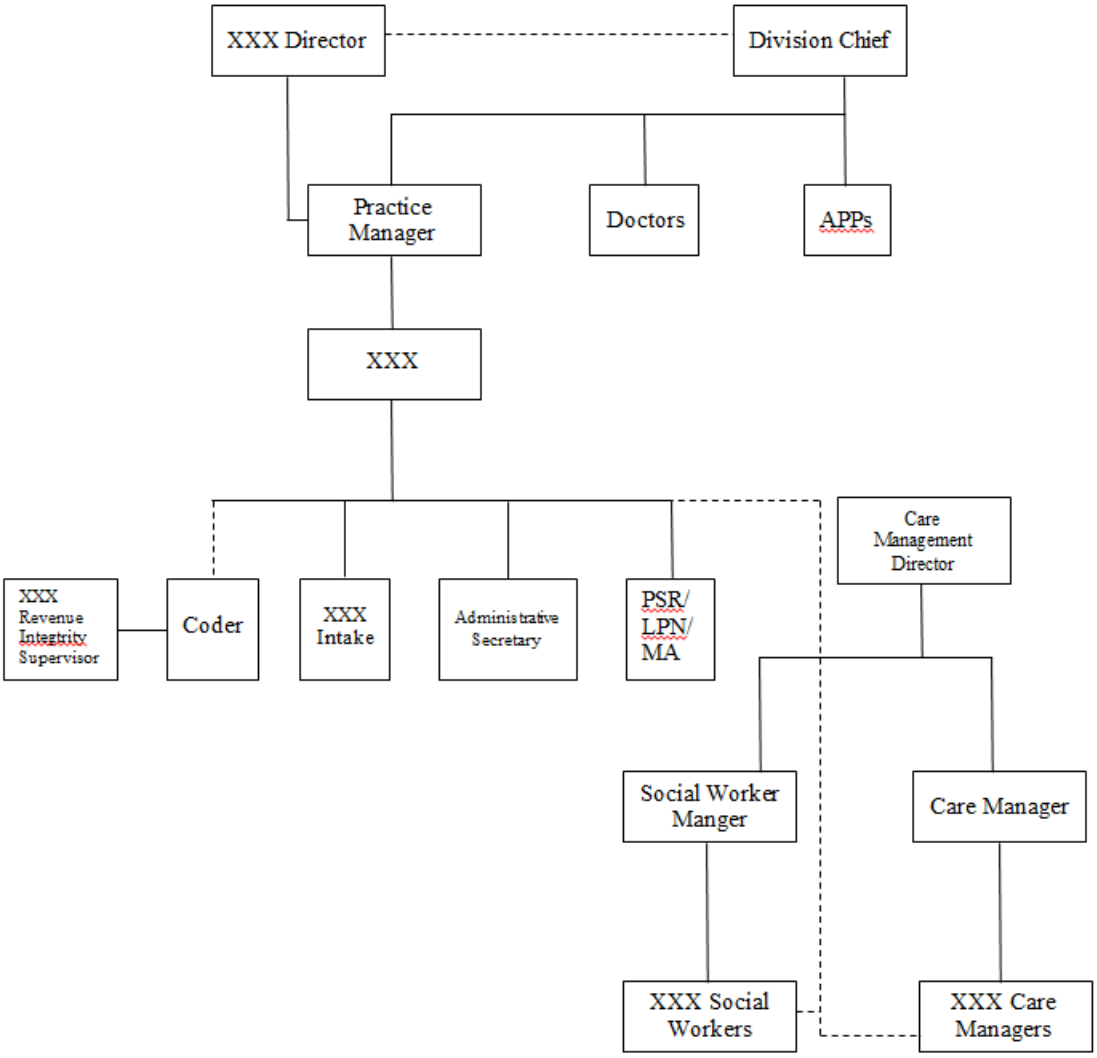
Please be advised, this determination letter is limited to IRB review. It is your responsibility to ensure all necessary institutional permissions are obtained prior to beginning this project. This includes, but is not limited to, ensuring all contracts have been executed, any necessary Data Use Agreements and Material Transfer Agreements have been signed, documentation of support from the Department Chief has been obtained, and any other outstanding items are completed (i.e. CMS device coverage approval letters, material shipment arrangements, etc.).

Your project will remain on file with the Office of the IRB, but only for purposes of tracking research efforts within the system. If you should have questions regarding the status of your project, please contact the Office of the IRB at (or email irb@ .org.

Sincerely,

cc: Quality Specialist

Appendix C
XXX Organizational Chart

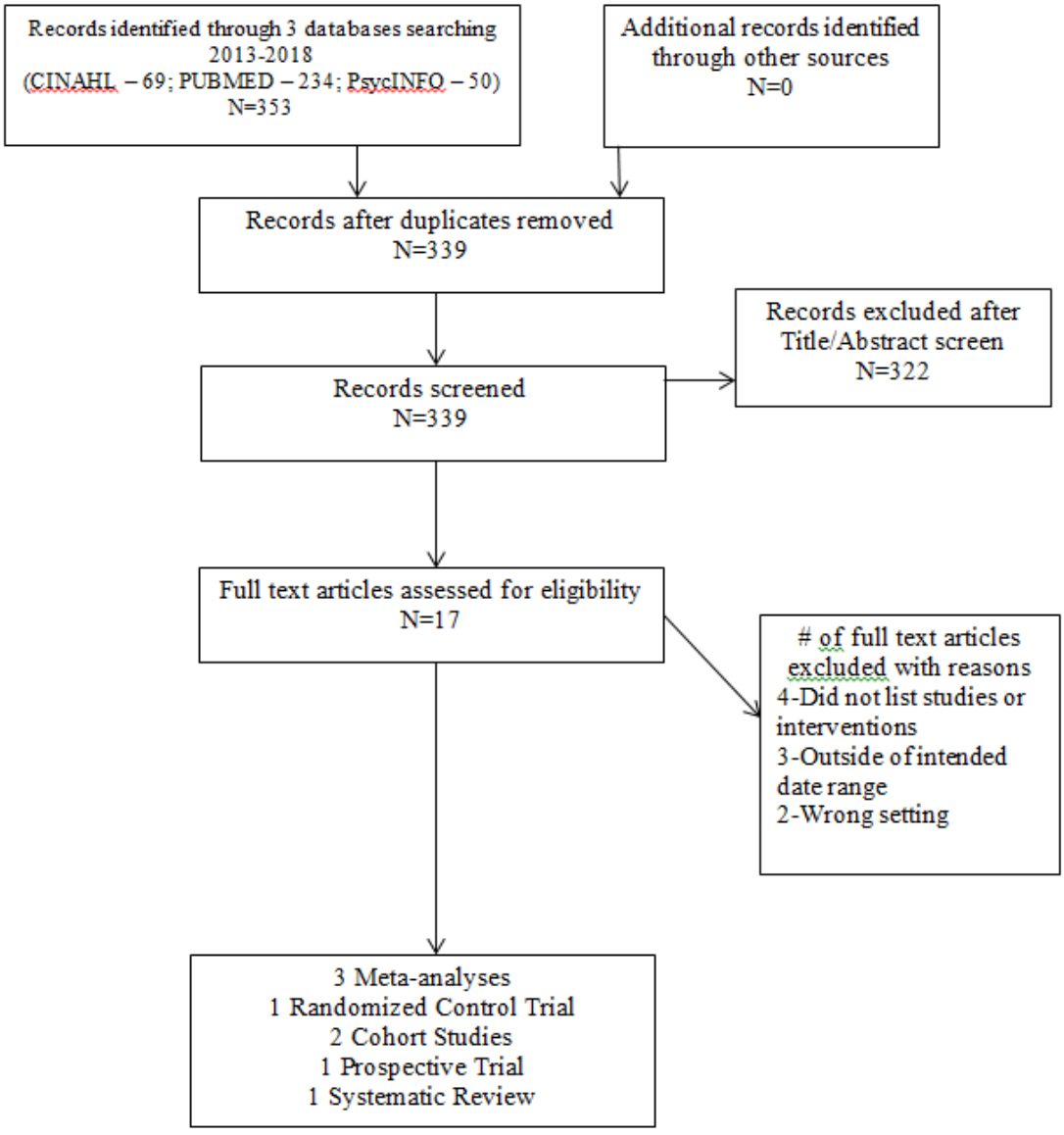


Appendix D
SWOT Analysis of XXX

Strengths	**Weaknesses**
• Key stakeholders: staff, management, and organizational leadership who are already passionate about the population and dementia screening. • Many resources available to support a seamless and successful transition. • All staff feels strongly about providing high quality care. • Practices within the office surrounding teamwork, improvement, and idea sharing.	• Very busy practice responsible for over 1500 patients. • Patient population has personal factors impeding success of screening tools. • Lack of an appropriate amount of time to accurately screen. • New staff members on orientation are perhaps not invested in screenings.
Opportunities	**Threats**
• Organization as a whole practices a culture of safety and high quality patient care. • Staff can inform patients and families of organizational goals and quality care. • Interdisciplinary collaboration is already well-established.	• Highly complex patients and needs leading to lack of time to accurately and completely screen patients. • Patient factors such as fear of diagnosis and stigma attached to diagnosis that results in an aversion to participating in the screening. • Provider cannot bill for dementia screening specifically. • Practice is not reimbursed for dementia screening services.

Appendix E

Flow of information through the different phases of the systematic review via PRISMA



Appendix F

Author, year, type, number of studies, intervention components, measure, and results of review

Author (Year) Purpose	Design (N)	Inclusion Criteria	Intervention vs Comparison	Results	Conclusion
Beauchet et al., 2016 To systematically examine the association of poor gait performance with the incidence of dementia.	Systematic review and Meta-Analysis	-Human study -Article published in English or French -Original Study -Data collection of gait performance -Dementia used as outcome -Prospective cohort design with information on the occurrence of dementia during the follow-up period	Assessed gait speed at usual pace, clinical gait abnormalities, falls, and problems with walking.	-Incidence of dementia during follow-up visits ranged from 6.5% to 52.9%. -All but 2 studies included found an associated between poor gait performance and occurrence of any dementia. -Gait disturbances were associated with the occurrence of vascular dementia, with the exception of one study.	This study provided evidence that poor gait performance is an indicator and predictor of the development of dementia. The association depends on the type of dementia. This exploration improves knowledge on the interaction of disorganization of brain functions with cognitive decline.
Carson, Leach, & Murphy, 2017 To determine the diagnostic accuracy of the MoCA for	Systematic review and Meta-Analysis	-Only included diagnostic validity studies examining MoCA -Studies diagnosed MCI	Data extracted was compiled and calculations were made to determine efficacy of MoCA, including: the sensitivity, specificity,	-Meta-analysis revealed a cutoff score of 23/30 yielded the best diagnostic accuracy. -Sensitivity	The MoCA is a widely used cognitive screening tool that has proven efficacious in the past. This study revealed that cutoff

differentiating healthy cognitive aging from MCI.		according to Peterson criteria (subjective memory complaint, impaired memory for age or education level, preserved general cognitive function, or no evidence of dementia) -Studies that diagnosed MCI with Alzheimer's Association criteria	positive predictive and negative predictive accuracy.	was highest for cutoff scores of 28, 29, and 30 (1.00) -Specificity was highest for the cutoff scores of 19 and 20 (0.98) -Positive predictive value was 0.79; indicating that 79% of individuals who achieve a score of lower than 23 are accurately diagnosed with MCI -Negative predictive value was 0.91; indicating that 91% of individuals who achieve a score of 23 or higher are diagnosed as cognitively healthy	score of 23 yields the highest diagnostic accuracy and therefore, that cutoff score should be used going forward.
Chow et al., 2018 To examine and compare the National Dementia Strategies of the 29	Meta-Analysis	-NDS stored within Alzheimer's Disease International -Current or most recent update to	-Framework conditions and key actions outline in the strategies -Years active -Involvement of stakeholders	-Major priorities included: increasing awareness of dementia, reducing the stigma	National Dementia Strategies exist in 29 countries and have common frameworks to improve care

countries involved by use of the Canadian government's policies to date.		published strategy -Strategies published in English or translated to English with an online translation service -Strategies that were publically available	-Funding -Implementation	surrounding the illness, identifying support services, improving the quality of care, and improving training and education while promoting further research. -Only 6 countries disclosed funding amounts: the United States received 156 million USD from the Obama administration, Australia received 200 million AUD, and France received 1.2 billion Euros. Other European countries with support were 105,000 Euros for Ireland, 85 million Euros for The Netherlands, and 1.5 million	of dementia patients.

				pounds annually for Wales.	
Hessler et al., 2014 To map the suitability of the Six Item Cognitive Impairment Test as a screening instrument for dementia in primary care and to assess its feasibility, reliability, and validity in a real-world setting.	Prospective Trial	-Members of the health insurance company with the largest market share -Reside in the district of Ebersberg -Age 55 and older	-Physical examination per general practitioner -Administration of the Six Item Cognitive Impairment Test (6CIT) -2, 4, and 6 year follow-up appointments were scheduled	-The mean 6CIT score was 2.7 -528 patients were diagnosed with dementia over the course of the study -Internal consistency was 0.52, 0.53, 0.54, and 0.58 for baseline examination, and the three follow-ups -Stability over time was 0.62 for all 2 year intervals -Concurrent validity results were ambiguous -6CIT cannot be recommended as a dementia screening instrument in primary care	6CIT is brief, highly feasible, not culturally biased, and free of charge. However, based on its psychometric properties it is not suited for routine use in a primary care setting. IN addition to its brevity, factors inherent to the routine cognitive screening in primary care limit its reliability and sensitivity.
Kvitting, Wimo, Johansson, & Marcusson, 2013 To validate	Cohort Study	-Patients seeking care in a primary care setting -Patients with no	Assessed performance of the AQT, MMSE, and CDT during an appointment in primary care.	-33 patients were found as having no objective cognitive impairment	AQT is a usable instrument for dementia diagnosis in a primary care

A Quick Test of Cognitive Speed (AQT) as an instrument in diagnostic dementia evaluations against the final clinical diagnosis and compare AQT with the Mini-Mental State Examination (MMSE) and Clock Drawing Test (CDT) in primary care.		history of dementia diagnosis -Patients with a stable psychiatric diagnosis and on unmodified antidepressant medications for 6 or more months were included -Patients who identify themselves as cognitively well-functioning in concurrence with assessment by their general practitioner		and 46 received a diagnosis of cognitive impairment: MCI 16, AD 12, mixed dementia 6, vascular dementia 5, Lewy body dementia 1, Parkinson's with dementia 1, and dementia of uncertain origin 2. -Sensitivity and specificity: MMSE 0.587 and 0.909, CDT 0.261 and 0.879, AQT 0.783 and 0.667 -Positive predictive values: MMSE 90%, CDT 75%, AQT 77% -AQT determined to be a usable test for diagnostic dementia evaluations in primary care	setting. In addition, AQT might be able to complement MMSE and be an alternative to CDT as a primary diagnostic tool.
Mukadam, Cooper, Nishin, &	Systematic Review	-Original research papers	Assessed for current interventions to	-Clinician education in primary care	Based on this review, the combination

Livingston, 2014 To systematically review the literature for interventions intended to increase the detection of dementia or suspected dementia or people presenting with memory complaints.		-Quantitative outcome reports that included one of the following: number of people presenting with memory complaints, number of people with new diagnoses, proportion of people accurately diagnosed, and the degree of cognitive impairment	diagnose dementia/cognitive impairment and the efficacy of the interventions.	interventions can increase the proportion of people in whom general practitioners suspect dementia. -Memory clinics provide a more timely diagnosis of dementia when compared to standard psychiatry practices. -Home visits by specialized geriatric nurses increases dementia diagnoses.	of education of primary care practitioners about dementia detection, and establishing specialist memory assessment services currently have the best but still very limited evidence for increasing detection of dementia at the earliest stage in the illness.
Van Den Dungen et al., 2016 To assess the effect of a two-component intervention of case finding and subsequent care on the diagnostic yeild and impact on mental health of patients and family	Cluster Randomized Controlled Trial	-Patients aged 65 and older -Patients without a formal diagnosis of dementia, but whom are suspected to have it -No patients with terminal illness -All patients must live at home and not be	-Two day accredited post-graduate training of practitioners in diagnosing dementia and mild cognitive impairment -Teaching about pharmacological and non-pharmacological management -Trained nurses assessed patients and referred to practitioners if MMSE score was	-After one year, more new diagnoses of MCI were found in the intervention group compared to the control group, but this difference was not statistically significant after adjustment	Did not find a significant increase in MCI and dementia diagnoses resulting from a combined educational, case finding and care intervention. Case finding did not seem to have impact on persons' mental health.

members.		expected to admit to a nursing home within 6 months	below average -Practitioner then administered further testing	for clustering -There was no difference in the number of new dementia diagnoses between the intervention and control group	
Walters et al., 2016 To develop and validate a 5-year dementia risk score derived from primary healthcare data	Cohort Study	-Patients aged 60-95 years old -Patients with no diagnosis of dementia, Parkinson's, Huntington's, or HIV -Patients with more than one year of data at current primary care setting -General practices in The Health Improvement Network (THIN) database	Analyzed data collected longitudinally during routine care including: consultations, symptoms, diagnoses, investigations, health measurements, prescriptions, surgical procedures, and referrals.	-In the development cohort, there was an incidence rate of 1.88/1000 person years at risk -In the validation cohort, there was an incidence rate of 15.08/1000 person years at risk -Dementia risk algorithm performed well for 60-79 year old, but not 80-95 year olds	Routinely collected health data can predict five year risk of recorded diagnosis of dementia in primary care for individuals aged 60-79 years, but not those aged 80 years or more.

Appendix G
Montreal Cognitive Assessment

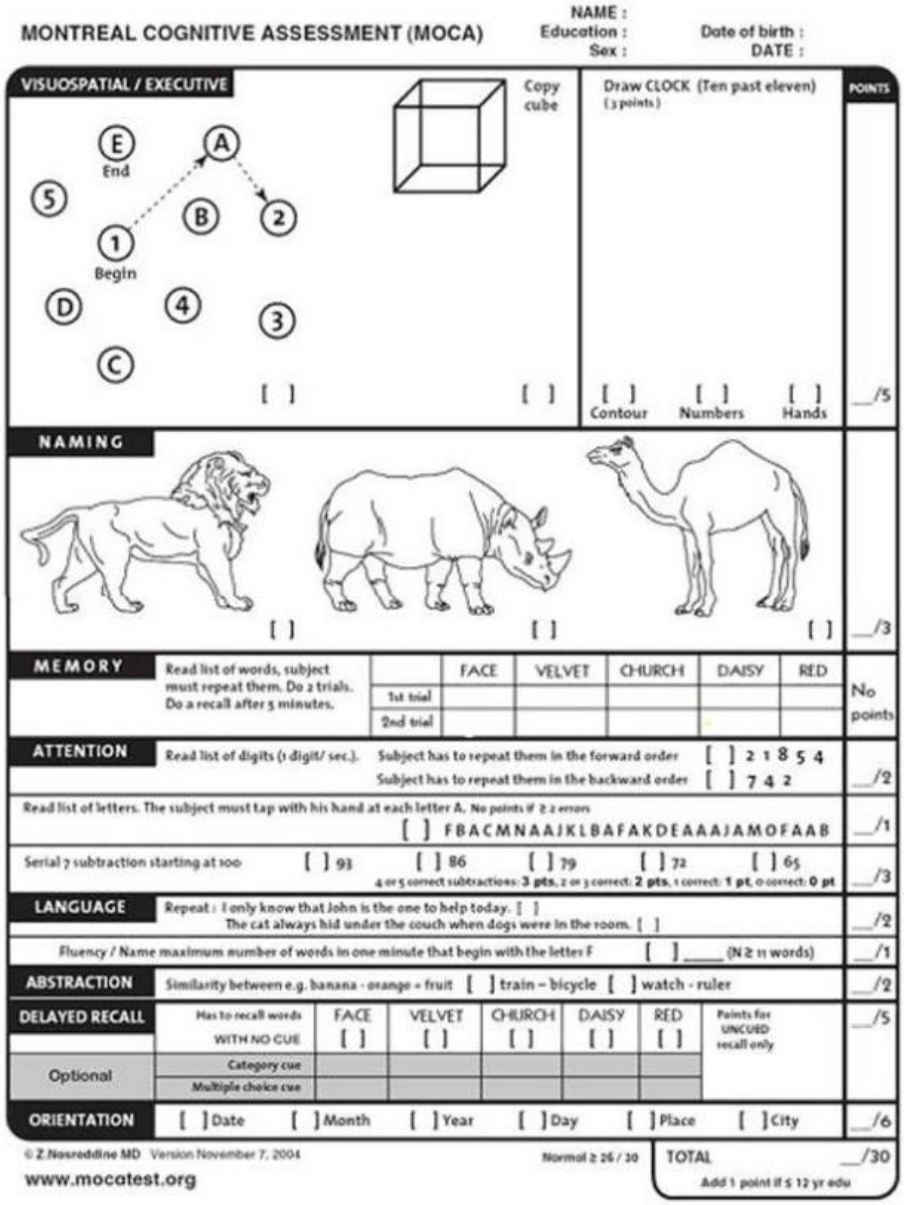
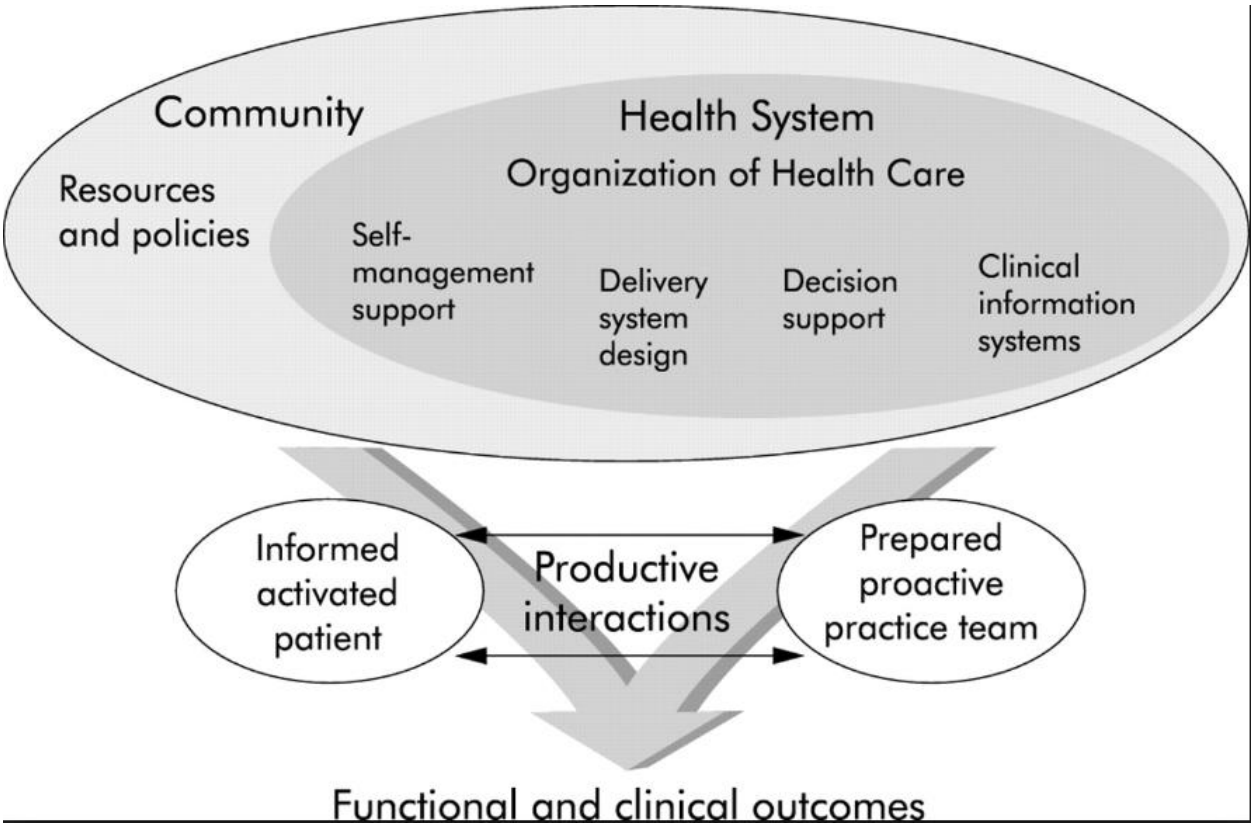


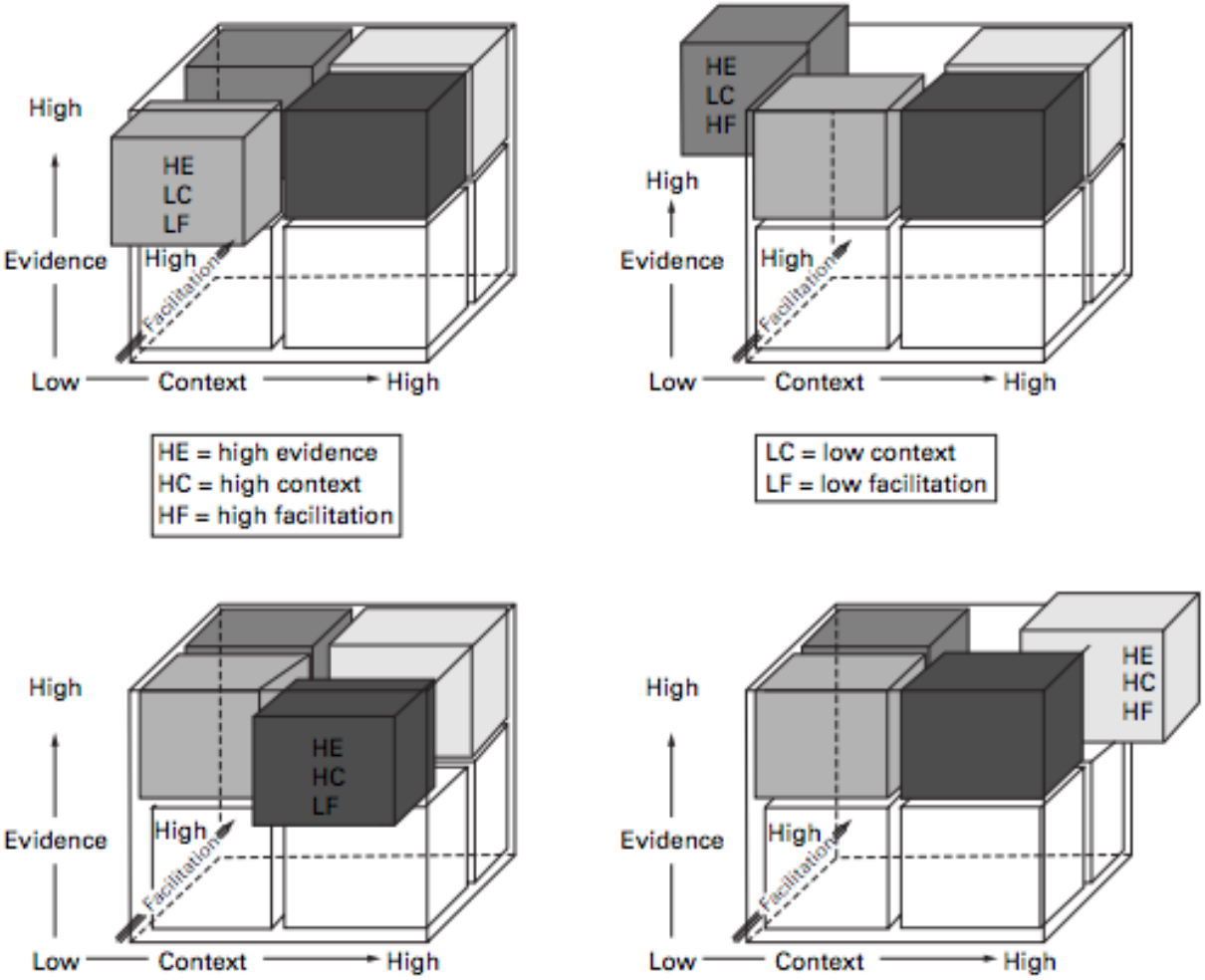
Figure 2. Montreal Cognitive Assessment. Reprinted from "Montreal Cognitive Assessment," P. Julayanont and Z.S. Nasreddine, 2014, *Journal of the American Geriatrics Society, 62*(4), 679-684.

Appendix H
Chronic Care Model



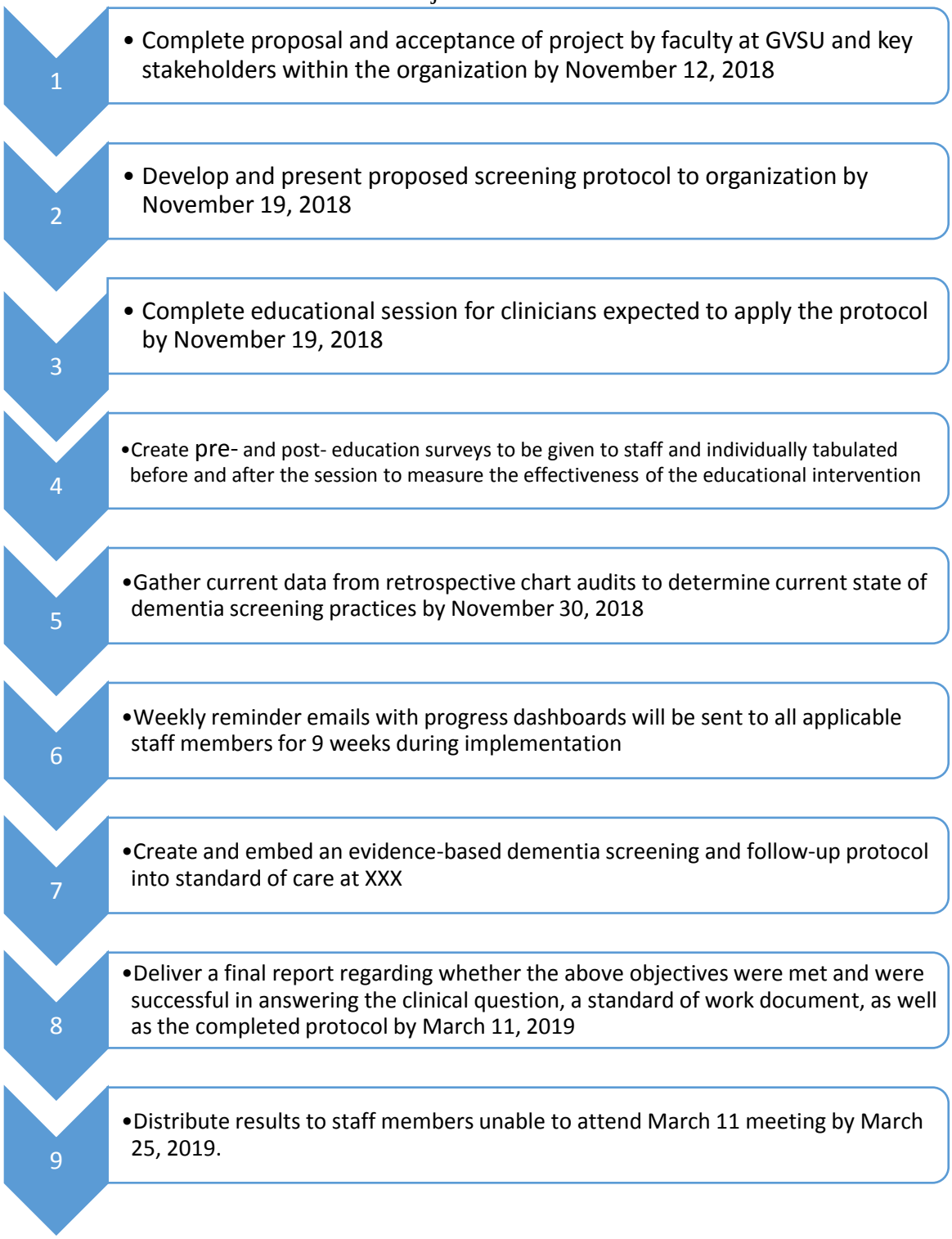
Adapted from "The Chronic Care Model," by E. Wagner, and Improving Chronic Illness Care Program. Copyright 1998 by Improving Chronic Illness Care.

Appendix I
Promoting Action on Research in Health Sciences (PARiHS) Framework



Implementation framework. Reprinted from "Enabling the implementation of evidence based practice: a conceptual framework," by A. Kitson, G. Harvey, & B. McCormack, 1998, *Quality in Health Care: QHC, 7*, p. 149-158. Copyright 1998 by Quality in Health Care.

Appendix J
Project Timeline



Appendix K
Budget for DNP Project

Initial Cost: Utilization of a Screening Tool to Improve the Diagnosis of Dementia in a Home-Based Primary Care Setting	
Revenue	
Project Manager Time (in-kind donation)	$2,511.00
Statistician (in-kind donation)	$100.00
Neurologist (in-kind donation)	$7,020.00
Total Income	$9,631.00
Expenses	
Supplied	$17.00
Project Manager Time (in-kind donation)	$2,511.00
Statistician (in-kind donation)	$100.00
Team member time:	
Educate providers, nurses, social workers, and medical assistants (time spent during 60 minute session)	$1,888.00
Total Expenses	$4,516.00
OPERATING INCOME	$5,115.00

Appendix L
Data Collection Table

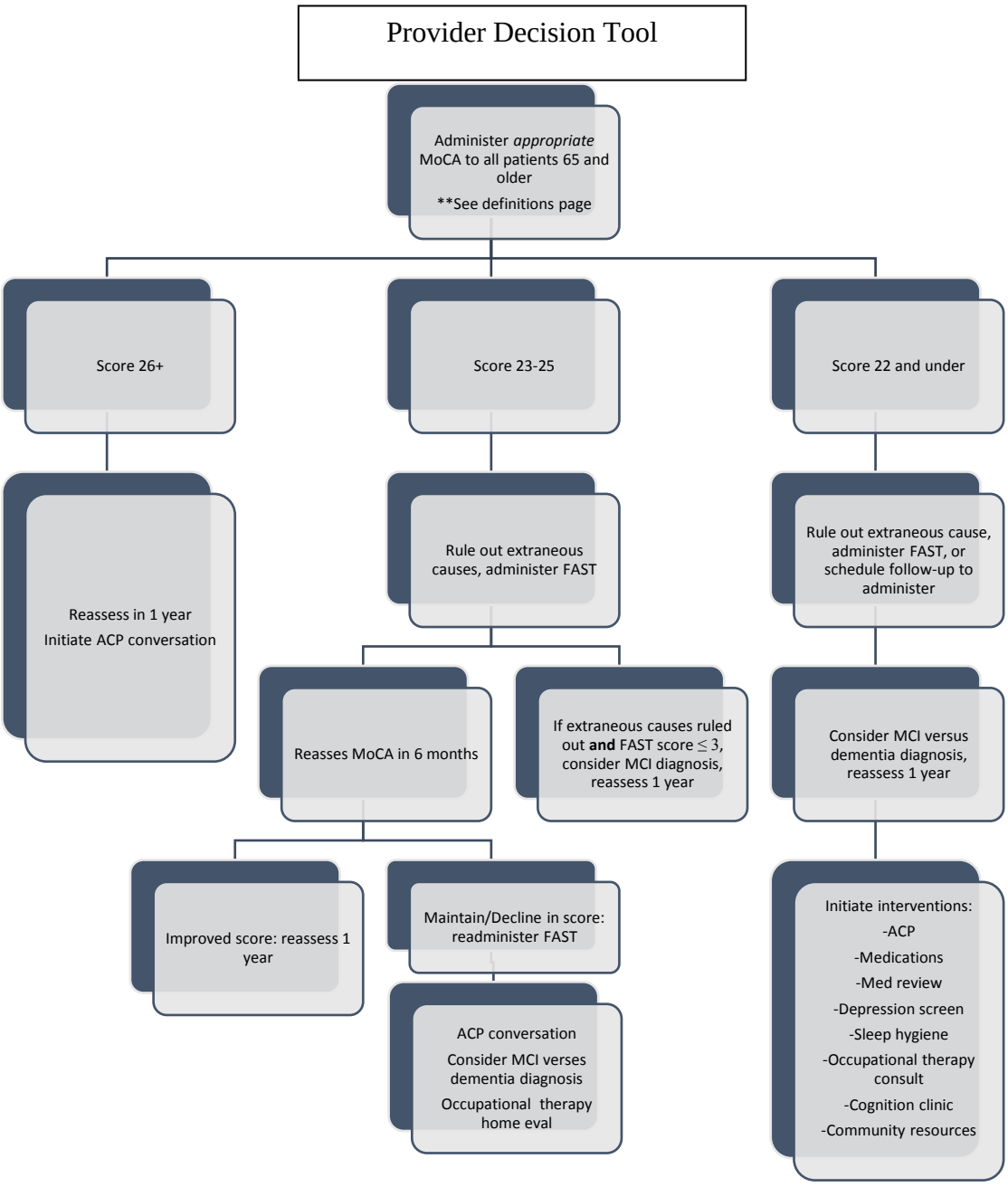
Objective	Data Variable	Type of Data	Analysis	Collection
1	Age in years at first MoCA screen >65	1=Yes, 2=No, 3=NA	Descriptive	Manual collection by doctoral student via electronic health record
1	Age in years at diagnosis of dementia >65	1=Yes, 2=No, 3=NA	Descriptive	Manual collection by doctoral student via electronic health record
1	MoCA completed at first visit	1=Yes, 2=No, 3=NA	Descriptive	Manual collection by doctoral student via electronic health record
1	Date of first MoCA within first year of care at practice	1=Yes, 2=No, 3=NA	Descriptive	Manual collection by doctoral student via electronic health record
1	Dementia diagnosis at pre-enrollment	1=Yes, 2=No, 3=NA	Descriptive	Manual collection by doctoral student via electronic health record
8	Dementia diagnosis at post-enrollment	1=Yes, 2=No, 3=NA	Descriptive	Manual collection by doctoral student via electronic health record
8	FAST completed	1=Yes, 2=No, 3=NA	Descriptive	Manual collection by doctoral student via electronic health record
8	Follow-up care initiated	1=Yes, 2=No, 3=NA	Descriptive	Manual collection by doctoral student via electronic

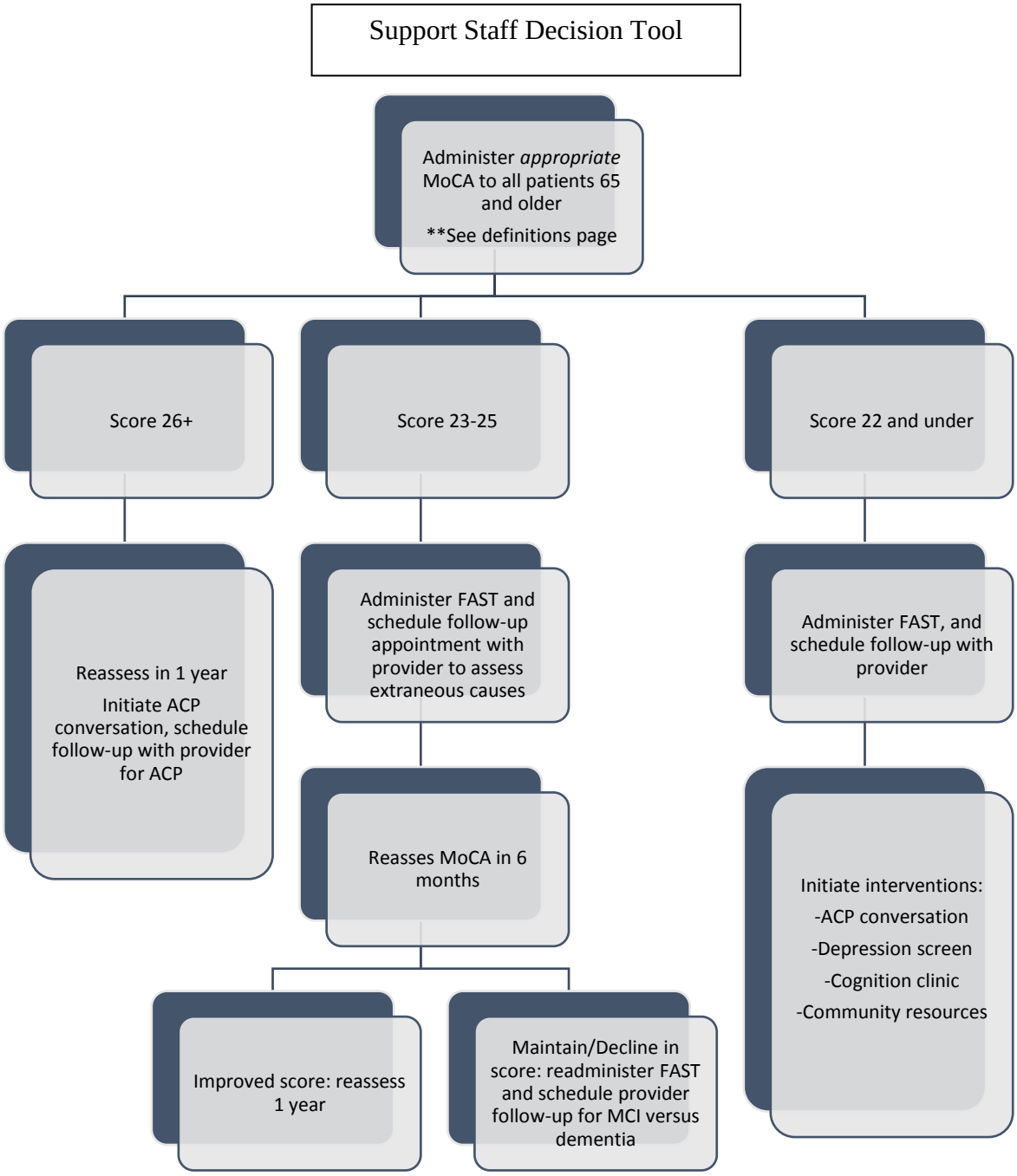
				health record
7	Role of clinician administering protocol	Descriptive	Descriptive	Manual collection by doctoral student via electronic health record
7	If clinician not able to diagnose dementia (MA, SW, RN), follow-up appointment set with provider	1=Yes, 2=No, 3=NA	Descriptive	Manual collection by doctoral student via electronic health record
7	MoCA score pre implementation	Score	Descriptive	Manual collection by doctoral student via electronic health record
7	MoCA score post implementation	Score	Descriptive	Manual collection by doctoral student via electronic health record

Appendix M
Data Collection Key

Dementia Screening Protocol Data Collection Tool			
SAS Descriptor Code	**Data Description**	**Data Code**	**Type of Data**
Ag_moc	Age in years at first MoCA screen ≥ 65	1=Yes, 2=No, 3=N/A	Numeric
Ag_dia	Age in years at diagnosis of dementia/cognitive impairment ≥ 65	1=Yes, 2=No, 3=N/A	Numeric
Mo_fir	MoCA completed at first visit	1=Yes, 2=No, 3=N/A	Numeric
Mo_da	Date of first MoCA within first year of care at practice	1=Yes, 2=No, 3=N/A	Numeric
Diag_1	Dementia/cognitive impairment diagnosis at pre-enrollment	1=Yes, 2=No, 3=N/A	Numeric
Diag_2	Dementia/cognitive impairment diagnosis at post-enrollment	1=Yes, 2=No, 3=N/A	Numeric
Fas_co	FAST completed	1=Yes, 2=No, 3=N/A	Numeric
Fol_up	Follow-up care initiated	1=Yes, 2=No, 3=N/A	Numeric
Clin_ro	Role of clinician administering protocol	Clinician Title	Descriptive
Fol_pr	If clinician not able to diagnose dementia (MA, SW, RN), follow-up appointment set with provider	1=Yes, 2=No, 3=N/A	Numeric
Mo_pre	MoCA score pre (if any)	Score	Numeric
Mo_post	MoCA score post	Score	Numeric

Appendix N
Final Protocol




Support Staff Decision Tool
Administer *appropriate* MoCA to all patients 65 and older
**See definitions page
Score 26+
Score 23-25
Score 22 and under
Reassess in 1 year
Initiate ACP conversation, schedule follow-up with provider for ACP
Administer FAST and schedule follow-up appointment with provider to assess extraneous causes
Administer FAST, and schedule follow-up with provider
Reasses MoCA in 6 months
Initiate interventions:
-ACP conversation
-Depression screen
-Cognition clinic
-Community resources
Improved score: reassess 1 year
Maintain/Decline in score: readminister FAST and schedule provider follow-up for MCI versus dementia

Definitions

- MoCA: Montreal Cognitive Assessment
    - A rapid screening instrument for mild cognitive dysfunction
    - Total possible score = 30; a score of 26 and above is considered normal
    - A score of 23 yields the highest dementia diagnostic accuracy
    - *MoCA will be administered at initial visit with the practice, annually, and/or when clinically indicated*
- *Appropriate* MoCA
    - Choose the MoCA test below that best suits the needs of your patient, *please note scoring system varies.*
        - MoCA Test Full: complete and original version of the test; scoring listed in decision tool
        - MoCA Test Basic: testing for those who are illiterate or with low education (< 5 years); total scoring is out of 30. *Note the scoring is the same as the MoCA Full; please follow above decision tool.*
        - MoCA Test Blind: comprised of the same elements from MoCA Full, but without the visual items; total scoring is out of 22. *A score of 18+ is considered normal, and should correlate to a score of 26+ on the decision tool. Scores under 18 have not been well validated. These scores should be considered with findings from the FAST and clinical judgement to determine if an abnormality exists. If a score under 18 is given, the clinician should proceed with the column "score 22 and under" on decision tool.*
- Clinical Indication
    - A sign, circumstance, or condition which makes a particular treatment advisable
    - Including, but not limited to: memory concerns (from patient or family), personality changes, depression, deterioration of chronic disease without explanation, falls, balance issues, Medicare beneficiaries (as part of Annual Wellness Visit).
- Extraneous Causes
    - Inorganic/organic sources causing cognitive impairment that when addressed have the potential to improve MoCA score
    - Includes: depression, polypharmacy or medication reaction, sleep deprivation, acute illness, metabolic and/or endocrine dysfunction, and delirium.
- Mild Cognitive Impairment
    - Stage between expected cognitive decline of normal aging and the more serious decline of dementia, can be diagnosed with abnormal MoCA + normal FAST
    - EPIC diagnosis: mild cognitive impairment, ICD-10 Code: G31.84
- Dementia

  - General term used to diagnose the loss of cognitive functioning and behavioral abilities to such an extent that it interferes with a person's daily life and activities
  - EPIC diagnosis: Dementia, ICD-10 Code: F03.90
- FAST: Functional Assessment Staging Tool
  - An efficient questionnaire intended to be used as a precursor to comprehensive functional assessments and identify functional declination while determining severity of dementia
  - When used in conjunction with the MoCA, a definitive diagnosis of dementia can be applied
  - Should be administered to several individuals who interact with the patient frequently (family, caregivers)
  - Measures both ADLs and iADLs
  - If a functional decline or change is identified, the MoCA score is lower than 26, and extraneous causes are ruled out, the provider may diagnose dementia
  - If the MoCA score is normal, but the FAST is abnormal – a diagnosis of mild cognitive impairment may be given
- Depression Screen
  - PHQ9: Patient Health Questionnaire
  - Succinct tool used to identify those at risk of/currently experiencing symptoms of depression
  - Final depression diagnosis should be made with clinical interview and mental status examination
  - Scoring:
    - 0-4: Minimal, monitor; may not require treatment
    - 5-9: Mild, use clinical judgement to determine treatment
    - 10-14: Moderate, use clinical judgement to determine treatment
    - 15-19: Moderately severe, warrants active treatment with psychotherapy, medications, or combination
    - 20-27: Severe, warrants active treatment with psychotherapy, medications, or combination
- Sleep hygiene
  - A variety of practices and habits necessary to have good nighttime sleep quality and full daytime alertness
  - Practices include:
    - Limit daytime naps to 30 minutes
    - Avoid stimulants such as caffeine and nicotine close to bedtime
    - Exercise
    - Avoid heavy, rich, fried, fatty, spicy foods and carbonated drinks close to bedtime

        - Ensure adequate exposure to natural light
        - Establish bedtime routine (bathing, reading, light stretches/range of motion)
        - Pleasant sleep environment (dim lighting, turn off cell phone/television, consider curtains, ear plugs, fans, humidifiers, set comfortable temperature to room)
- Cognition clinic
    - Multidisciplinary team which includes specialists in neurology, neuropsychology, pharmacy, and social work; expertise in diagnosis and management
    - Referral should be considered if unable to manage condition in primary care or patient/family wants to pursue further workup and diagnosis
- Community resources
    - Religious institutions
    - Area Agency on Aging of Western Michigan
    - Support groups
    - Day programs
    - Exercise programs
- Medications
    - Cholinesterase Inhibitors (Donepezil, Rivastigmine, and Galantamine)
    - NMDA Receptor Antagonist (Memantine)
        - May use in combination with cholinesterase inhibitor in advanced disease

        May defer to cognition clinic for medication management

Seq. No	Task Description:	Key Point / Image / Measure (what good looks like)	Who	Cycle Time mm:ss
1.	Identify need for dementia screening	Need for dementia screening is based on clinical indication, upon initial visit within the practice, and annually. Assessments are limited to those 65 and older, unless otherwise indicated by patient condition.		
2	Administer Montreal Cognitive Assessment (MoCA)	Administer MoCA once need is identified, if time allows. If time is a barrier, schedule follow-up appointment as soon as possible to dedicated to completion of screening. • Administer MoCA • Determine score • A score of 26 and above is considered a normal exam • A score of 23-25 warrants further assessment and consideration, *see decision tool* • A score of 22 and below warrants further assessment, *see decision tool* • **These scores should be adjusted based on MOCA utilized (i.e. blind MOCA)		

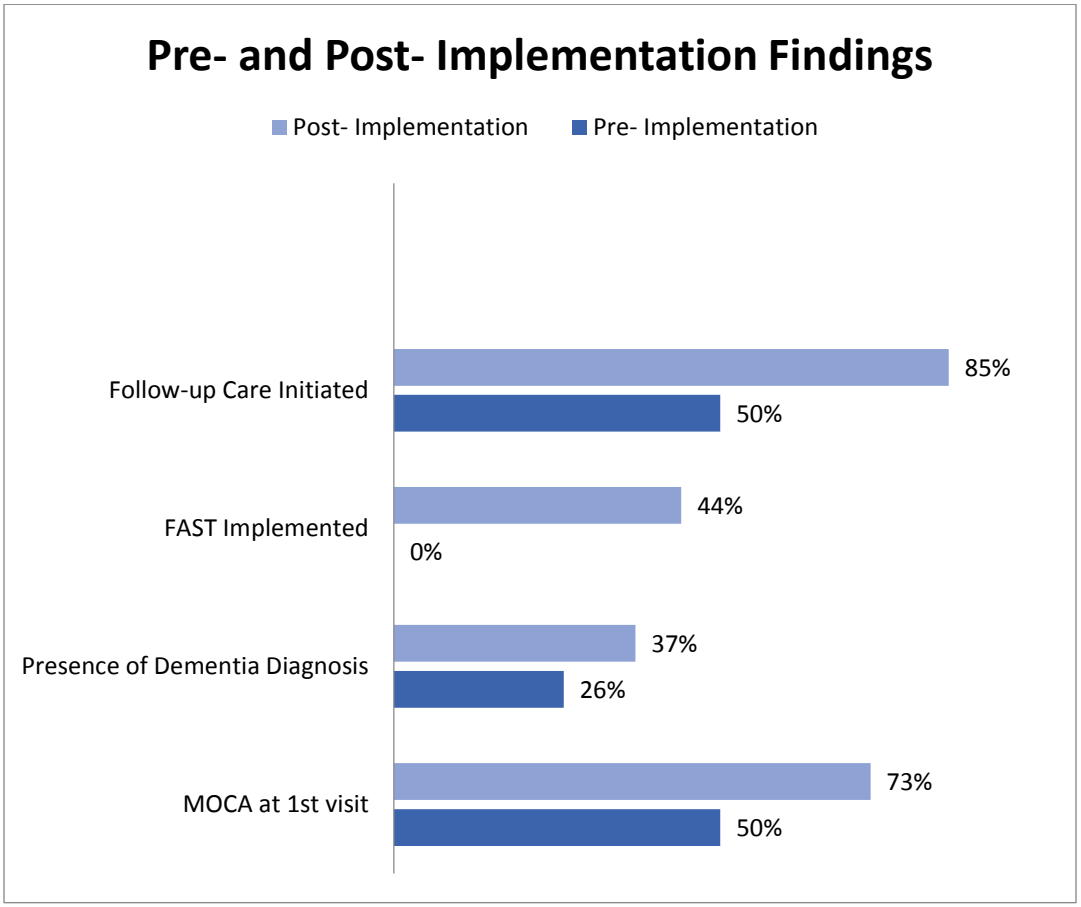
3	Identify next step based on score given	**Provider**
		• Score 26+: reassess MoCA in one year, initiate advanced care planning
		• Score 23-25: rule out extraneous causes (*see definition sheet)* and address as necessary
		  ○ Reassess in 6 months; if score improves, reassess annually. If score declines or maintains:
		  ○ Administer FAST (*see step 4)*, consider diagnoses, initiate advanced care planning, consider occupational therapy consult for home safety evaluation
		• Score 22 and under
		  ○ Rule out extraneous causes, administer FAST (at current visit, or scheduled follow-up if family is not available)
		  ○ Consider diagnosis based on cognitive AND functional decline, initiate interventions *(see decision tool)*
		
		Social work, nursing, medical assistant
		• Score 26+: reassess in one year, initiate ACP conversation and schedule follow-up with provider for ACP visit
		• Score 23-25: schedule follow-up appointment for provider assessment, reassess in 6 months or as determined by provider		

Seq. No	Task Description:	Key Point / Image / Measure (what good looks like)	Who	Cycle Time mm:ss

		• Score 22 and under: administer FAST (at current visit, or scheduled follow-up if family is not available)
		  ○ Schedule follow-up with provider
		  ○ Initiate interventions: *see decision tool*		

4	Administer Functional Analysis Screening Tool (FAST)	Administer FAST to identify any functional decline. Once identified, interventions can be targeted to area of most need. 1. If family/caregiver is present, administer screening. If not present, schedule follow-up visit with family/caregiver. 2. Scoring: circle the number of questions answered "yes" and total 3. Based on the area of need identified in scoring box, determine further interventions as appropriate		
5	Diagnosis and follow-up	**<u>Provider</u>** Diagnosis may be given if MoCA screen shows cognitive dysfunction, *and* FAST shows some functional/behavioral decline, or based on clinical decision-making. • If either mild cognitive impairment or dementia are suspected/confirmed, diagnosis must be entered into electronic health record • Schedule follow-up care, referrals, and appointments based on need **<u>Social Work, Nursing, Medical Assistant</u>** • Refer to provider to diagnosis • Initiate follow-up care as appropriate within scope of practice		

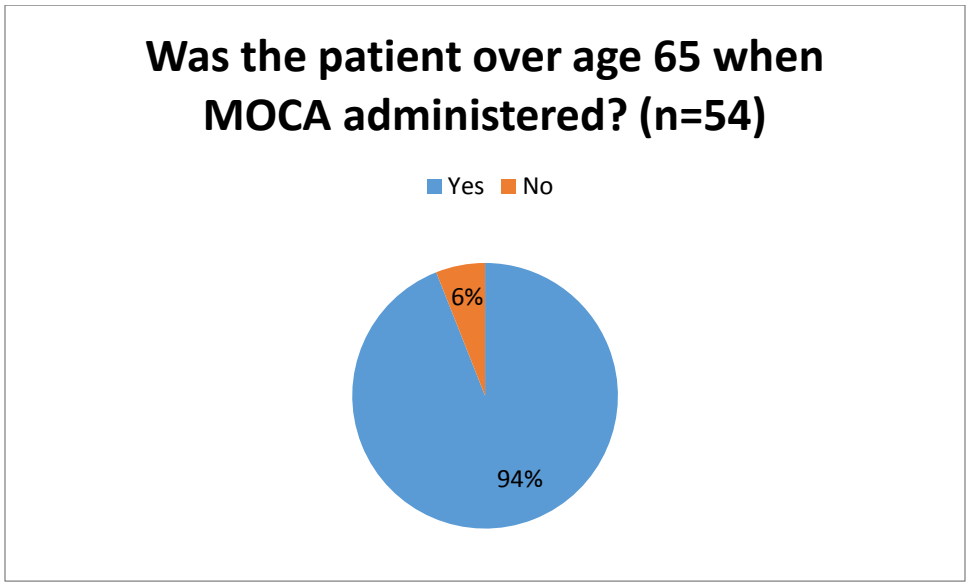
Appendix O
Data Output (n=54)

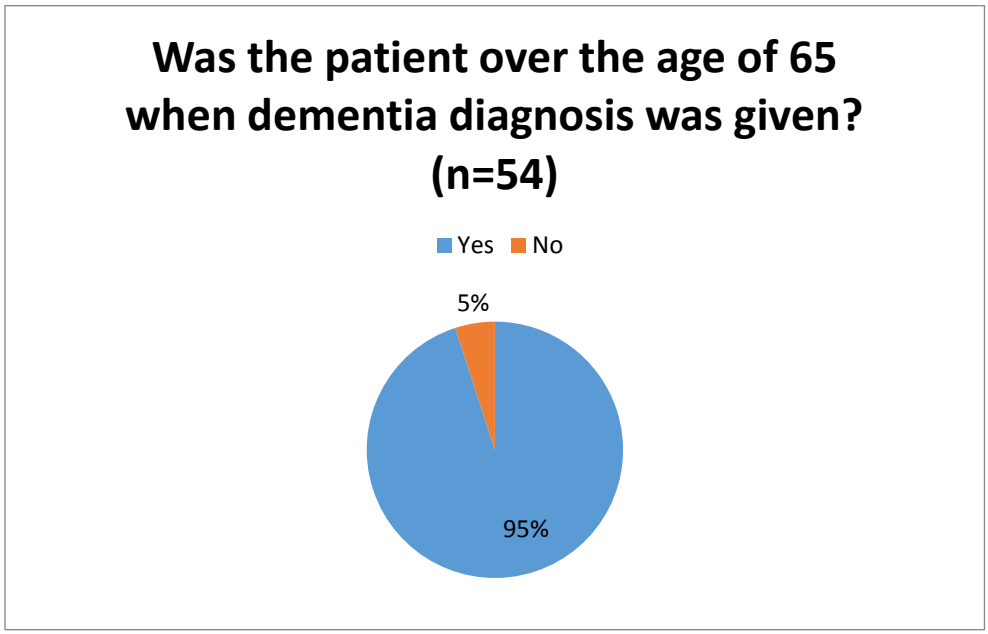


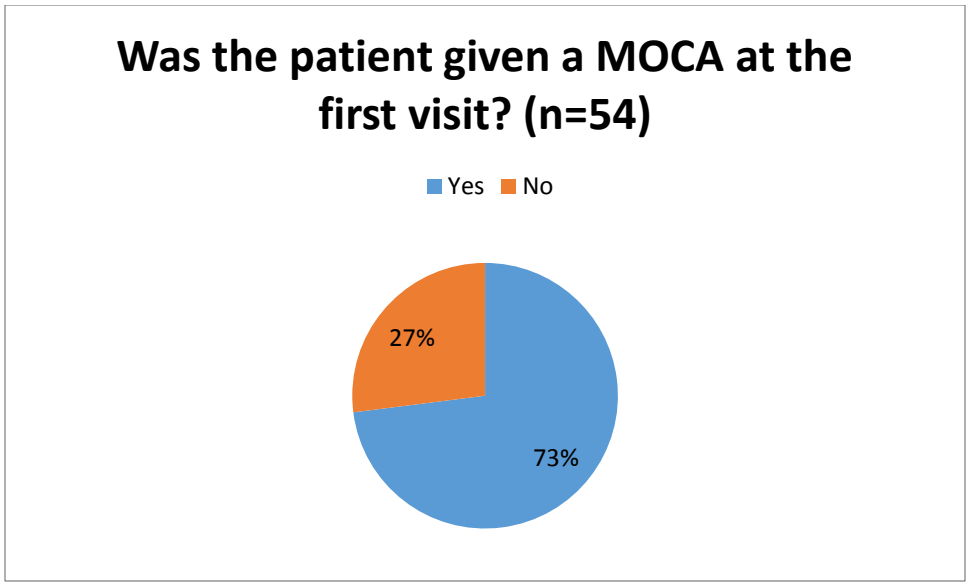
McNemar's Test	
Statistic (S)	6.0000
DF	1
Pr > S	0.0143

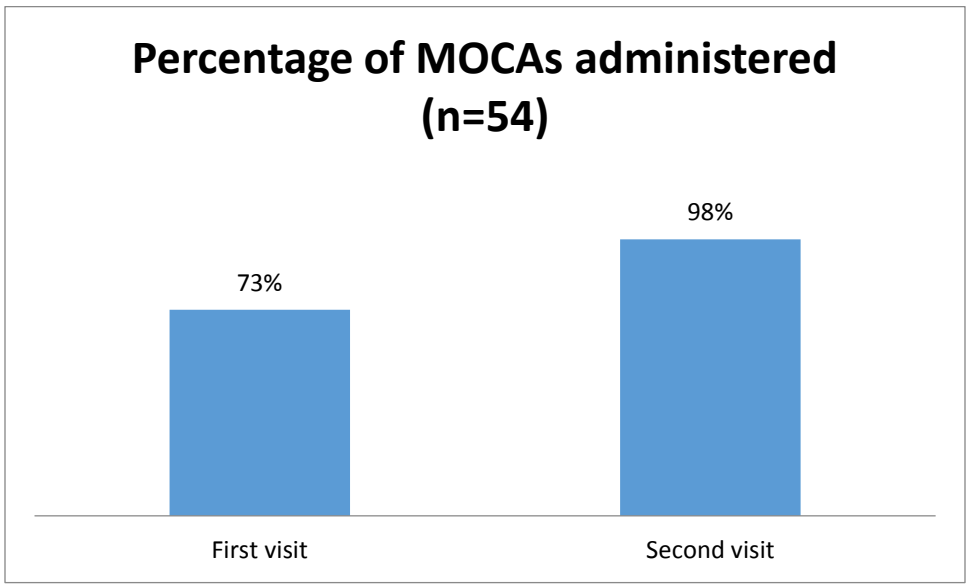
Table of mo_pre2 by mo_post2			
mo_pre2	**mo_post2**		
Frequency **Percent** **Row Pct** **Col Pct**	**Moca documented**	**Moca not documented**	**Total**
Moca documented	9 16.67 75.00 21.43	3 5.56 25.00 25.00	12 22.22
Moca not documented	33 61.11 78.57 78.57	9 16.67 21.43 75.00	42 77.78
Total	42 77.78	12 22.22	54 100.00

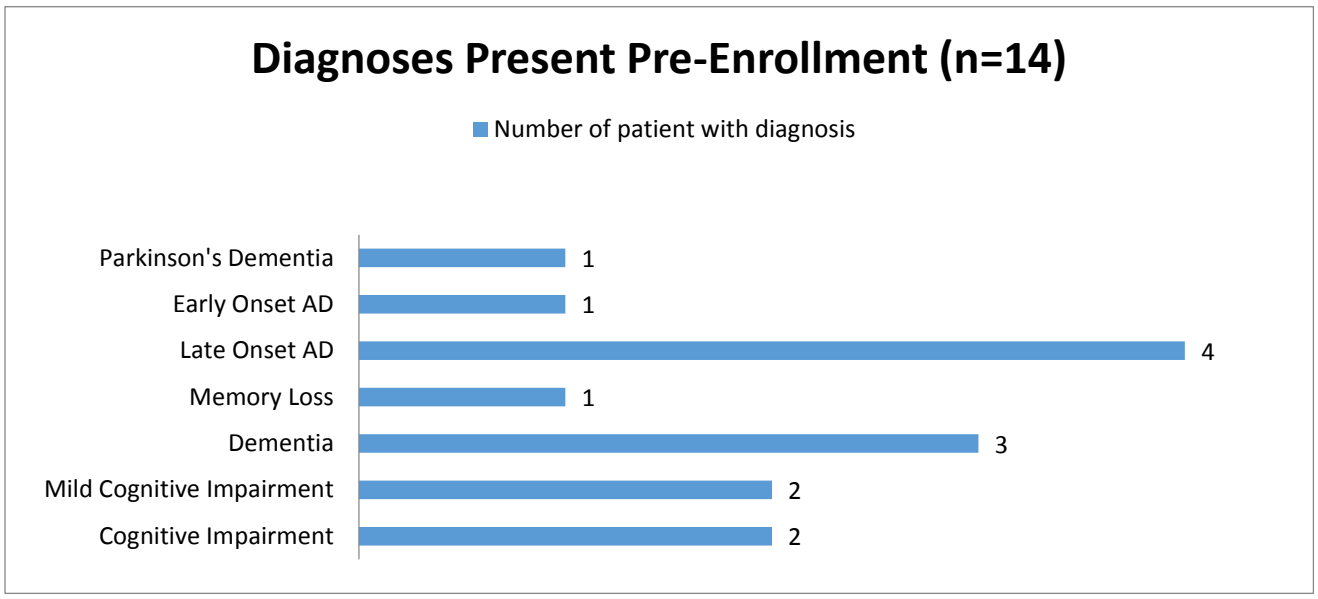
Appendix P
Data Tables (n=54)



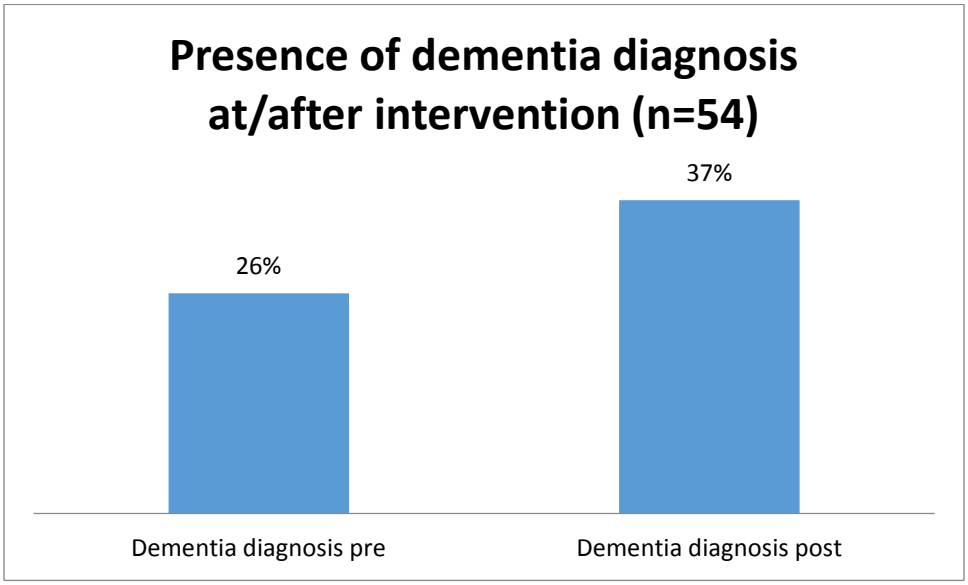


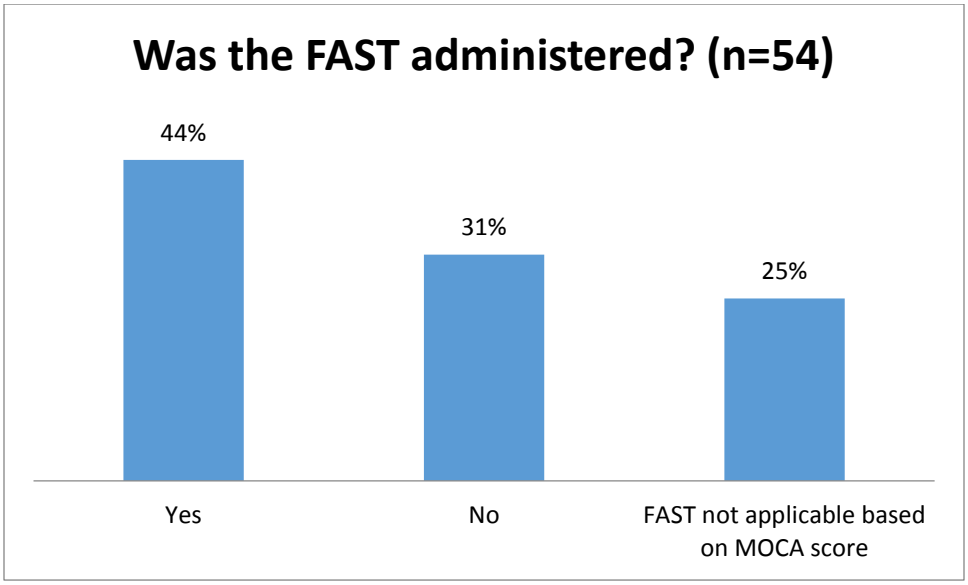

Was the patient given a MOCA at the first visit? (n=54)
Yes
No
27%
73%

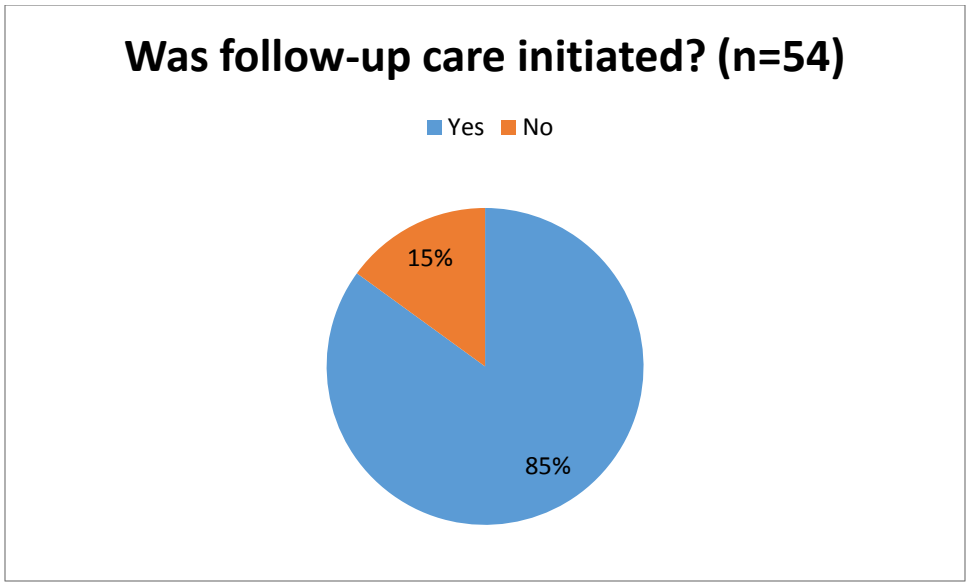

Percentage of MOCAs administered (n=54)
73%
98%
First visit
Second visit

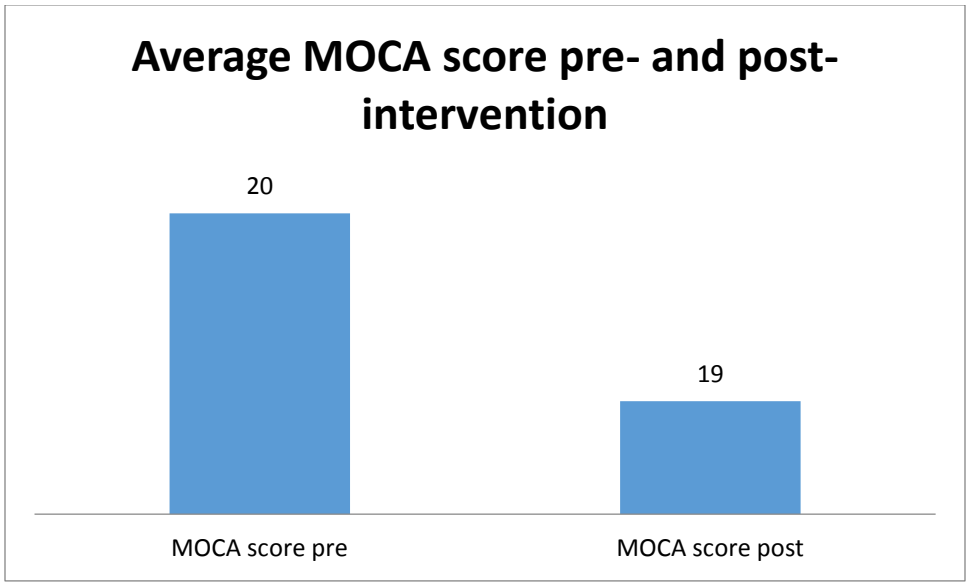


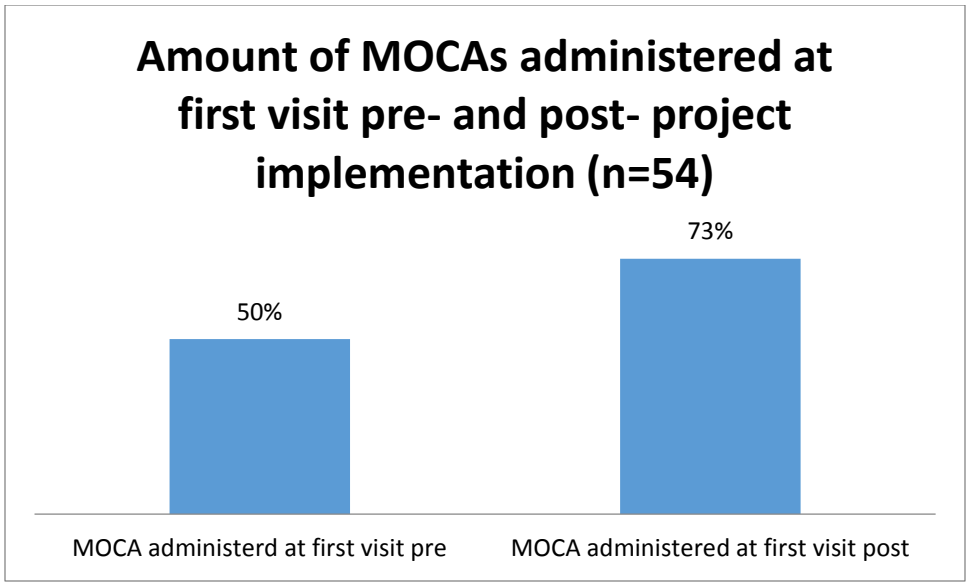
Problem List Pre-Enrollment	Change Post Enrollment	MOCA Pre-Enrollment	MOCA Post-Enrollment	FAST Score
Cognitive Impairment	No	NA	26	NA
MCI	No	15	19	NA
Dementia	No	NA	7	6d
Alzheimer's Disease, Late Onset	No	20	4	4
Memory Loss	No	14	14	NA
Alzheimer's Disease, Late Onset	No	18	16	5
Parkinson's Dementia	No	NA	17	5
Alzheimer's Disease, Late Onset	No	NA	15	4
Alzheimer's Disease, Late Onset	No	NA	NA	6d
Dementia	No	NA	2	6c
MCI	No	24	23	4
Dementia	No	23	23	6d
Alzheimer's Disease, Early Onset	No	NA	NA	7a
Cognitive Impairment	No	9	NA	NA

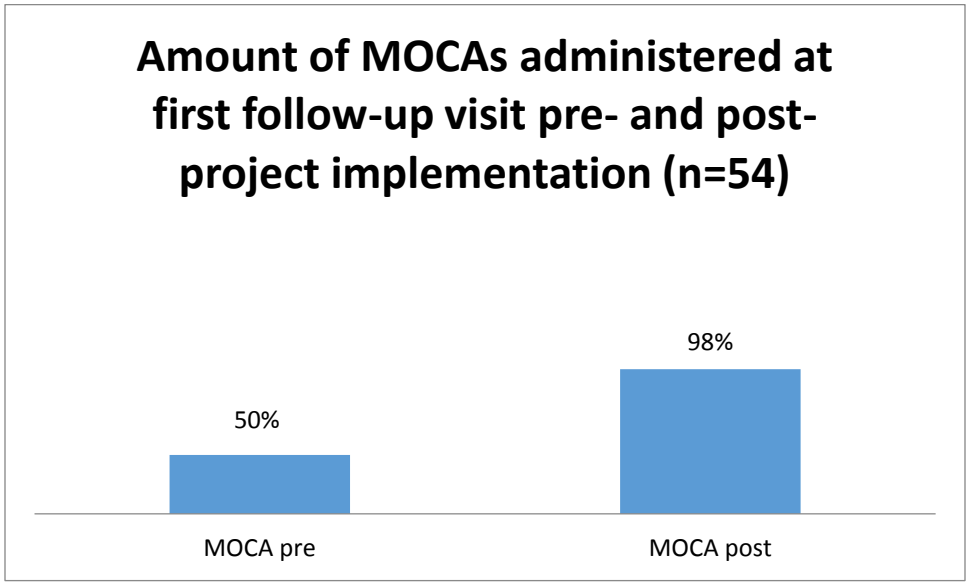

Presence of dementia diagnosis at/after intervention (n=54)
26%
37%
Dementia diagnosis pre
Dementia diagnosis post


Was the FAST administered? (n=54)
44%
31%
25%
Yes
No
FAST not applicable based on MOCA score


Was follow-up care initiated? (n=54)
Yes
No
15%
85%


Average MOCA score pre- and post-intervention
20
19
MOCA score pre
MOCA score post


Amount of MOCAs administered at first visit pre- and post- project implementation (n=54)
50%
73%
MOCA administerd at first visit pre
MOCA administered at first visit post


Amount of MOCAs administered at first follow-up visit pre- and post- project implementation (n=54)
50%
98%
MOCA pre
MOCA post

Implementation of an Evidence Based Screening Protocol to Improve the Diagnosis of Dementia in a Home-Based Primary Care Setting

Lauren Sutton
DNP Project Final Defense
April 8, 2018

Grand Valley State University, Kirkhof College of Nursing

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- Advisor
  - Dianne Conrad, DNP, RN, FNP-BC, BC-ADM, FNAP
- Advisory Team
  - Iris Boettcher, MD, CMD
  - Rebecca Davis, PhD, RN, MSN
- Connie Mahon, practice manager
- Mark Holcomb, Director of Operations
- Timothy Thoits, MD, Division Chief: Neurology

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Objectives for Presentation

1. Review the practice problem
2. Review the evidence based solutions
3. Introduce and discuss developed protocol
4. Review limitations and recommendations

Introduction

- Dementia is a universally acknowledged public health concern
- 46.8 million people worldwide were diagnosed with dementia in 2015 (Chow et al., 2018)
- This number is expected to double every 20 years (Chow et al., 2018)
- Economic impact: estimated global cost in 2015 was $818 billion (Chow et al., 2018)
- By 2050, dementia related Medicare spending is set to surpass $1 trillion (Chow et al., 2018)

Introduction Continued

- Current state:
  - Diagnoses are delayed due to poor motivation, lack of time, provider confidence and lack of expertise
  - Need for heightened provider suspicion and knowledge to screen and diagnose dementia early and implement interventions
- A screening protocol:
  - Improves diagnostic accuracy and timeliness of diagnosis
  - Allows for appropriate referrals and advanced care planning
  - May improve long term patient outcomes
    - Decrease morbidity and mortality, mitigate functional decline, address loss of independence and isolation, improve quality of life and mental health, and delay admission to care facilities

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Assessment of Organization

- Organizational assessment was completed between May and August 2018
- Assessment included:
  - Geriatrics and home-care groups who provide care in assisted living, long-term care, rehabilitation facilities, clinics, and patient homes
  - 54 staff members (physicians, NPs, PAs, LPNs, RNs, MAs, social workers, secretary, practice manager, supervisor, biller, patient services representatives)
  - The office provides care to 2,144 total patients (XXX, 2018)

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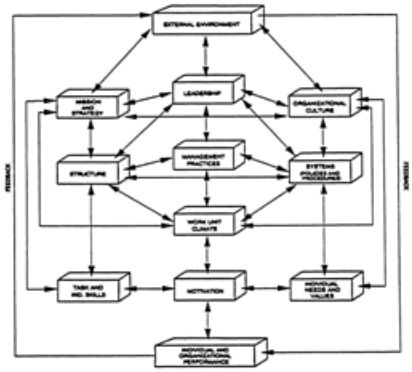
Framework: Burke & Litwin

- Applied Burke-Litwin Causal Model of Organizational Performance and Change (Spangenberg & Theron, 2013)



A model of organizational performance and change. Reprinted from "A Causal Model of Organizational Performance and Change," by W. W. Burke and G. H. Litwin, 1992, *Journal of Management, 18*, 528. Copyright 1992 by Southern Management Association.

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State of Site Pre-Intervention

- A de-identified retrospective chart review took place of 20 randomly selected patient EHRs cared for by the home-based group
- Only patients seen between January-June 2018 were included
- 6 of the patients had a previous dementia diagnosis (from outside provider)
  - Only 1 of these patients had a MoCA completed on initiation of care
- 14 of charts reviewed did not have a previous dementia diagnosis
  - Only 5 of those patients received the MoCA at the initial visit
- 40% of total patients audited underwent MoCA within the 1st year of assumed care
- 50% of total patients audited underwent MoCA within 3 years of assumed care
- There was no consistent follow-up care initiated after screening

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Stakeholders

- Medical providers: physicians, physician assistants, nurse practitioners
- Support staff: LPNs, RNs, MAs, social workers
- Patients and families impacted by practice change
- Office supervisor
- Practice manager

SWOT

Strengths	Weaknesses
• Key stakeholders: staff, management, and organizational leadership who are already passionate about the population and dementia screening. • Many resources available to support a seamless and successful transition. • All staff feels strongly about providing high quality care. • Practices within the office surrounding teamwork, improvement, and idea sharing.	• Very busy practice responsible for many patients. • Patient population has personal factors impeding success of screening tools. • Lack of an appropriate amount of time to accurately screen. • New staff members on orientation are perhaps not invested in screenings.
Opportunities	**Threats**
• Organization as a whole practices a culture of safety and high quality patient care. • Staff can inform patients and families of organizational goals and quality care. • Interdisciplinary collaboration is already well-established.	• Highly complex patients and needs leading to lack of time to accurately and completely screen patients. • Patient factors such as fear of diagnosis and stigma attached to diagnosis that results in an aversion to participating in the screening. • Practice is not reimbursed for dementia screening services.

Clinical Practice Question

What is an efficient and evidence based protocol for the timely assessment, accurate diagnosis, and appropriate follow-up for dementia patients in a home-based primary care setting?

Literature Review

- Purpose
  - To complete a comprehensive review of existing literature to determine practices, identify tools in use, and understand needs for dementia diagnosis and care
  - Identify dementia screening tool with highest efficacy and feasibility for use in home-based primary care setting

Results: Literature Review

- 8 articles met inclusion criteria
  - 3 meta-analyses: Review of 25 country's national dementia strategies; gait performance as a predictor of risk of developing dementia; diagnostic accuracy of the Montreal Cognitive Assessment (Beauchet et al., 2016; Carson, Leach, & Murphy, 2017; Chow et al., 2018)
  - 1 Cluster RCT: implemented case finding and subsequent care intervention (Van Den Dungen et al., 2016)
  - 2 cohort studies: risk algorithm for predicting dementia (Walters et al., 2016), assessed A Quick Test of Cognitive Speed (Kvitting, Wimo, Johansson, & Marcusson, 2013)
  - 1 prospective trial: mapped suitability of the Six Item Cognitive Impairment Test (Hessler et al., 2014)
  - 1 systematic review: Evaluated existing literature for interventions to increase detection of dementia (Mukadam, Cooper, Kherani, & Livingston, 2014)

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Evidence for Project

- Meta-analytic evaluation of validation studies including data from the original MoCA study revealed an optimal cutoff score of 23/30 (Carson et al., 2017)
- The cutoff of 23 was found to optimally balance sensitivity (1.00) and specificity (0.98) and provided the highest diagnostic accuracy (Carson et al., 2017)
- Positive predictive value 0.79, negative predictive value 0.91 (Carson et al., 2017)
- Use of the tool in combination with functional testing, clinician determination, and clinical criteria yields appropriate dementia diagnoses (Carson et al., 2017)

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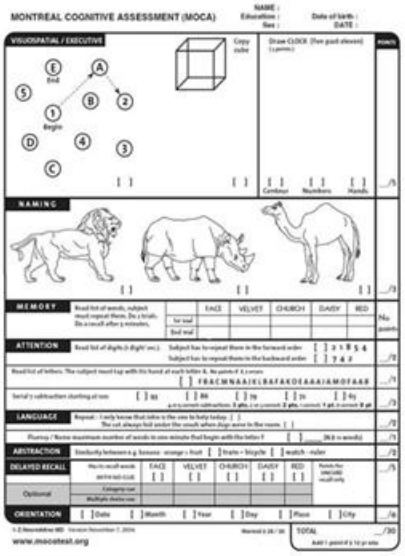

Montreal Cognitive Assessment

Additional Findings

- Dementia is the loss of cognitive functioning to such an extent that it interferes with a person's daily life and activities (National Institute of Neurological Disorders and Stroke, 2018)
  - One significant function impacted: one's ability to perform activities of daily living (ADLs)
- Appropriate diagnosis of dementia occurs when cognitive decline is proven in the setting of functional decline (NINDS, 2018)
  - Decreased ability to perform ADLs
- The Functional Assessment Staging Tool (FAST) employs a seven-stage system based on one's level of functioning and ability to perform ADLs (Reisberg,1988)
  - Concurrent validity for the FAST was demonstrated in relation to the Mini-Mental State Examination and was observed to be 0.8 (Auer & Reisberg, 1997)
- FAST is a moderately reliable and valid tool, and when used in conjunction with the MoCA brings a definitive diagnosis of dementia (Iwata, Deleon, & Roscoe, 2013)

FAST

Functional Assessment Staging of Alzheimer's Disease. (FAST)©

STAGE	SKILL LEVEL
1.	No difficulties, either subjectively or objectively.
2.	Complains of forgetting location of objects. Subjective word finding difficulties.
3.	Decreased job function evident to co-workers; difficulty in traveling to new locations. Decreased organizational capacity.*
4.	Decreased ability to perform complex tasks (e.g., planning dinner for guests), handling personal finances (forgetting to pay bills), difficulty marketing, etc.
5.	Requires assistance in choosing proper clothing to wear for day, season, occasion.
6a.	Difficulty putting clothing on properly without assistance.
b.	Unable to bathe properly; e.g., difficulty adjusting bath water temperature) occasionally or more frequently over the past weeks.*
c.	Inability to handle mechanics of toileting (e.g., forgets to flush the toilet, does not wipe properly or properly dispose of toilet tissue) occasionally or more frequently over the past weeks.*
d.	Urinary incontinence, occasional or more frequent.
e.	Fecal Incontinence, (occasional or more frequently over the past week).
7a.	Ability to speak limited to approximately a half dozen different words or fewer, in the course of an average day or in the course of an intensive interview.
b.	Speech ability limited to the use of a single intelligible word in an average day or in the course of an interview (the person may repeat the word over and over.
c.	Ambulatory ability lost (cannot walk without personal assistance).
d.	Ability to sit up without assistance lost (e.g., the individual will fall over if there are no lateral rests [arms] on the chair).
e.	Loss of the ability to smile.

STAGE••_____

*Scored primarily on the basis of information obtained from a knowledgeable informant and/or caregiver.

©1984 by Barry Reisberg, M.D. All rights reserved.Reisberg, B. Functional Assessment Staging (FAST). Psychopharmacology Bulletin. 1988:24: 653-659.

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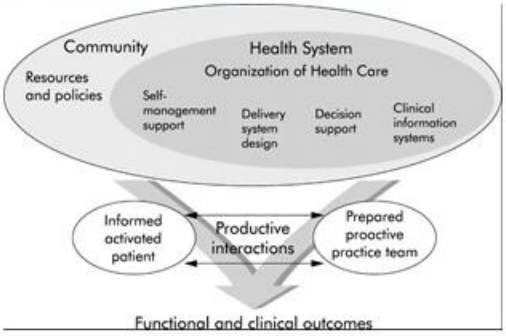
Model to Examine Phenomenon: The Chronic Care Model



Adapted from "The Chronic Care Model," by E. Wagner, and Improving Chronic Illness Care Program. Copyright 1998 by Improving Chronic Illness Care.

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Project Plan

- Structured to answer each component of the clinical practice question
- The setting, participants, design, and resources were clearly defined
- Implementation steps directly correlated to the clinical question and collected data
- Measures to evaluate each step were created and analyzed

Project Purpose

- Purpose: design and implement quality evidence-based protocol for accurate and timely diagnosis of dementia into standard of care in an urban home-based primary care practice and address follow-up care

Implementation Model

- Design for this quality improvement project was guided by the Promoting Action on Research Implementation in Health Services (PARiHS) framework
  - Evidence: supports indoctrination of a standardized approach to the timely screening, methods for diagnosis and appropriate follow-up of dementia patients
  - Context: maintain culture of the organization which strives to provide patient centered quality care to the geriatric population. Protocol focuses on patient, family, and caregiver involvement which enhances patient centered care
  - Facilitation: DNP student enacts role of the facilitator, provides educational session, completes data extraction, creates and maintains plan, and develops the protocol

Setting & Participants

- Setting
  - An urban home-based primary care practice that specializes in the care of geriatrics
- Participants
  - Staff (n=26): providers, nurses, social workers, medical assistants
  - Newly enrolled home-based patients (n=54)

Implementation Steps and Measures

1. Evaluated the current state of MoCA screenings and follow-up care applied to all patients (n=20).
2. Developed pilot protocol
3. Gained approval for initial proposed protocol prior to staff presentation.
4. Education of staff (n=26) who administer dementia screenings took place during a dedicated meeting on November 19, 2018

Implementation Steps and Measures

5. Began evidence based protocol implementation on December 1, 2018.
6. Continued assessment of the practice took place weekly to determine any barriers and facilitators that existed (December 2018 – March 2019).
7. Performed weekly audit and feedback for 60-days after implementation.

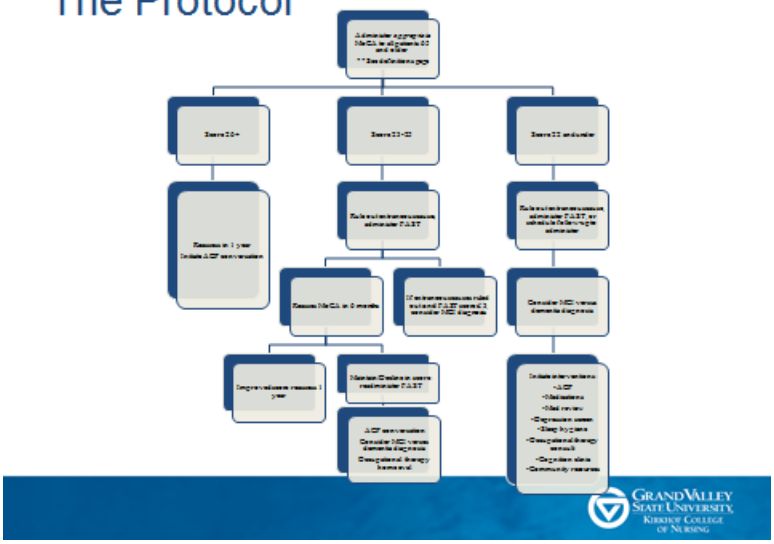
Implementation Steps and Measures

8. Delivered a final report to key stakeholders on March 11, 2019.
9. Developed the final quality protocol based off the pilot study by March 1, 2019.
10. Disseminate final report to advisory committee, Grand Valley State University, and upload into Scholarworks by April 15, 2019.

The Protocol

1. Staff education
2. Decision tool
3. Definitions
   - Implementation, weekly audits, data dashboards and staff feedback, final analysis
4. Standard work document

The Protocol



Analysis Plan

- Each objective was met by assessing pre- and post- data
  - Organizational assessment
  - Determined current state of practice
  - Quality monitoring system was constructed
  - Developed pilot study
  - Following approval, educated staff
  - Implemented protocol, analyzed and distributed results weekly
  - Compiled final data for report out

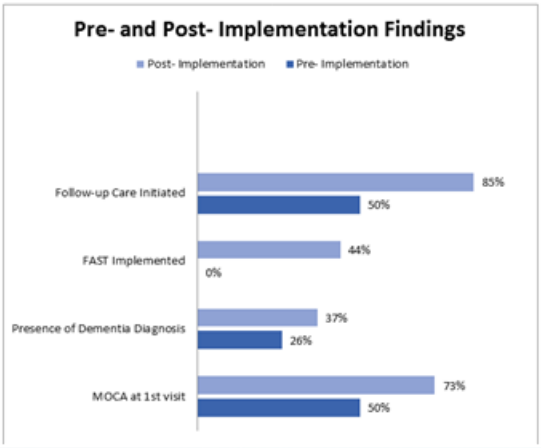
Analysis Plan Continued

- Data collected answered the three components of the clinical question:
  1. Timely assessment
     - MOCA completion at enrollment visit, and at follow up visit (as able to assess)
     - FAST administered at enrollment visit
     - Age of patient less than or greater than 65
  2. Accurate diagnosis
     - Determine MOCA and FAST scores, and whether a dementia/MCI diagnosis was given appropriately
     - Assessed for presence of diagnosis pre- and post- implementation
  3. Appropriate follow up
     - Follow up care and plan
     - Referrals, advanced care planning, resources provided to patient and family

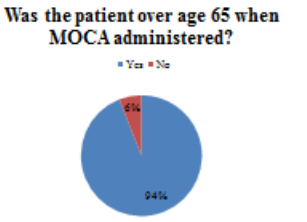
Resources & Budget

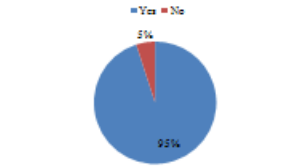
Initial Cost: Utilization of a Screening Tool to Improve the Diagnosis of Dementia in a Home-Based Primary Care Setting	
Revenue	
Project Manager Time (in-kind donation)	$2,511.00
Statistician (in-kind donation)	$100.00
Neurologist (in-kind donation)	$7,020.00
Total Income	$9,631.00
Expenses	
Supplied	$17.00
Project Manager Time (in-kind donation)	$2,511.00
Statistician (in-kind donation)	$100.00
Team member time:	
Educate providers, nurses, social workers, and medical assistants (time spent during 60 minute session)	$1,888.00
Total Expenses	$4,516.00
OPERATING INCOME	$5,115.00

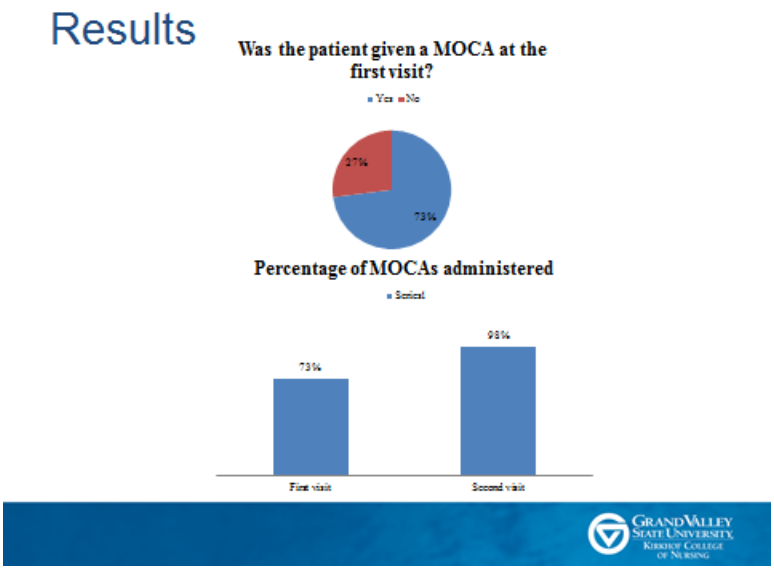
Results



Results






Results
Was the patient given a MOCA at the first visit?
Yes
No
27%
73%
Percentage of MOCAs administered
Series1
73%
98%
First visit
Second visit
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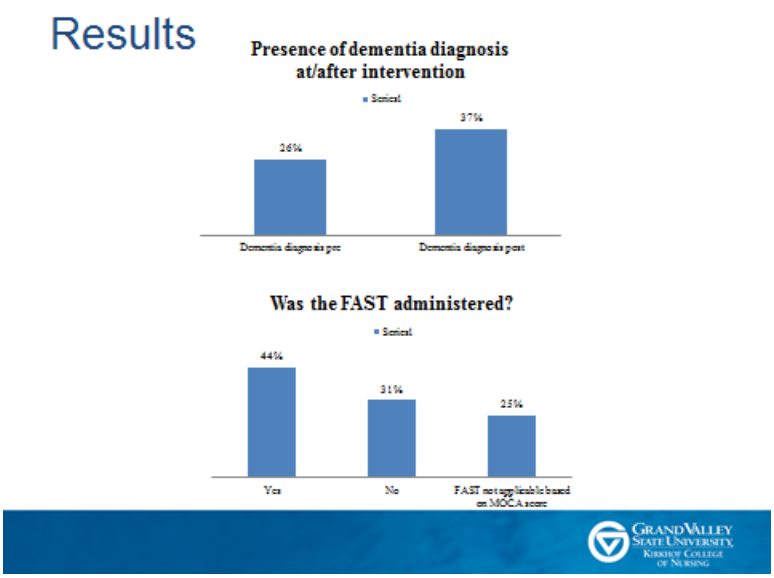
Results
Presence of dementia diagnosis at/after intervention
Series1
26%
37%
Dementia diagnosis pre
Dementia diagnosis post
Was the FAST administered?
Series1
44%
31%
25%
Yes
No
FAST not applicable based on MOCA score
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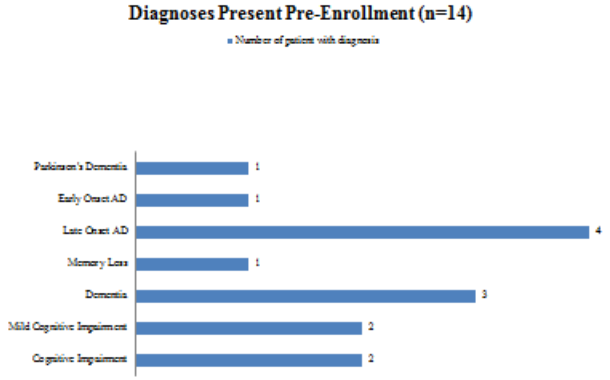
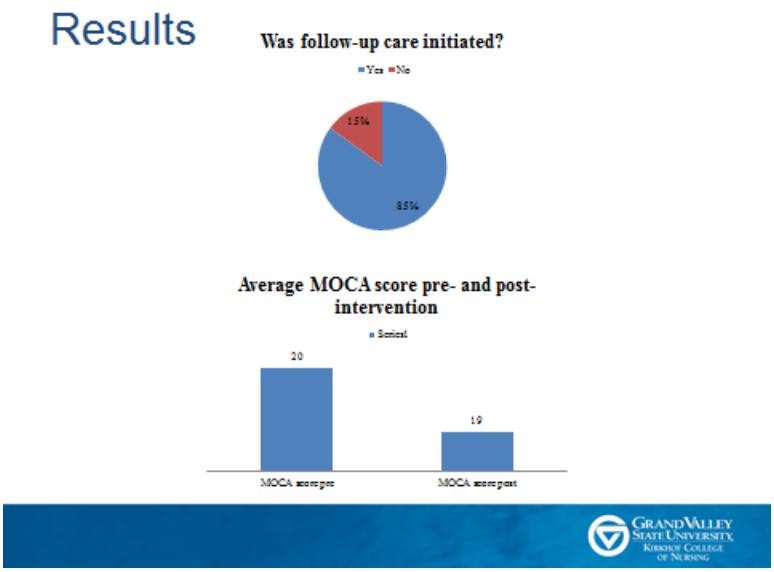
Results



Results

Problem List Pre-Enrollment	Change Post Enrollment	MOCA Pre-Enrollment	MOCA Post-Enrollment	FAST Score
Cognitive Impairment	No	NA	26	NA
MCI	No	15	19	NA
Dementia	No	NA	7	6d
Alzheimer's Disease, Late Onset	No	20	4	4
Memory Loss	No	14	14	NA
Alzheimer's Disease, Late Onset	No	18	16	5
Parkinson's Dementia	No	NA	17	5
Alzheimer's Disease, Late Onset	No	NA	15	4
Alzheimer's Disease, Late Onset	No	NA	NA	6d
Dementia	No	NA	2	6c
MCI	No	24	23	4
Dementia	No	23	23	6d
Alzheimer's Disease, Early Onset	No	NA	NA	7a
Cognitive Impairment	No	9	NA	NA


Results
Was follow-up care initiated?
Yes
No
15%
85%
Average MOCA score pre- and post-intervention
Series1
20
19
MOCA score pre
MOCA score post
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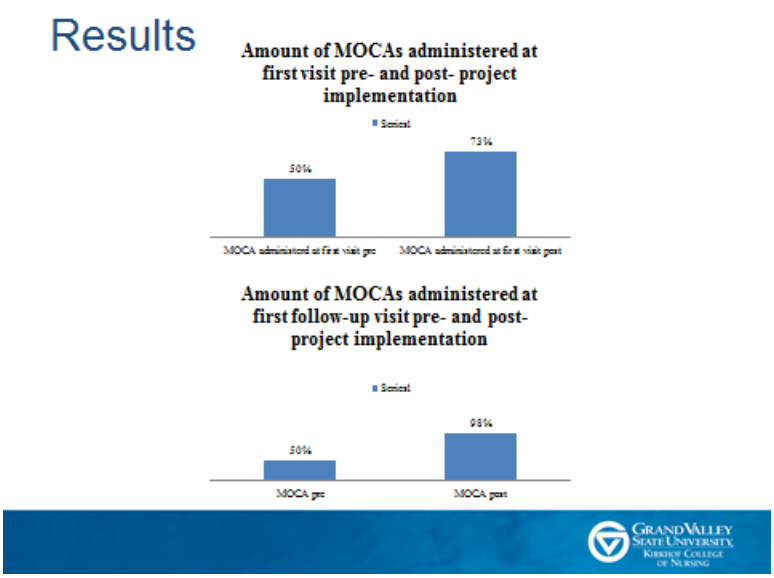
Results
Amount of MOCAs administered at first visit pre- and post- project implementation
Series1
50%
73%
MOCA administered at first visit pre
MOCA administered at first visit post
Amount of MOCAs administered at first follow-up visit pre- and post-project implementation
Series1
50%
98%
MOCA pre
MOCA post
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Discussion

- In total, 6 new diagnoses of either dementia or cognitive impairment were given
  - Protocol and follow up care were initiated appropriately in all 6 instances
  - This finding is statistically significant
- Weekly findings
  - Addition of FAST to new enrollment template in EHR resulted in increased compliance
- MOCA screenings increased from 50% to 73% at first visit and 98% at follow-up visit
  - This indicates that learning from the educational session provided by the student did occur
  - Further, this evidence shows that the addition of an evidence-based protocol increases rates of screening and diagnosis of cognitively impaired patients

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Discussion

- Prior to implementation many staff members were discussing functional decline, but zero were utilizing FAST
- Post- implementation, nearly all were utilizing FAST
  - 44% yes, 31% no, 25% not applicable
- Barriers
  - lack of face to face staff education, lack of time, and deteriorating patient conditions, variances to patient needs
  - Variance to needs: It was discovered that the initial protocol did not account for illiterate or blind patients. Therefore, the protocol was amended to include augmented screening tools for these instances and was then successfully implemented

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Sustainability Plan and Dissemination

- Stakeholder support
  - Involvement of staff members in altering protocol to better fit their needs
- Standard work document
  - Standard work will be created and remain in place as an expectation of the staff members at the conclusion of this project
- Final results disseminated to staff
  - Weekly dashboards and final results were sent to staff and presented to stakeholders
- Components of protocol were embedded into EHR
- Handoff to practice manager, physician mentor, incoming DNP student
- Defense to advisory committee, and upload into Scholarworks
- Publication and presentation to professional organizations

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Limitations

- Short implementation period
  - 60 days
  - Made it difficult to obtain some outcome data: follow-up care
    - Unable to determine whether many diagnoses will be made at these appointments, what counseling may occur, and whether or not additional follow-up care will then be initiated
- Small sample size
  - 54 new enrollments
  - challenging to evaluate statistical significance in the accuracy of diagnoses
  - consists of only home-based geriatric patients
- Patient condition and refusals
  - not expected and resulted in the lack of ability for staff to successfully complete the full protocol
  - Some patients were subject to advanced cognitive impairment and multiple comorbidities that made it impossible to administer screening tools to produce accurate results
- McNemar's Test
  - will always be significant due to the result being equal to 6
  - due to the small number of divergent pairs; the probability is not well approximated by a chi-square distribution
- Clinicians were motivated to follow the protocol and while they felt that the steps did not add time or difficulty to the enrollments, the 60 day time period was not sufficient to determine sustainability of the practice change

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Implications for Practice

- Application of a standardized protocol can generate new and earlier diagnoses of dementia
- By initiating the diagnosis sooner, patient's quality of life can be positively impacted, outcomes improved, and healthcare costs decreased
- Evidence supports the notion that the inclusion of a dementia screening and diagnostic protocol will increase rates of diagnosis
- This protocol has the potential to positively impact cognitively impaired patients in the future as each component utilized was a success
- Further work on connecting patients to resources is needed
- A comprehensive policy and plan should include multiple disciplines within the organization

Conclusions

- A primary care practice that provides specialized treatment to elderly patients sought to address delays in the diagnosis and care of dementia patients hoping to improve outcomes long term
  - An organizational assessment was paired with an extensive literature review and led to the creation of a protocol designed to address the delays
- The protocol consisted of two screening tools that led provider through the assessment, diagnosis, and follow up care options for the cognitively impaired
- Results revealed a significant improvement in screening amount, efficiency, diagnosis, and follow-up care of newly enrolled patients
- This type of protocol is important and needed as the world's population ages with rates of cognitive impairment ever increasing

DNP Essentials

I. Scientific Underpinnings for Practice
   - Evidence-based treatment through literature review

II. Organizational and Systems Leadership
   - Performing organizational needs assessment, cost analysis, IRB approval

III. Clinical Scholarship and Analytical Methods
   - Research based interventions, dissemination

IV. Information Systems/Technology
   - Chart audits, data dashboards, integration into electronic health record

V. Advocacy in Health Care Policy
   - Creation of standard of work

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DNP Essentials

VI. Interprofessional Collaboration
   - Collaborated with numerous disciplines (physicians, nurse practitioners, physician assistants, registered nurses, licensed practical nurses, medical assistants, social workers, neurologists)

VII. Clinical Prevention Population Health
   - Focus on geriatric population and prevention of adverse long term outcomes

VIII. Advanced Nursing Practice
   - Developed and maintained partnerships, facilitated project, implemented evidence-based solution, analyzed and disseminated results

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References

- Auer, S., & Reisberg, B. (1997). The GDS/FAST staging system. *International Psychogeriatrics*, *9*(S1), 167-171.
- Beauchet, O., Annweiler, C., Callisaya, M. L., De Cock, A. M., Helbostad, J. L., Kressig, R. W., ... & Allali, G. (2016). Poor gait performance and prediction of dementia: results from a meta-analysis. *Journal of the American Medical Directors Association*, *17*(6), 482-490.
- Carson, N., Leach, L., & Murphy K. J. (2018). A re-examination of Montreal Cognitive Assessment (MoCA) cutoff scores. *International journal of geriatric psychiatry*, *33*(2), 379-388.
- Chow, S., Chow, R., Wan, A., Lam, H. R., Taylor, K., Bonin, K., ... & Herrmann, N. (2018). National Dementia Strategies: What Should Canada Learn?. *Canadian Geriatrics Journal*, *21*(2), 173.
- Hessler, J., Brönner, M., Etgen, T., Andel, K. H., Förstl, H., Poppert, H., ... & Bickel, H. (2014). Suitability of the 6CIT as a screening test for dementia in primary care patients. *Aging & mental health*, *18*(4), 515-520.
- Iwata, B. A., DeLeon, I. G., & Roscoe, E. M. (2013). Reliability and validity of the functional analysis screening tool. *Journal of Applied Behavior Analysis*, *46*(1), 271-284.
- Kvitting, A. S., Wimo, A., Johansson, M. M., & Marcusson, J. (2013). A Quick Test of Cognitive Speed (AQT): usefulness in dementia evaluations in primary care. *Scandinavian journal of primary health care*, *31*(1), 13-19.
- Mukadam, N., Cooper, C., Kherani, N., & Livingston, G. (2015). A systematic review of interventions to detect dementia or cognitive impairment. *International journal of geriatric psychiatry*, *30*(1), 32-45.
- Reisberg, B. (1988). Functional assessment staging (FAST). *Psychopharmacology bulletin*, *24*(4), 653-659.
- Spangenberg, H., & Theron, C. (2013). A critical review of the burke-litwin model of leadership, change and performance. *Management Dynamics*, *22*(2), 29-48.
- Van den Dungen, P., van Charante, E. P. M., van de Ven, P. M., van Marwijk, H. W., van der Horst, H. E., & van Hout, H. P. (2016). Case finding of mild cognitive impairment and dementia and subsequent care; results of a cluster RCT in primary care. *PloS one*, *11*(6), e0156958.
- Walters, K., Hardoon, S., Petersen, I., Iliffe, S., Omar, R. Z., Nazareth, I., & Rait, G. (2016). Predicting dementia risk in primary care: development and validation of the Dementia Risk Score using routinely collected data. *BMC medicine*, *14*(1), 6.
- XXX. (2017a). *About XXX*. Retrieved from https://www.XXX.org/aboutus