Southern California CSU DNP Consortium

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IMPLEMENTATION AND EVALUATION OF
CHRONIC CARE MANAGEMENT PROGRAM:
A CLINICAL PRACTICE CHANGE

A DOCTORAL PROJECT

Submitted in Partial Fulfillment of the Requirements

For the degree of

DOCTOR OF NURSING PRACTICE

By

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ABSTRACT

The increasing size of the chronically ill elderly Medicare population and its projected growth are a major challenge to the health care systems in the United States. This ongoing pilot study compares outcomes before and after a Chronic Care Management Program (CCMP) was implemented on 36 elderly Medicare beneficiaries with two or more chronic conditions in a primary care setting over 12 months. The goals of care coordination services through the CCMP fully support the goals of the Triple Aim of the Affordable Care Act (2010): improved health, improved health care, and improved cost value. Monthly telehealth coaching sessions were conducted by trained, certified medical assistants and supervised by a nurse practitioner. Outcomes to be evaluated at baseline, 6 and 12 months include the Chronic Disease Sample Questionnaire survey, and two clinical outcomes as appropriate to individual patients (HbA1c, blood pressure). Participant recruitment was completed in December 2015, with data collection scheduled for completion in December of 2016.

Patients enrolled had a variety of chronic illnesses: 92% hypertension, 75% hyperlipidemia, 56% diabetes. Although the preliminary 3-month findings of the aggregated clinical outcomes lack statistical significance in all measures (e.g., no significant improvements found), these findings are noteworthy, as the ultimate goal is to prevent rapid deterioration in the elderly population. Once completed, the analyses will provide more understanding of CCMP effects on the overall health outcome for the
Medicare beneficiaries with multiple chronic conditions. Primary care settings truly have
great potential to improve the overall health outcomes of the chronically ill Medicare
population. In particular, advanced practice nurses, with their advanced clinical skills
based on evidence-based practice and workplace versatility, may play central roles in
development, implementation, and evaluation of the CCMP in alignment with the *Triple
Aim*. 
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BACKGROUND

In the United States, health care expenditures exceed $2.9 trillion and comprise 17.2% of the gross domestic product (Centers for Medicare and Medicaid Services [CMS], 2014). Of those expenditures, approximately 71% of the total health care expenditure is spent on care for Americans with multiple chronic conditions (Agency for Healthcare Research and Quality [AHRQ], 2010). The Centers for Disease Control and Prevention (CDC, 2014) reported that more than 117 million people, or almost half of all Americans, have at least one or more chronic conditions. This number is projected to increase by more than 1% per year, to an estimated chronically-ill population of 171 million by 2030 (CDC, 2009). Furthermore, according to the Institute of Medicine’s (IOM, 2001) seminal report, “Crossing the Quality Chasm,” 23% of Medicare beneficiaries have five or more chronic conditions. Data show that Medicare beneficiaries with chronic conditions account for 93% of total Medicare spending (CMS, 2012). The presence of multiple chronic conditions is associated with significant health care costs, and the future projection of a dramatic increase in federal spending for Medicare patients places profound strains on the budget.

At the same time, there are concerns about the overall quality and efficiency of care received by Medicare beneficiaries (CMS, 2012); those with chronic conditions such as heart disease and diabetes often may not receive health care consistent with recommended standards. Additionally, limited coordination among providers who care for patients with chronic conditions may act as factors to patients’ noncompliance (Knight, Dowden, Worral, Veerabhadra, & Murphy, 2009). These issues are well documented in studies that show lack of coordinated care for Medicare recipients with
chronic conditions and have contributed to increased health care spending on hospitalizations, urgent care (UC), and emergency room (ER) visits and are indicators of poor quality health care (Lochner, Goodman, Posner, & Parekh, 2013). Ridenour and Trautman (2009) also shared this view:

The United States has a health care system that is actually nonsystematic—rather than being coordinated and comprehensive, what exists is predominantly a patchwork quilt focused on acute illness, with few examples of care coordination, chronic care management, and limited attention to wellness and care management, and limited attention to wellness and prevention. (p. 358)

Signed into law in 2010, the Patient Protection and Affordable Care Act (ACA) stressed three initiatives of the Triple Aim with goals to improve health, improve patient experience of care, and reduce per capita cost value in efforts to defragment the current health care system. First described by Berwick, Nolan, and Whittington (2008), the Triple Aim has a single aim of simultaneously improving these three dimensions of health care. According to the Institute for Healthcare Improvement (IHI, 2012), Triple Aim has since become the organizing framework by organizations around the world. Health life expectancy, measured by combination of mortality and health and functional status, are the outcome measures for population health (IHI, 2012). In improving experience of care, two perspectives are used as measurements: (a) individual experience of health care system; and (b) health care system goals as defined by the IOM’s (2001) set of measures based on key dimensions, including safe, effective, timely, efficient, equitable, and patient-centered health care (IHI, 2012). Total cost per capita with the
focus on the utilization of high-cost services, including ER visits and hospitalizations, is used as measurement for improving the health care cost (IHI, 2012).

In alignment with these goals, the national health care reform aims to improve the overall accessibility of quality care to patients with chronic conditions. As a result, there are new, distinct opportunities to improve patient outcomes at the primary care practice level. Historically, payers have bundled the coordination of non-face-to-face services such as medication reconciliation, provider coordination, social services arrangements, and remote patient monitoring (CMS, 2015) with the payment of in-clinic evaluation and management services. Thus, providers did not consistently furnish these care management services (Nutting et al., 2007).

The recurrent themes in literature regarding the difficulties of implementing chronic care management programs in primary care practices are apparent and may have served as impetus for the creation of the external support at the national level. As of January 1, 2015, the CMS outlined a new provision to aid primary care practices to provide specified non-face-to-face chronic care management services to qualified Medicare beneficiaries. Hence, the implementation of the chronic care management is an opportunity to address the needs of Medicare beneficiaries, together, with a prospect for additional income for primary care practices.

The CMS defined chronic care management services through the American Medical Association’s Current Procedural Terminology (CPT) Professional Codebook (2014) as follows:

Chronic care management services, at least 20 minutes of clinical staff time directed by a physician or other qualified health care professional, per
calendar month, with the following required elements: multiple (two or more) chronic conditions expected to last at least 12 months, or until the death of the patient; chronic conditions place the patient at significant risk of death, acute exacerbation/decompensation, or functional decline; comprehensive care plan established, implemented, revised, or monitored. (pp. 412-413)

According to the American College of Physicians (ACP, 2015), health care professionals who are eligible to provide chronic care management services are defined as advanced practice registered nurses, clinical nurse specialists, physicians, and physician assistants.

**Problem Statement**

Elderly Medicare recipients with chronic conditions need coordinated efforts in chronic care services within primary care practices. Lack of coordinated care for Medicare recipients with chronic conditions has contributed to increased health care spending on hospitalizations and ER visits (Lochner et al., 2013). Literature has suggested that implementation of the Chronic Care Model (CCM) helps improve the overall health care outcomes and decrease health care expenditures (Coleman, Austin, Brach, & Wagner, 2009).

**Purpose Statement**

The purpose of this project was to develop, implement, and evaluate a Chronic Care Management Program (CCMP) at a solo primary care practice with a population of elderly Medicare patients with two or more chronic medical conditions. The outcome measures, in accordance with the goals of Triple Aim, are to assess (a) improvement in health, measured by self-assessed Stanford Chronic Disease Sample Questionnaire
(CDSQ); (b) improvement in health care quality, measured by qualitative reports of CCMP experience, glycosylated hemoglobin, type A1c (HbA1c) levels in type 2 diabetics (T2DM), systolic blood pressure (SBP), and diastolic blood pressure (DBP) levels in hypertensives; and (c) improvement in cost value per capita, measured by the number of physician visits, ER visits, UC visits, and hospitalizations over 12 months, compared to 6 months prior to CCMP implementation.

Supporting Framework

Chronic Care Model

According to Bonnel and Smith (2014), theories and frameworks are organizing tools to assist in clinical projects or plans for change. Additionally, these authors suggested the lack of incorporating theoretical frameworks into clinical projects jeopardizes the essence of professional nursing. Similarly, Moran, Burson, and Conrad (2014) defined conceptual frameworks as a “group of concepts that are broadly defined and systematically organized to provide a focus, a rationale, and a tool for the integration and interpretation of information” (p. 27). Therefore, the application of a framework in a practice change is essential to establish structure, provide guidance, and achieve its aim.

The CCM, developed by Ed Wagner, M.D. and colleagues, is a well-established organizational framework for chronic care management and practice improvement (Group Health Research Institute Improving Chronic Illness Care, 2015). Developed during the 1990s, the CCM is an implementation tool for primary care practices to improve clinical quality measures in the United States and around the world (Coleman et al., 2009). In addition, the CCM is a framework for coordinating and improving chronic illness care at both the individual and population levels (Fiandt, 2006). There are six
major components of this model that yield guidance to specific quality improvement strategies (AHRQ, 2014; Figure 1):

1. Supporting and encouraging care for chronic conditions by the health care organization as a whole, through leadership and motivation that promote successful quality improvement actions.

2. Providing connections to community resources for more cost-effective services not available within the organization, such as support groups.

3. Providing support for patient self-management behaviors to promote patient empowerment and self-management skills.

4. Coordinating the delivery system to manage and coordinate multiple providers and caregivers for optimal health care utilization.

5. Incorporating evidence-based practice guidelines into clinical decision-making.

6. Having access to updated health information technology systems to coordinate patient care and promote self-care.

*Figure 1. Chronic Care Model (adapted from “The MacColl Institute” 2015).*
Studies have suggested the implementation of the CCM principles yield improved outcomes for those with chronic conditions (Bonomi, Wagner, Glasgow, & Von Korff, 2002; Wagner, Davis, Schaefer, Von Korff, & Austin, 1999; Wagner, Glasgow, et al., 2001; Wagner, Grothaus, et al., 2001). For example, Asch et al. (2005) found congestive heart failure patients participating in the chronic care management collaboratives visited the ER less often and experienced 35% fewer days in the hospital. Moreover, according to Bonomi et al. (2002), there are five recommended principles to observe when implementing chronic care management at primary care practices. The first principle emphasizes the need for the primary care provider to be the primary source of contact within the health care system for any problems and offer guidance in seeking specialist care. The second principle stresses the importance of consistency and establishing plans for long-term relationships between primary care providers and patients. The third principle recommends that primary care provide comprehensive care that includes both preventive and acute care services. The fourth principle outlines that primary care systems need to coordinate care given by other providers, utilizing electronic health records (EHR) systems. The fifth principle emphasizes that primary care providers need to be held liable for patients’ overall health and outcomes. Implementation of these primary care principles supports the aim of primary health care systems to provide high quality care using cost-efficient methods (Schimittdiel, Shortell, Rundall, Bodenehimer, & Selby, 2006). Furthermore, Mohler and Mohler (2005) advised clinicians that successful implementation of CCMP requires the program coordinators to set goals, create a tracking record, test changes, plan visits, and involve and utilize staff members and non-physician caregivers.
The CCM is especially suited for the CCMP at the author’s place of employment because of the model’s attributes. In addition, the CCM addresses potential gaps, including clinicians not following established practice guidelines, lack of care coordination, lack of active follow-up to ensure the best outcomes, and patients’ inadequate trainings in self-management to manage their illness (Group Health Research Institute Improving Chronic Illness Care, 2015).

**Plan-Do-Study-Act**

The Plan-Do-Study-Act (PDSA) model facilitates a pragmatic method to implement the CCMP within the primary care setting. Initially developed by W. Shewhart in 1939 and later modified by W. Edwards Deming in 1951 and 1986, the Deming Cycle (1996), or PDSA, is a 4-stage, problem-solving approach used to apply and evaluate changes in the practice (Moen, 2009; Figure 2). The *Plan* stage includes creating aim statements, describing current practices and problems, and identifying causes and alternatives. During the *Do* stage, implementation of the plan occurs, along with the initiation of data collection and analysis. In the *Study* stage, new knowledge is built. In the *Act* stage, further improvement and standardization of the program occurs. The *Study* and *Act* stages of the PDSA will occur post-Doctor of Nursing Practice (DNP) program.

**Summary**

The United States spends nearly double the healthcare costs of the most costly nation in the world (World Health Organization [WHO], 2006). According to Berwick et al. (2008), to improve the U.S. healthcare system, primary care services need to be redesigned in
developing shared plans of care; coordinating care, including subspecialists and hospitals; and providing innovative access to services through improved scheduling, connection to community resources, and new means of communication among individuals, families, and the primary care team facilitated by a patient-controlled personalized health record. (p. 764)

The purpose of this project was to develop, implement, and evaluate a CCMP at a primary care practice rooted on evidence-based health care, to meet the Triple Aim of the health care reform initiatives.

Figure 2. Deming cycle (Adapted from “Quality improvement through planned experimentation” by R. Moen, T. W. Nolan, and L. P. Provost, 2012).
REVIEW OF LITERATURE

Search Methods

A thorough review of the literature is critical to enhance and support a sound project. This literature review is categorized into the following subsections: Chronic Care Management, T2DM and Hypertension, Self-Management and Efficacy, Continuity of Care and Individualized Plan of Care, and Telehealth and Health Coaching by Medical Assistants. A summary section concludes the literature review.

The author conducted a review of the literature by using the following electronic databases: CINAHL, PubMed, Google Scholar, and EBSCO and employed the following key terms to streamline the search: Chronic Care Management, Primary Care, Chronic Care Model, Diabetes, and Hypertension. The term Chronic Care Management yielded 68,466 titles through PubMed. The combination of the terms Chronic Care Management and Primary Care yielded 15,835 titles. Adding the third term, Chronic Care Model narrowed the results to 2,130 titles. Adding the fourth term, Diabetes and hypertension, further narrowed the results to 400 titles. A separate search with the terms Continuity of Care, Individualized Plan of Care, Telehealth, and Health Coaching by Medical Assistants yielded specific articles pertaining to those terms. Of these journal articles, the author selected those published in English-language with publication dates between 1999 and 2016 and reviewed the reference lists of retrieved documents to identify any additional pertinent publications.

Chronic Care Management

The IOM’s (2001) report “Crossing the Quality Chasm” highlighted the problem of fragmented health care and emphasizes the need for health care systems that promote
continuity and management of services. According to McGlynn et al. (2003), Americans receive only about half the services they need for acute, preventive, and chronic condition care management. There is no single definition for chronic condition; however, chronic condition themes revolve around non-self-limited conditions that are consistent and recurrent and last longer than days or weeks (U.S. Department of Health and Human Services, 2013).

Studies have suggested that the intent and design of the CCM is to optimize the health care outcomes for the chronic conditions at the organizational level (Coleman et al., 2009; Nutting et al., 2007; Parchman, Pugh, Wang, & Romero, 2007; Schmittdiel et al., 2006), especially in the ambulatory care settings (Coleman et al., 2009; Tsai, Morton, Mangion, & Keeler, 2005). The findings indicate that there are savings of $6 to $22 per patient per year in the first year of implementation of the CCM in primary clinics (Coleman et al., 2009). However, interventions based on CCM have not been widely adopted by primary care practices (Nutting et al., 2007). Studies indicated that CCM implementation in primary care practices is difficult (Parchman et al., 2013; Tsai et al., 2005); hence, there is only limited evidence examining the influence of CCM on patient outcomes in small primary care practices (Parchman et al., 2013). For example, change of practices in small primary care practices is challenging because of the lack of resources and support from external sources, such as the lack of financial incentives (Nutting et al., 2011). Although some studies demonstrated that chronic care management yields better health care outcomes (Nutting et al., 2007; Parchman et al., 2007), many patients do not receive the needed care, mostly due to physician time constraints (Ostbye et al., 2005).
Studies have also identified methods of implementing CCM to improve health outcomes. Mirzaei et al. (2013) identified multiple areas providers need to improve when caring for the chronically ill. Their study contained patients’ reports of poor communication with their providers, including lack of information, poor organization of service delivery, and long waiting times. The study also incorporated patients’ reports of confusion in having too many appointments and insufficient holistic, continuous care. It included patients’ suggestions for improvement in chronic care services: (a) having access to information on most recent advances in managing their conditions, (b) creating online learning resources that are accessible by themselves and caretakers, (c) encouraging active patient engagements in their treatment, and (d) patient-centered implementation of chronic care programs.

In the United States, many projects to improve care and treatment of patients with chronic conditions have revolved around medical practices. These projects indicated that nurses are key to implementing the CCM in a patient centered care team (Bodenheimer & MacGregor, 2005). Furthermore, nurse practitioners and professional health educators assume essential roles as chronic condition educators and are efficient, cost-effective providers (Ostbye et al., 2005). Successful implementation of the CCM, therefore, requires use of best-suited staffing resources and continuous evaluation of the interventions to meet the clinical and financial incentives of the programs (Wells et al., 2013).

Type 2 Diabetes Mellitus and Hypertension

Diabetes is a chronic disease and a major cause of morbidity and mortality in the United States, with the estimated prevalence of 12% to 14% among adults in 2011-2012.
Numerous research studies have shown that implementing chronic care management in clinical settings improves diabetic outcomes. For example, Nutting et al. (2007) reported that CCM implementation is significantly associated with lower HbA1c values \((p = .002)\) in patients with type 2 diabetic mellitus (T2DM). Specifically, for every unit increase (i.e., from rarely to occasionally) in clinician-reported CCM use, there is a corresponding 0.3% reduction of HbA1c values in T2DM patients. Parchman et al. (2007) reported that in primary care clinics, the relationship between HbA1c scores and the level of CCM implementation in patients with T2DM is consistent. The authors also found the 10-year risk of heart disease was the lowest in patients whose care was associated with the most CCM integration. Furthermore, Ohman Strickland et al. (2010) indicated that higher levels of CCM implementation patterns are closely linked with the presence of diabetes assessment and patient treatment \((p = 0.009\) and \(p = 0.015\), respectively). These preceding literature findings regarding the relationship between the CCM implementation and T2DM at the practice settings demonstrate overall improved health care outcomes.

Implementation of the CCM in various other practices has resulted in similar outcomes. For instance, patients with diabetes showed outcomes of decreased coronary vascular disease (Vargas et al., 2007), and adults with T2DM, depression, and coronary heart disease (CHD) reported improved quality of life \((p < 0.001; \text{Katon et al., 2010})\). Coleman et al. (2009) also reported that the CCM improved outcomes in various disease-related measures in all trials, especially with depression and cancer. However, Chin et al. (2004) noted the improvements in the HbA1c and low-density lipoprotein (LDL) levels were seen only after 2 years of CCM implementation. Furthermore, Brown et al. (2004)
reported that older adults with diabetes may experience more difficulties due to complicated care needs and the natural aging process. Thus, it may be necessary to evaluate these individuals for longer periods of time to see the improvements in their chronic conditions.

Hypertension is the most prevalent chronic condition in primary care that leads to myocardial infarction, stroke, renal problems, and death if not treated properly (James et al., 2014). It is the most significant cardiac risk factor in older adults (James et al., 2014). Hypertension is the most preventable cause of disease and death, yet substantial numbers of patients have poor control of their blood pressure (Egan, Zhao, & Axon, 2010). Most management of hypertension occurs in primary care; therefore, appropriate interventions should be delivered at this setting to prevent complications derived from hypertension (McManus et al., 2010). In the “Telemonitoring and Self-Management in Hypertension 2 (TASMINH 2)” trial, it was reported that self-management, consisting of self-monitoring and with self-titration of antihypertensive medications through telemonitoring and health coaching, resulted in lower (5.5 mm Hg, 2.4-8.5; \( p = 0.0004 \)) SBP after 1 year compared to the usual care (McManus et al., 2010).

**Self-Management and Efficacy**

Literature has shown that both the educational and psychological interventions are regarded equally important in self-management and considered the cornerstone of care that enables diabetics to achieve successful outcomes (Mensing, Boucher, & Cypress, 2000). Therefore, providers regularly implement patient counseling for psychosocial problems and health behavior change and believe counseling is effective (Fraser, Oyama, Burg, Sprull, & Allespach, 2015). For example, the goal of diabetic self-management
education (DSME) is to help patients take control of their health status by improving their knowledge base and skills that include establishing goals and thus empowering them (Clark, 2008). In a cluster randomized controlled trial conducted by Boul et al. (2008), the “Guided Care” nurse program, consisting of individual management plan and coaching for self-management with monthly monitoring and coordination of care, was implemented with an elderly population with multiple chronic conditions. After 6 months, compared to the usual care group, Guided Care participants rated their care highly [RR 2.0, (95% CI 1.2-3.4), \( p = 0.006 \)]. In addition, the study reported that primary care physicians were more satisfied with their care, in part through motivating multi-morbid elderly patients and their families \( (p < 0.05) \). An empowered patient with the knowledge, skills, attitudes, and self-awareness (i.e., crucial components) that can positively influence his or her own behavior as well as that of others to improve his or her quality of life (Clark, 2008).

**Continuity of Care and Individualized Plan of Care**

Studies have suggested that continuity of care is linked to increases in patients’ use of preventive care, increased immunization rates, and medication compliance (Knight et al., 2009). Other studies supported correlations between continuity of care in T2DM patients and patients’ HbA1c levels. For example, Holbrook et al. (2009) reported that continuity of care and decrease in HbA1c levels are significantly correlated \( (p = .029) \). Drivsholm and Olivarius (2006) and Sperl-Hillen et al. (2008) also concluded that patients well known to healthcare providers through continuity of care had lower HbA1c levels \( (p < .01 \) and \( p < .001 \), respectively). Continuity of care results in improved patient-provider relationship and increases the provider’s knowledge of patient history.
(Franklin, 2014). However, the relationship between the use of individualized plans of care (IPC) and improved healthcare outcomes has not been clearly established (Lion, Mangione-Smith, & Britto, 2014), as studies have reported divergent outcomes. For instance, Adam, Brandenburg, Bremer, and Nordstrom (2010) reported an increase in satisfaction (75% to 92%) in the patient intervention group with IPC use, but they also reported an increase in ER visits by 0.5%. On the contrary, Counsell et al. (2007) reported a positive correlation between ER visits and IPC use, with fewer ER visits among IPC intervention group ($p < .03$). Aiken et al. (2006) reported no difference in ER use but better quality of life ($p < .05$) with IPC utilization. The strongest evidence between IPC use and symptom improvement was found among depressed adults and adult populations in multi-targeted care coordination interventions (Lion et al., 2014).

### Telehealth and Health Coaching by Medical Assistants

In a 2014 national survey, only 15% of family physicians reported using telehealth, although a majority agreed telehealth could potentially improve health care continuity and access for their patients (Moore, Coffman, Jetty, Petterson, & Bezemore, 2016). Specifically, more than one-half of FP reported lack of training and reimbursement as major barriers to utilizing telehealth, in addition to cost of technology upgrade and possible liability issues as additional barriers (Moore et al., 2016). In a meta-analysis of 15 studies conducted by Inglis, Clark, McAlister, Stewart, and Cleland (2011), the authors identified reduction of congestive heart failure-related hospitalization with utilization of structured telephone support [$RR 0.77, (95\% CI 0.68-0.87), p < 0.0001$]. These issues, compounded with primary clinicians decreasing in supply, place the medical assistant (MA) workforce into a financially viable option for health coaching.
Willard-Grace et al. (2015) found that health coaching by MAs resulted in nearly twice as many coached patients achieving the HbA1c goals (48.6% vs. 27.6%, \( p = .01 \)) and LDL goal (42.8% vs. 25.4%, \( p = .04 \)). On the contrary, the authors reported the proportion of patients meeting the systolic blood pressure goal did not differ significantly.

**Summary**

Although there is evidence in the literature that CCM yields improved outcomes for patients with chronic conditions in the primary care settings, implementation rates are low. The primary reason for this may be due to lack of resources and support from the external environment, such as lack of provider time and low reimbursement plans from third parties. With the aging U.S. population set to burgeon and the rising cost of health care, an important priority for primary care practices is to develop plans that support chronic care management. Specifically, it is essential for individual primary care practices to assess the needs of the elderly with chronic conditions as a population, to develop and implement effective CCMPs, and, furthermore, to evaluate the associated health outcomes.
METHODS

The purpose of this project was to develop and implement a CCMP in a solo primary care practice setting and to construct an evaluation plan to determine its effect on key outcome measures on the elderly population. This chapter begins with the research design, research question, operational definitions, and assumptions. Subsequently, dependent and independent variables, other key variables, setting, sample, and instruments are described. Finally, protection of human subjects, limitations, and data analysis plans are discussed. The chapter concludes with the summary.

Research Design

A comparative, longitudinal design was constructed to examine the effects pre and post-enrollment of elderly Medicare beneficiaries in the CCMP. Data are collected at baseline, at 6 months, and 12 months post intervention. Developed and implemented by an advanced practice nurse, the primary outcome was to assess selected patient-centered health indicators around the goals of Triple Aim: improved health, improved health care and improved value. However, because of the time restrictions of the DNP program, only the baseline and 3-months preliminary data are reported at this stage of the project. The final evaluation of the program is scheduled for completion in March of 2017.

Research Question

The primary clinical question for this project is: What effect will enrollment of Medicare beneficiaries in a CCMP have on health outcomes (i.e., self-rated Stanford Chronic Disease Sample Questionnaire); health care outcomes (i.e., SBP, DBP and HbA1c levels); and value outcomes (i.e., number of ER and UC visits, number and days of hospitalizations) in a cohort of patients at baseline, 6 months, and 12 months post-enrollment compared to when they received the usual standard of health care?
Operational Definitions

The following operational definitions are provided to offer clarification on terms frequently used in this project:

*Chronic Care Management Program (CCMP):* Monthly comprehensive care coordination and management services, as defined by CMS (2014), to prevent ER and UC visits, hospitalizations and admissions to skilled nursing facilities (SNF).

*CCMP eligible:* Medicare recipients with two or more chronic illnesses expected to last at least 12 months; chronic conditions place the patient at significant risk of death, acute exacerbation/decompensation, or functional decline until the death of the patient, as defined by CMS (2014).

*Chronic conditions:* Health conditions that have a non-self-limiting nature and are persistent with duration measured in months and years (U.S. Department of Health and Human Services, 2013). Examples include hypertension, T2DM, cardio-vascular disease (CVD), congestive heart failure (CHF), chronic obstructive pulmonary disease (COPD), asthma, and depression.

*Individualized care plans:* Comprehensive, individualized plan of care that reflects the needs, goals, and clinical practice guidelines, including medication management and education.

*Providers:* Nurse Practitioners (NPs), Physicians, and Physician Assistants (PAs)

*Telehealth:* A broad range of health services delivered by telecommunication tools, such as telephones, Bluetooth transmissions, and computers.
24/7 Access: Availability of Chronic Care Management Program team to address a patient’s acute chronic care needs, as well as access to care plan 24 hours a day, 7 days a week.

Assumptions

The following assumptions were made for this study:

1. Those enrolled in the CCMP would follow the health care advice provided by the CCMP coordinators.
2. All participants would respond accurately and truthfully to the best of their ability.
3. Participants would be able to dialogue about their health care needs in the 20-minute timeframe projected for each phone visit.

Variables

The dependent variables of interest were the number of ER and UC visits, hospitalizations, and hospital days. Dependent variables also included HbA1c levels on T2DM patients and systolic and diastolic blood pressure readings in hypertensive patients. The trends in the key indicator scores on health and health-related activities were tracked through the Chronic Disease Sample Questionnaire developed by the Stanford Patient Education Research Center (2007a). The independent variable was the implementation of the CCMP in the eligible Medicare beneficiaries. Covariates included age, gender, race, marital status, educational background, and the number and type of chronic conditions.
Setting

The setting for this project was a private family practice clinic in suburban Southern California that accepts Medicare beneficiaries. The city location has a population of about 127,000, with Caucasians comprising about 75%, Hispanics 23%, and others 2% of the total population (U.S. Census Bureau, 2015). The practice has 9 providers: 4 physicians, 3 NPs, and 2 PAs. The practice cares for about 3,500 patients, of which about 860 are Medicare recipients.

Sample

A convenience sample of 36 eligible patients was included in the study. Eligibility was determined based on the Medicare beneficiaries with the following attributes: (a) age greater than or equal to 65 years and (b) two or more chronic conditions. This sample included some patients with T2DM based on the typical profile of patients seen in this practice setting and the identification that this condition responds best to CCM (Coleman et al., 2009). Exclusion criteria included those participants who refused to participate; chose to opt out of the CCMP after the program initiation; did not understand, speak, or write English; did not have access to telephones; had an existing diagnosis of cognitive impairment; were unwilling to complete the Chronic Disease Sample Questionnaire; and were treated by the principal investigator for any health care needs within 1 year of date of study enrollment.

Instruments

A comprehensive questionnaire toolkit was used in this project titled, “Chronic Disease Sample Questionnaire (CDSQ).” Developed by the Stanford Patient Education Research Center (2007a), it is specifically geared to assess patients’ overall health
statuses with chronic conditions. The first part of this survey contains demographic questions, including gender, date of birth, ethnic origin, educational background, marital status, and the number and type of currently existing chronic conditions. The second section of the survey contains 33 self-rated questions regarding mental and physical health, health-related activities and medical service utilization. A minor change was made to this survey to capture other details; two additional questions were added to the “Medical Care” section of the survey to assess the number of UC visits and the number of NP/PA visit to reflect the current practice setting. The survey includes the following instruments:

1. Self-Rated Health (Lorig et al., 1996). This instrument, with one question, measures the current general state of health.
2. Health Distress (Lorig et al., 1996). This instrument, with four questions, measures feelings and concerns about the overall health.
3. Fatigue Visual Numeric (Ritter, Gonzalez, Laurent, & Lorig, 2006). This instrument, in graph format, measures fatigue level in the past 2 weeks.
4. Shortness of Breath Visual Numeric (Ritter et al., 2006). This instrument, in graph format, measures shortness of breath in the past 2 weeks.
5. Pain Visual Numeric (Ritter et al., 2006). This instrument in graph format, measures pain level in the past 2 weeks.
6. Exercise Behavior questions on stretching/strengthening exercises, and Aerobic Exercise (Lorig et al., 1996). This instrument with a total of six questions, on a Likert scale, measures physical activity levels in the past week.
7. Self-Efficacy for Managing Chronic Disease (Lorig, Sobel, Ritter, Laurent, & Hobbs, 2001). This instrument with six questions, on a Likert scale, measures confidence about doing things.

8. Daily Activities (Lorig et al., 1996). This instrument with four questions, on a Likert scale, assesses limitations of social/role activities.

9. Medical Care (Lorig et al., 1996). This instrument includes two parts; the first part lists three questions on a Likert scale regarding the level of communication with physicians, and the second part has four questions regarding healthcare utilization.

Table 1 contains itemized survey characteristics on all of the aforementioned measurements from the (CDSQ) and describes the internal consistency reliability testing and test-retest reliability analysis conducted on this instrument (Sample Questionnaire, Chronic Disease, Stanford Patient Education Research Center, 2007a).

The second part of the survey assesses the utilization of the following services in the past 6 months:

- Number of physician visits
- Number of emergency department visits
- Number of hospitalizations
- Number of hospitalization days
- Skilled nursing facility admission (yes or no).

The CDSQ scheduled to be mailed out at 6 months (April of 2016) and 12 (October of 2016) months post-enrollment contains two additional questions that elicit qualitative responses. The first question asks, “Has the Chronic Care Management
Program helped to improve your health outcome? If yes, describe how.” The second question asks, “What changes would you like to see in the Chronic Care Management Program to help improve your health outcome?”

Table 1

*Itemized Survey Characteristics of Chronic Disease Sample Questionnaire*

<table>
<thead>
<tr>
<th>Survey Items</th>
<th>No. of Items</th>
<th>N for Test-Retest</th>
<th>Internal Consistency for Reliability</th>
<th>Test-Retest Reliability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-Rated Health</td>
<td>1</td>
<td>51</td>
<td>--</td>
<td>.92</td>
</tr>
<tr>
<td>Health Distress</td>
<td>4</td>
<td>51</td>
<td>.87</td>
<td>.87</td>
</tr>
<tr>
<td>Fatigue Visual Numeric</td>
<td>1</td>
<td>122</td>
<td>--</td>
<td>NA</td>
</tr>
<tr>
<td>Shortness of Breath Numeric</td>
<td>1</td>
<td>122</td>
<td>--</td>
<td>NA</td>
</tr>
<tr>
<td>Pain Visual Numeric</td>
<td>1</td>
<td>42</td>
<td>--</td>
<td>.92</td>
</tr>
<tr>
<td>Stretching</td>
<td>1</td>
<td>51</td>
<td>--</td>
<td>.56</td>
</tr>
<tr>
<td>Aerobic Exercise</td>
<td>5</td>
<td>51</td>
<td>--</td>
<td>.72</td>
</tr>
<tr>
<td>Self-Efficacy</td>
<td>6</td>
<td>605</td>
<td>.91</td>
<td>NA</td>
</tr>
<tr>
<td>Social/Role Activities Limitations</td>
<td>4</td>
<td>51</td>
<td>.91</td>
<td>.68</td>
</tr>
<tr>
<td>Communication with Providers</td>
<td>3</td>
<td>51</td>
<td>.73</td>
<td>.89</td>
</tr>
<tr>
<td>Provider Visits</td>
<td>1</td>
<td>51</td>
<td>--</td>
<td>.76</td>
</tr>
<tr>
<td>ER Visits</td>
<td>1</td>
<td>51</td>
<td>--</td>
<td>.94</td>
</tr>
<tr>
<td>Hospitalized Times</td>
<td>1</td>
<td>51</td>
<td>--</td>
<td>.89</td>
</tr>
<tr>
<td>Hospitalized Nights</td>
<td>1</td>
<td>51</td>
<td>--</td>
<td>.97</td>
</tr>
</tbody>
</table>

*Note.* NA = not applicable. Adapted from *Chronic Disease Self-management Program Questionnaire Code Book*, 2007b, Stanford Patient Education Research Center.
Data Collection Procedure

The project development was divided into two planning phases. Each phase was further subdivided.

Planning Phase I

Program development and participant enrollment. The CCMP team was formed in consultation with the clinic director and led by the author. The team included interprofessional team members (i.e., nurse practitioners, physicians, physician assistants, medical assistants, and administrators). Two meetings were held to disseminate the details of the CCMP and the DNP project. During these sessions, designation of team member roles and duties were discussed, along with the call logistics of the program. Furthermore, during this phase, CCMP Pamphlets (Appendix C), CCMP Introduction Letter (Appendix D), CCMP Consent Letter (Appendix E), Consent to Participate in a Research Study (Appendix F), A Script for Invitation to Participate in a Research Study (Appendix I), Patient Centered Care plans (Appendix G), and Additional Survey Questions (Appendix B) were developed and/or modified by the author. Content structures and procedures of care management calls, along with the generalized care plans, were formulated.

Participant identification/mailing and displaying of CCMP pamphlets. From a list of Medicare beneficiaries, potential eligible CCMP participants were identified and confirmed by the providers. Subsequently, CCMP pamphlets were mailed to all eligible Medicare recipients belonging to the clinic and displayed throughout the office (Appendix C).
Enrollment appointments and consents. Eligible patients for CCMP, who were identified by their providers at the practice site or those who called back with interest, were scheduled for enrollment visits. The initial visits were scheduled as either Initial Preventative Physical Exams (IPPE), or Medicare Annual Wellness Exams (AWE) for established beneficiaries who had not had this performed in the past 12 months (CMS, 2015), or as Complex Exam Visits, if not eligible for either of the other visits.

Participant enrollment. An approval was granted to conduct a research study from the Institutional Review Board (IRB) of California State University, Long Beach (CSULB) on October 6, 2015. The study commenced on October 7, 2015, with data collection scheduled to continue through December of 2016. Additionally, the agency approval (Appendix H) to conduct a research study was granted on September 3, 2015. Two-part informed consents were used in this study: first, for the CCMP and second, for the DNP project. At the initial face-to-face enrollment visit, written consents for the CCMP were obtained from participants (Appendix E) and copies were provided. Subsequently, a script for invitation to participate in the DNP project (Appendix I) was read and explained by a trained office administrator to prevent potential perceived coercion. This document contained detailed explanation of the consent, purpose, and potential risks and benefits of this research study. After the consent to participate in the study was obtained and copies provided (Appendix F), the CDSQs (Appendix A) were administered and collected in manila envelopes. To link the survey documents and medical records, each study participant was designated a project identification number as an identifier and recorded in the actual data collection tool. A separate book that matched patient number and study patient number was kept in a locked file cabinet at the study
location. Addresses and names filed under the medical record numbers are solely to mail survey questionnaires at 6-months and 12-months post enrollment. This time frame represents the post-DNP portion of the project. Figure 3 is a configuration of participant flow.

![Participant Flow Diagram]

*Figure 3. Participant flow.*

HbA1c levels and blood pressures 6 months pre-CCMP implementation and within 1 month of enrollment visit were reviewed and collected as baseline data during this enrollment visit. HbA1c levels and blood pressures were chosen as outcome measures because of their accessibility within the electronic health records (EHR). Electronic health records were also audited for reliability, including additional pertinent
medical and social history and self-reported medical care utilization rates. Furthermore, an individualized plan of care with pertinent, shared goals was developed for each participant as part of CCMP objectives. At least one individualized goal per chronic illness was established as the focus of subsequent calls.

**Planning Phase II**

**Care coordination service calls.** The coordination service phone calls were scheduled and placed by the MAs within 5 days of target date (30 days after the enrollment visit and monthly after that). The same MA was assigned to make monthly calls to the participant for the purpose of consistency. Using Patient Centered Care Plans and (Appendix F) and semi-structured Monthly Care Coordination Questions (Table 2) as guidelines, participants were provided with care coordination services calls. Monthly Care Coordination Questions are a set of questions asked of all patients and disease specific questions for those with hypertension and/or T2DM. These individualized care plans reflect the plan of care for specific chronic conditions and pertinent personal goals, and they adhere to the clinical practice guidelines. With each subsequent service call every 30 days, these care plans were updated, modified, and monitored as deemed necessary. The individualized care plans were bridged to the currently existing electronic medical records and remained accessible to the CCMP team members for post-call care coordination. The monthly phone calls, on average, lasted 20 minutes and included the review of chronic conditions, medication reconciliations, referral services, and transition/coordination of care with other providers. Those cases involving assessment of clinical status, contact for complex clinical issues and medication issues, return calls for
24/7 access, and diagnosing were immediately forwarded to nurse practitioners, physicians, and physician assistants for timely interventions.

Table 2

*Monthly Care Coordination Questions*

<table>
<thead>
<tr>
<th>Category</th>
<th>Yes/No/Notes</th>
<th>If Yes, Request Consult/Results/Labs</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Chronic Care Service Questions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>In the past month (or since the last CCMP call),</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Have there been any changes in your chronic conditions?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. If so, in what and how?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Are you taking with your medications as directed?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Do you have any problems with your medications?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Did you get any labs done?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Have there been any changes in your caregiver?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Have you had any ER or UC visits?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Were you admitted in the hospital or SNF?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Have you had any procedures done?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Have you seen any specialists?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. What progresses have you made with your goals?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Goal #1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Goal #2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Goal #3</td>
<td></td>
<td></td>
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<tr>
<td>Goal #4</td>
<td></td>
<td></td>
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<tr>
<td>Goal #5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. Do you have any immunizations due?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. Are you adhering to your diet as advised?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14. Are you compliant with your exercise as advised?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15. Do you have a follow-up appt with your PCP? If so, when is it?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16. Do you have any concerns or questions?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hypertension Question</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17. Are you checking your BP at home?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>If so, what is your average?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diabetes Questions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18. Are you checking your blood sugars at home? If so, what is your average?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19. When is your next HbA1C due?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Date: _______________  MA Initials: ________  Provider Initials: ________
The care coordination calls have three main aims: (a) to facilitate interdisciplinary collaboration and encourage active patient and caregiver participation through encouragement of self-management behaviors; (b) to promote medication compliance and self-management, ensure prompt follow-ups and complete recommended diagnostic tests; and (c) foster communication between patients, caregivers, and providers.

**Follow-up surveys and plans.** As follow-up at 6-months and 12-months from baseline, the CDSQ will be mailed to each research project participant, along with self-addressed, stamped envelopes. The stamps and envelopes will be provided by the practice. In addition, BP and HbA1c measurements completed within 1 month either before or after each of the follow-up time points will be collected until the conclusion of the project.

**Protection of Human Subjects**

To maintain the protection of participants’ rights and ensure the research is conducted in an ethical manner, the following steps were initiated:

- The proposal was submitted and approved by the IRB of the CSULB prior to initiation.
- An agency approval letter was submitted and approved by the medical director at the place of employment prior to initiation.
- Patients were informed that participation in the CCMP and the project is completely voluntary.

In addition, the participants’ rights were explained and the choice to withdraw from the program and/or study at any time was given. To protect their anonymity, no names or contact information were collected on the surveys. Participant identification numbers and
participant information related to the study will remain confidential and solely be
disclosed with participants’ permission or as required by law.

Potential threats include loss of confidentiality; however, all efforts were made to
protect the participants’ confidentiality rights. All care plans and EHR patient
information were stored safely, using secure servers, abiding by the Health Insurance
Portability and Accountability Act (CMS, 1996) regulations. All telephone calls were
made in the private clinic office, where non-medical personnel cannot overhear
conversations. The author’s chair and committee members, along with the IRB of
CSULB, reviewed the project proposal to safeguard the protection of participant rights
and to ensure the project was conducted in an ethical manner. Raw data from the
questionnaires were available only to the author, faculty members, and statistician. Data
collected for the project were kept safe in a locked cabinet at the author’s place of
employment. These files are only accessible to the author. Subsequently, collected data
will be promptly shredded and destroyed at the end of 3 years.

Limitations

Data of interest were collected on a convenience sample of 36 initial participants.
Hence, the main limitation of this study is its low statistical power due to its small sample
size and the lack of a comparison group. As a result, true differences in the dependent
variables may not be detected. Furthermore, the convenience sample of 36 was drawn
and referred from the providers at the author’s place of employment and thus may not
represent any other population.
**Data Analysis**

The baseline characteristics of the sample are described with measures of central tendency (frequencies, means, and standard deviations). Data collected at 6-months and 12-months post-enrollment will be analyzed using inferential statistical testing (e.g., 2-sample t tests for continuous variables and chi square tests for categorical variables) to examine changes in dependent variables over time. HbA1c and BP measurements are collected during participants’ routine primary care follow-up appointments’ thus, a linear mixed model approach to incorporate random intercepts will be fitted to analyze the data at a future date when 12 months of data entry are completed.

**Summary**

The purpose of this project was to develop and implement a CCMP in a primary care practice setting based on the Chronic Care Model and to evaluate the patient-centered health outcomes based on the Triple Aim of the Affordable Care Act (2010). Although the 6-month and 12-month evaluation of the intervention will not occur during the actual DNP program, the author presents a rigorous evaluation plan to assess the efficacy of the program during its first 3 months of implementation. The goals of this continuing project are essentially twofold. The first is to provide a cost effective patient centered model of care while improving patient health and health care. The second is an opportunity for the author to develop the skills as an advanced practice nurse to initiate a practice change and evaluate its outcomes using metrics developed a priori.
RESULTS

This chapter contains the first 3-months preliminary analysis of data from 12 total months of data collection scheduled to occur until December of 2016. It begins with demographic characteristics, followed by analyses on health outcomes and health care outcomes. Subsequently, research questions are analyzed on health care outcomes, value outcomes, and health and value outcome relations.

Baseline Data

Demographic Characteristics

The demographic characteristics of this sample of 36 patients are described in Table 3. Patients are predominantly White and married, with gender equally represented. The sample is generally highly educated, with the majority reporting completion of some degree of higher education. The mean age of participants is 71.8 ($SD = 6.28$) years. In order of prevalence, the common diagnosis included hypertension, hyperlipidemia, diabetes, obesity, and arthritis. The percentage of participants with hypertension was 91.7%, with a mean SBP of 125.6 mmHg ($SD = 11.1$) and a mean DBP of 74.5 mmHg ($SD = 7.7$) at baseline. The percentage of participants with diabetes mellitus was 55.6% with a mean HbA1c level of 6.6 ($SD = 1.1$) at baseline.

Measures on Improved Health Outcome

The health outcomes are measured with the CDSQ. Table 4 shows the preliminary analysis of participants’ responses to the CDSQ at baseline. At the end of data collection, the table will summarize a series of one-way ANOVAs comparing patient scores across three time periods: at baseline, months 6, and months 12 post CCMP.
intervention. The last column labeled eta-square will measure the effect size once all of the data are collected.

Table 3

**Sociodemographic Characteristics of Sample (N = 36)**

<table>
<thead>
<tr>
<th>Variable</th>
<th>M ± SD (Range)</th>
<th>Frequency (Valid %)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>65-74</td>
<td>71.8 ± 6.28 (65-81)</td>
<td>25 (69.4)</td>
</tr>
<tr>
<td>75-84</td>
<td>11 (30.6)</td>
<td></td>
</tr>
<tr>
<td><strong>Years of School completed</strong></td>
<td>14.8 ± 4.5 (2-23)</td>
<td></td>
</tr>
<tr>
<td>Primary (1-6)</td>
<td>2 (5.6)</td>
<td></td>
</tr>
<tr>
<td>High School (7-12)</td>
<td>10 (27.8)</td>
<td></td>
</tr>
<tr>
<td>College (13-16)</td>
<td>13 (36.1)</td>
<td></td>
</tr>
<tr>
<td>Graduate School (17+)</td>
<td>11 (30.6)</td>
<td></td>
</tr>
<tr>
<td><strong>Sex</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>18 (50)</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>18 (50)</td>
<td></td>
</tr>
<tr>
<td><strong>Ethnic Origin</strong></td>
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<td></td>
</tr>
<tr>
<td>White</td>
<td>26 (72)</td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>1 (3)</td>
<td></td>
</tr>
<tr>
<td>Hispanic</td>
<td>4 (11)</td>
<td></td>
</tr>
<tr>
<td>Asian/Pacific Islander</td>
<td>5 (14)</td>
<td></td>
</tr>
<tr>
<td><strong>Marital Status</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>27 (74)</td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>2 (6)</td>
<td></td>
</tr>
<tr>
<td>Divorced</td>
<td>2 (6)</td>
<td></td>
</tr>
<tr>
<td>Widowed</td>
<td>5 (14)</td>
<td></td>
</tr>
<tr>
<td><strong>Number of Chronic Health Conditions</strong></td>
<td>6.5 ± 2.1 (3-13)</td>
<td></td>
</tr>
<tr>
<td>Hypertension</td>
<td>33 (91.7)</td>
<td></td>
</tr>
<tr>
<td>Hyperlipidemia</td>
<td>27 (75)</td>
<td></td>
</tr>
<tr>
<td>Diabetes</td>
<td>20 (55.6)</td>
<td></td>
</tr>
<tr>
<td>Obesity</td>
<td>16 (44.4)</td>
<td></td>
</tr>
<tr>
<td>Arthritis</td>
<td>13 (36.1)</td>
<td></td>
</tr>
</tbody>
</table>

**Measures on Improved Health Care Outcome**

Improved health care outcomes were measured through the comparison of SBP and DBP from baseline to month 3 for the purpose of preliminary analysis. Meeting the SBP goal of < 140 mmHg (CMS, 2015) at baseline were 93.3% of participants, and
Table 4

*Preliminary Summary of Participants’ Responses on Health Outcomes at Baseline and Proposal of Analysis (Anticipated N = <36>)*

<table>
<thead>
<tr>
<th>Item</th>
<th>Baseline</th>
<th>6 month</th>
<th>12 month</th>
<th>F</th>
<th>df</th>
<th>p</th>
<th>(\chi^2)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>General health (1-5, higher score indicates poorer health)</strong></td>
<td>3.19 (0.92)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Symptoms (0-5, higher score indicates more symptoms)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Discouraged by health problems</td>
<td>1.61 (1.38)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fearful about future health</td>
<td>1.47 (1.46)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Worry about health</td>
<td>1.47 (1.30)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frustrated by health problems</td>
<td>1.61 (1.54)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fatigue (0-10, higher score indicates more symptoms)</td>
<td>3.92 (2.47)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shortness of Breath (0-10, higher score indicates more symptoms)</td>
<td>1.94 (2.38)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pain (0-10, higher score indicates more symptoms)</td>
<td>4.00 (2.56)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Physical Exercises (minutes per week)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stretching of strengthening exercises (A)</td>
<td>1.00 (1.09)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Walk for exercise (B)</td>
<td>1.53 (1.28)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Swimming or aquatic exercise (C)</td>
<td>0.06 (0.35)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bicycling (including stationary) (D)</td>
<td>0.24 (0.66)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aerobic equipment (E)</td>
<td>0.00 (0.00)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other aerobic exercise (F)</td>
<td>1.09 (1.72)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Confidence (0-10, higher score indicates more confidence)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Keep fatigue interfering with doing things</td>
<td>6.91 (2.44)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Keep physical discomfort/pain from doing things</td>
<td>6.85 (2.54)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Keep emotional distress from doing things</td>
<td>7.35 (2.76)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Keep any symptoms from doing things</td>
<td>7.61 (3.99)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do tasks to reduce doctor visits</td>
<td>7.42 (4.20)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do things to reduce effects on your life</td>
<td>7.61 (4.14)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 4, continued

<table>
<thead>
<tr>
<th>Item</th>
<th>M (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Baseline</td>
</tr>
<tr>
<td>Daily Activities (0-4, higher score indicates more interference)</td>
<td></td>
</tr>
<tr>
<td>Health interference with social activities</td>
<td>1.42 (4.16)</td>
</tr>
<tr>
<td>Health interference with hobbies</td>
<td>1.78 (4.13)</td>
</tr>
<tr>
<td>Health interference with household chores</td>
<td>1.86 (4.16)</td>
</tr>
<tr>
<td>Health interference with errands/shopping</td>
<td>1.64 (4.13)</td>
</tr>
<tr>
<td>Communication with Doctor (0-5, higher score indicates more</td>
<td></td>
</tr>
<tr>
<td>involvement)</td>
<td></td>
</tr>
<tr>
<td>Prepare a list of questions</td>
<td>2.00 (1.37)</td>
</tr>
<tr>
<td>Ask questions about treatment</td>
<td>3.28 (1.21)</td>
</tr>
<tr>
<td>Discuss personal problems related to illness</td>
<td>2.75 (1.38)</td>
</tr>
<tr>
<td>Utilization</td>
<td></td>
</tr>
<tr>
<td>Physician</td>
<td>5.25 (5.22)</td>
</tr>
<tr>
<td>ER</td>
<td>1.08 (4.23)</td>
</tr>
<tr>
<td>Hospitalization</td>
<td>0.92 (4.17)</td>
</tr>
<tr>
<td>Hospitalized, Nights</td>
<td>1.17 (4.37)</td>
</tr>
<tr>
<td>Skilled Nursing Facility/Convalescent Hospital (Yes/No)</td>
<td>0.04 (0.19)</td>
</tr>
<tr>
<td>NP/PA</td>
<td>1.86 (4.24)</td>
</tr>
<tr>
<td>Urgent Care Clinic</td>
<td>0.89 (4.18)</td>
</tr>
</tbody>
</table>
92.3% of participants who were enrolled 3 months or more met the SBP goal at month 3. Additionally, 100% of participants met the DBP goal of < 90 (CMS, 2015) at both baseline and month 3. Table 5 describes patients meeting the BP goal of < 140/90 at baseline and month 3. The difference in the total number of participants between baseline and month 3 for each measurement is due to the insufficient time elapsed for follow-up data collection for some participants.

Table 5

*Descriptive Statistics on Achieving BP Goals at Baseline and Month 3*

<table>
<thead>
<tr>
<th>Blood Pressure Goals</th>
<th>Baseline</th>
<th>Month 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Systolic Blood Pressure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 140</td>
<td>31 (93.9%)</td>
<td>24 (92.3%)</td>
</tr>
<tr>
<td>≥ 140</td>
<td>2 (6.1%)</td>
<td>2 (7.7%)</td>
</tr>
<tr>
<td>Diastolic Blood Pressure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 90</td>
<td>33 (100%)</td>
<td>26 (100%)</td>
</tr>
<tr>
<td>≥ 90</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

The number of monthly CCMP service calls ranged from 0 to 4 for each participant, with the majority receiving 1 or 2. The following research questions (RQ) were deployed to compare the preliminary results of SBP, DBP and HbA1c at baseline and month 3.

**Research Questions**

*RQ 1: What is the mean SBP, DBP and HbA1c level at baseline and month 3 post CCMP implementation?* Table 6 is a mean distribution table of SBP, DBP, and HbA1c levels at baseline and month 3. The difference in the total number of participants between baseline and month 3 for each measurement is due to the insufficient time elapsed for follow-up data collection for some participants.
Table 6

_Mean Distribution Table of SBP/DBP and HbA1c Levels at Baseline and Month 3_

<table>
<thead>
<tr>
<th>Central Tendencies</th>
<th>SBP Baseline</th>
<th>SBP Month 3</th>
<th>DBP Baseline</th>
<th>DBP Month 3</th>
<th>HbA1c Baseline</th>
<th>HbA1c Month 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>N Valid</td>
<td>33</td>
<td>26</td>
<td>33</td>
<td>26</td>
<td>20</td>
<td>8</td>
</tr>
<tr>
<td>N Missing</td>
<td>3</td>
<td>10</td>
<td>3</td>
<td>10</td>
<td>16</td>
<td>28</td>
</tr>
<tr>
<td>M</td>
<td>125.5758</td>
<td>127.1154</td>
<td>74.5455</td>
<td>73.5385</td>
<td>6.6050</td>
<td>6.5125</td>
</tr>
<tr>
<td>SD</td>
<td>11.14403</td>
<td>12.37522</td>
<td>7.73826</td>
<td>8.33897</td>
<td>1.06498</td>
<td>0.53033</td>
</tr>
</tbody>
</table>

_Q2: What is the difference in patients’ scores on SBP, DBP, and HbA1c when compared at baseline and 3 months post CCMP implementation?_ The differences in patients’ scores on SBP, DBP and HbA1c were compared at baseline and 3-months following using a series of paired samples t tests. As shown in Table 7, no statistically significant changes were observed.

Table 7

_Summary of Paired Samples t Tests Comparing Baseline and 3-Month Follow-up Scores (n = 8-26)_

<table>
<thead>
<tr>
<th>Measurements</th>
<th>$M_{\text{baseline}}$</th>
<th>$M_{\text{3-month}}$</th>
<th>t</th>
<th>df</th>
<th>p</th>
<th>Cohen’s d</th>
</tr>
</thead>
<tbody>
<tr>
<td>Systolic BP</td>
<td>125.46</td>
<td>127.12</td>
<td>-0.47</td>
<td>25</td>
<td>.64</td>
<td>-.09</td>
</tr>
<tr>
<td>Diastolic BP</td>
<td>74.50</td>
<td>73.54</td>
<td>.455</td>
<td>25</td>
<td>.65</td>
<td>.09</td>
</tr>
<tr>
<td>HbA1c</td>
<td>6.36</td>
<td>6.51</td>
<td>-1.36</td>
<td>7</td>
<td>.22</td>
<td>.89</td>
</tr>
</tbody>
</table>

The following research questions were deployed to assess the differences in health care outcome between one vs. two calls. Most participants received either one or two CCMP calls; hence, the group who received one call was compared with the group who received two calls.
**RQ3:** Did the change in HbA1c levels from baseline to month 3 differ for patients receiving one vs. two CCMP calls? An independent samples t test revealed no statistically significant difference in changes in HbA1c for patients receiving one call ($M = 0.27$) vs. two calls ($M = 0.08$; $t(6) = 0.80, p = .46, d = 0.57$). Given the small sample size of this pilot data, the decision was made to run a power analysis to determine how many subjects would be needed to find a difference of this size to be statistically significant. The post hoc power analysis revealed a sample of at least 164 patients would be needed to have an 80% probability of detecting a difference as statistically significant at the 0.95 level of confidence. Given the relatively small sample size needed and observation of a moderate effect size (Cohen’s $d = 0.57$), it seems probable that reminder calls have a clinically meaningful impact on patients’ HbA1c scores.

**RQ4:** Did the change in SBP levels from baseline to month 3 differ for patients receiving one vs. two calls? An independent samples t test revealed no statistically significant difference in changes in SBP for patients receiving one call ($M = 9.14$) vs. two calls ($M = -1.11$; $t(24) = 1.30, p = .21, d = 0.53$). Given the small sample size of this pilot data, the decision was made to run a power analysis to determine how many subjects would be needed to find a difference of this size to be statistically significant. The post hoc power analysis revealed that a sample of at least 124 patients would be needed to have an 80% probability of detecting a difference as statistically significant at the 0.95 level of confidence. Given the relatively small sample size needed and observation of a moderate effect size (Cohen’s $d = 0.56$), it seems probable that reminder calls have a clinically meaningful impact on patients’ SBP levels.
RQ 5: Did the change in DBP levels from baseline to month 3 differ for patients receiving one vs. two calls? An independent samples t test revealed no statistically significant difference in changes in DBP for patients receiving one call (M = 3.71) vs. two calls [M = -2.68; t(24) = 1.37, p = .19, d = 0.56]. Given the small sample size of this pilot data, the decision was made to run a power analysis to determine how many subjects would be needed to find a difference of this size to be statistically significant. The post hoc power analysis revealed a sample of at least 124 patients would be needed to have an 80% probability of detecting a difference as statistically significant at the 0.95 level of confidence. Given the relatively small sample size needed and observation of a moderate effect size (Cohen’s d = 0.56), it seems probable that reminder calls have a clinically meaningful impact on patients’ DBP levels.

For research questions 4 and 5, the participants were dichotomized into two groups: those who received one call vs. those who received two, three, or four calls.

RQ 6: Did patients’ home glucose testing behaviors differ for patients receiving one vs. more than one call? Chi-square test of independence revealed no statistically significant association between number of CCMP calls and patients’ rate of blood glucose testing [$\chi^2(1) = 0.72, p = .40$].

RQ 7: Did patients’ BP checking behaviors differ for patients receiving one vs. more than one call? Chi-Square test of Independence revealed no statistically significant association between number of CCMP calls and patients’ rate of BP checking ($\chi^2(1) = 1.36, p = .24$).

RQ 8: Did the compliance rate between checking the BP at home combined with checking the HbA1c at home show significant differences? To determine the effects of
compliance rate of home BP monitoring and blood glucose monitoring on patients’ in-clinic blood pressure and HbA1c levels, a trio of independent samples t tests were conducted. As shown in Table 8, no statistically significant differences were seen in patient outcomes between patients who tested their own glucose levels and/or BP, though the effect sizes for analyses related to BP monitoring were large.

Table 8

Effects of Self-Monitoring on SBP/DBP and Blood Glucose

<table>
<thead>
<tr>
<th>Measurements</th>
<th>$M_{\text{non-compliant}}$</th>
<th>$M_{\text{compliant}}$</th>
<th>$t$</th>
<th>$df$</th>
<th>$p$</th>
<th>Cohen’s $d$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blood Glucose Testing</td>
<td>.10</td>
<td>.08</td>
<td>0.09</td>
<td>3</td>
<td>.93</td>
<td>.10</td>
</tr>
<tr>
<td>Blood Pressure Monitoring, Systolic</td>
<td>13.00</td>
<td>0.92</td>
<td>0.99</td>
<td>12</td>
<td>.34</td>
<td>.94</td>
</tr>
<tr>
<td>Blood Pressure Monitoring, Diastolic</td>
<td>-10.00</td>
<td>2.67</td>
<td>-1.56</td>
<td>12</td>
<td>.15</td>
<td>-.90</td>
</tr>
</tbody>
</table>

RQ 9: Is there a difference in the patient’s general health score in married patients vs. others? Marital statuses were dichotomized into two groups of married vs. all others. An independent samples t test failed to detect a statistically significant difference in married patients’ general health scores ($M = 3.04$) compared to patients not currently married [$M = 3.67$; $t(34) = 1.84$, $p = .08$, $d = .63$]. This question is geared to evaluate whether marital status (having support) affects general health and to make meaningful connections to the level of health care needed.

Measures on Improved Value Outcome

Table 2 showed the summary of participants’ responses to Medical Care utilization section of the CDSQ at baseline. The mean number of physician visits in the past 6 months was $5.25 (SD = 5.22)$. The mean number of hospital emergency department visits in the past 6 months was $1.08 (SD = 4.23)$. The mean number of hospitalizations in
the past 6 months was 0.92 (SD = 4.17). The mean number of hospital days was 1.17 (SD = 4.37). The mean number of UC clinic visits was 0.89 (SD = 4.18). Changes in cost value outcomes will be measured through the comparison of data collected at 6 months and 12 months post CCMP intervention on all six of the Medical Care utilization section questions. The outcomes of interest include physician, ER, UC, hospital and SNF utilization.

**Measures on Health and Value Outcome Relations**

*RQ 10: What is the relation between General Health (Q #1) and the number of visits to physician, NP, and PA?* Calculation of Pearson correlations revealed a moderate, positive association between scores on the General Health measure and number of physician visits \( (r = .44, p = .008) \). This translates to increased number of physician visits for those with poorer health. However, no association was observed between the General Health measure and NP/PA visits \( (r = .11, p = .51) \). This may be attributable, in part, to the much higher utilization of physician visits \( (M = 5.22, SD = 5.22) \), compared to NP/PA visits \( (M = 1.20, SD = 1.53) \). This result is likely due to all of the NP/PAs working part-time schedules at the study site compared to the physicians working full-time.

*RQ 11: What is the relation between physical activities and ER visits, hospitalizations, and UC visits?* A correlation matrix was utilized to examine the relation between the six measures of physical activity and ER visits, hospitalizations, and UC visits (Table 9). No statistically significant relationship was observed between the physical activity variables and ER or Urgent Care utilization. However, a pair of unusual correlations emerged between number of Hospitalizations and two of the Physical
Activity variables. In both instances, positive correlations emerged, suggesting that patients who engaged in more physical activity also experienced more hospitalizations. Given the limitations of this dataset both in terms of size and in limited variation in patient scores (example: Physical C, one of the variables correlated with Hospitalizations, had only a single non-zero score, while another, Physical E, had identical scores for all participants), it seems likely these observed correlations, though statistically significant, are clinically meaningless and simply artifacts of the aforementioned data limitations.

Table 9

_Correlation Matrix of Physical Activity and Medical Services Utilization (N = 36)_

<table>
<thead>
<tr>
<th>Items</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Physical A</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Physical B</td>
<td>.50**</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Physical C</td>
<td>.17</td>
<td>-.07</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Physical D</td>
<td>.50**</td>
<td>.25</td>
<td>.48</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Physical E</td>
<td>a</td>
<td>a</td>
<td>a</td>
<td>a</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Physical F</td>
<td>.19</td>
<td>.37</td>
<td>a</td>
<td>.27</td>
<td>a</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. ER Visits</td>
<td>.26</td>
<td>.10</td>
<td>.26</td>
<td>.03</td>
<td>a</td>
<td>-.12</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>8. Hospitalizations</td>
<td>.38*</td>
<td>.06</td>
<td>.62***</td>
<td>.31</td>
<td>a</td>
<td>-.14</td>
<td>.45**</td>
<td>-</td>
</tr>
<tr>
<td>9. Urgent Care</td>
<td>-.23</td>
<td>.16</td>
<td>-.06</td>
<td>-.13</td>
<td>a</td>
<td>-.19</td>
<td>.14</td>
<td>-.12</td>
</tr>
</tbody>
</table>

*Note.* aCorrelations could not be calculated; Ph. E was a constant.

**p < .01, ***p < .01.

_RQ 12: What is the relation between marital status and ER visits, hospitalization and UC visits?_ Marital statuses were dichotomized into two groups of married vs. all others. The presence of a support system was not individually assessed for each of the marital status reported. Despite medium to large effect sizes, a series of independent samples _t_ tests failed to detect any statistically significant difference in medical service utilization between married and unmarried patients (see Table 10).
Table 10

Summary of Independent Samples t Tests Comparing Married and Unmarried Patients’ Utilization of Medical Services (N = 36)

<table>
<thead>
<tr>
<th>Measures</th>
<th>$M_{\text{unmarried}}$</th>
<th>$M_{\text{married}}$</th>
<th>$t$</th>
<th>df</th>
<th>$p$</th>
<th>Cohen’s $d$</th>
</tr>
</thead>
<tbody>
<tr>
<td>ER Visits</td>
<td>1.00</td>
<td>0.22</td>
<td>1.12</td>
<td>7.37$^a$</td>
<td>.30</td>
<td>.55</td>
</tr>
<tr>
<td>Hospitalizations</td>
<td>0.13</td>
<td>0.26</td>
<td>-0.55</td>
<td>33</td>
<td>.59</td>
<td>-.25</td>
</tr>
<tr>
<td>Urgent Care</td>
<td>0.38</td>
<td>0.15</td>
<td>0.88</td>
<td>33</td>
<td>.38</td>
<td>.34</td>
</tr>
</tbody>
</table>

Note. $^a$ The assumption of equality of variances was violated, so degrees of freedom were corrected.
DISCUSSION

Due to the rapid aging of the population and longer life expectancy, chronic diseases are expected to cause more than three-quarters of all deaths by 2030 (WHO, 2006). In this pilot study, a CCMP was developed and implemented through monthly care coordination services to 36 eligible Medicare beneficiaries. Although the 3-month preliminary data did not demonstrate any statistically significant improvements in any of the measures, maintaining the health status of the elderly population and avoiding unnecessary emergency room visits and hospitalizations was clinically significant, and thus, it should serve as the future key approach to prevent rapid and costly deterioration.

Once the 12-month data collection and analyses are completed, it will provide more evidence regarding the health and economic effects of the CCMP through the deployment of a thorough and rigorous evaluation plan post DNP program.

Recommendations

It is advised that careful consideration and planning take occur to the implementation of the program to ensure successful CCMPs in primary care settings. Full staff participation and support in planning and implementation is ideal to promote patient adherence, possibly resulting in overall improved health outcomes. During this process, open and respectful channels of communication between the interprofessional personnel are recommended to positively impact the patient care, while bringing valuable experiences to the table for all to share. Furthermore, active communication between the health care providers and family members to promote care involvement and support should be inherent when caring for the elderly population. Additionally, while this study is still under progress, an adjustment of the CMS’ chronic care management payment
policy to the primary care providers is recommended. Currently, there is a set payment amount dispersed for primary care providers for 20 minutes of care service coordination per month, depending on the service region (CMS, 2015), which does not account for different levels of patient acuity. It may not require 20 minutes to coordinate services for those who are relatively healthy solely with two chronic conditions. Conversely, it may take double the time to coordinate care for those with 10 chronic conditions and lack of family support and/or resources. Furthermore, creation of a nation-wide database of resources and services for both providers and patients with the purpose of enhanced accessibility, may serve as a valuable tool to promote self-management and efficacy.

**Conclusion**

With the increasing prevalence of chronic diseases, it is imperative to implement strategies at the primary care level to decrease the burden for patients and society at large. CCMP, through monthly care coordination services, may be a pragmatic method to approach elderly, frail patients to enhance earlier detection of clinical deterioration and reduce comorbidities. Advanced practice nurses, while functioning with their fullest scope of practice, have the potential to embrace the primary role in improving the clinical outcomes in elderly patients with chronic conditions. Foundation based on evidence-based practice, coupled with effective communication and individualized care approach, will aid in development, implementation, and evaluation of a sustainable Chronic Care Management Program.
REFERENCES


Retrieved from: http://www.who.int/chp/chronic_disease_report/ English%20compressed.ppt?ua=1


http://www.who.int/whosis/whostat2006/en
APPENDIX A

STANFORD SAMPLE QUESTIONNAIRE, CHRONIC DISEASE

SAMPLE QUESTIONNAIRE

CHRONIC DISEASE

August 2007

You may use all or parts of the questionnaire at no charge without permission.
Participant ID Number: _____________ Birth Year: ________ Birth Month: ________

Name: ___________________________ Today’s date: __________

Address: ____________________________________________________________

City, state, zip: ____________________________

Telephone: home (_____) ________ - ________ Date of birth: ________

work (_____) ________ - ________ Sex (circle): Female Male

Background

1. Ethnic origin (check only one):

☐ White not Hispanic
☐ Black not Hispanic
☐ Hispanic
☐ Asian or Pacific Islander
☐ Filipino
☐ American Indian/Alaskan Native
☐ Other: ____________________________

2. Please circle the highest year of school completed:

1  2  3  4  5  6  7  8  9  10  11  12  13  14  15  16  17  18  19  20  21  22  23-
( primary) (high school) (college/ university) (graduate school)

3. Are you currently (check only one):

☐ Married
☐ Single
☐ Separated
☐ Divorced
☐ Widowed

4. Please indicate below which chronic condition(s) you have:

☐ Diabetes
☐ Asthma
☐ Emphysema or COPD
☐ Other lung disease Type of lung disease: ____________________________
☐ Heart disease Type of heart disease: ____________________________
☐ Arthritis or other rheumatic disease Specify type: ______________________
☐ Cancer Type of cancer: ____________________________
☐ Other chronic condition Specify: ____________________________
## General Health

1. In general, would you say your health is:

   (Circle one)

   Excellent .................................. 1
   Very good .................................. 2
   Good ........................................ 3
   Fair ......................................... 4
   Poor ........................................ 5

## Symptoms

How much time during the past 2 weeks...

<table>
<thead>
<tr>
<th>None of the time</th>
<th>A little of the time</th>
<th>Some of the time</th>
<th>A good bit of the time</th>
<th>Most of the time</th>
<th>All of the time</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>

1. Were you discouraged by your health problems? ........................................ 0
   1  2  3  4  5

2. Were you fearful about your future health? ........................................ 0
   1  2  3  4  5

3. Was your health a worry in your life? ........................................ 0
   1  2  3  4  5

4. Were you frustrated by your health problems? ........................................ 0
   1  2  3  4  5
1. We are interested in learning whether or not you are affected by fatigue. Please circle the number below that describes your fatigue in the past 2 weeks:

![Fatigue Scale]

2. We are interested in learning whether or not you are affected by shortness of breath. Please circle the number below that describes your shortness of breath in the past 2 weeks:

![Shortness of Breath Scale]

3. We are interested in learning whether or not you are affected by pain. Please circle the number below that describes your pain in the past 2 weeks:

![Pain Scale]
## Physical Activities

During the past week, even if it was not a typical week for you, how much total time (for the entire week) did you spend on each of the following? *(Please circle one number for each question.)*

<table>
<thead>
<tr>
<th>Activity</th>
<th>none</th>
<th>less than 30 min/week</th>
<th>30-60 min/week</th>
<th>1-3 hrs per week</th>
<th>more than 3 hrs/week</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Stretching or strengthening exercises</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>(range of motion, using weights, etc.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Walk for exercise</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>3. Swimming or aquatic exercise</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>4. Bicycling (including stationary exercise bikes)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>(Stairmaster, rowing, skiing machine, etc.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Other aerobic exercise equipment</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>(Stairmaster, rowing, skiing machine, etc.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Other aerobic exercise</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Specify</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## Confidence About Doing Things

For each of the following questions, please circle the number that corresponds with your confidence that you can do the tasks regularly at the present time.

### How confident are you that you can...

1. Keep the fatigue caused by your disease from interfering with the things you want to do?  
   - not at all confident  
   - 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | totally confident

2. Keep the physical discomfort or pain of your disease from interfering with the things you want to do?  
   - not at all confident  
   - 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | totally confident

3. Keep the emotional distress caused by your disease from interfering with the things you want to do?  
   - not at all confident  
   - 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | totally confident

4. Keep any other symptoms or health problems you have from interfering with the things you want to do?  
   - not at all confident  
   - 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | totally confident
How confident are you that you can...

5. Do the different tasks and activities needed to manage your health condition so as to reduce your need to see a doctor?  
   not at all  |  1 |  2 |  3 |  4 |  5 |  6 |  7 |  8 |  9 |  10  
   confident  |              |              |              |              |              |              |              |              |              |

6. Do things other than just taking medication to reduce how much your illness affects your everyday life?  
   not at all  |  1 |  2 |  3 |  4 |  5 |  6 |  7 |  8 |  9 |  10  
   confident  |              |              |              |              |              |              |              |              |              |

---

### Daily Activities

During the past 2 weeks, how much... (Circle one)

<table>
<thead>
<tr>
<th>Not at all</th>
<th>Slightly</th>
<th>Moderately</th>
<th>Quite a bit</th>
<th>Almost totally</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Has your health interfered with your normal social activities with family, friends, neighbors or groups? ........................................... 0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>2. Has your health interfered with your hobbies or recreational activities? .......................... 0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>3. Has your health interfered with your household chores? ............................................. 0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>4. Has your health interfered with your errands and shopping? ........................................... 0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

*Only one more page to go!*
Medical Care

1. When you visit your doctor, how often do you do the following (please circle one number for each question):

<table>
<thead>
<tr>
<th></th>
<th>Never</th>
<th>Almost never</th>
<th>Some- times</th>
<th>Fairly often</th>
<th>Very often</th>
<th>Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Prepare a list of questions for your doctor</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>b. Ask questions about the things you want to know and things you don't understand about your treatment</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>c. Discuss any personal problems that may be related to your illness</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

2. In the past 6 months, how many times did you visit a physician?
   Do not include visits while in the hospital or the hospital emergency department.__________ visits

3. In the past 6 months, how many times did you go to a hospital emergency department?______________________________ times

4. In the past 6 months, how many times were you hospitalized for one night or longer?______________________________ times

   a. How many total NIGHTS did you spend in the hospital in the past 6 months?______________________________ nights

   b. Were any of these hospitalizations at a skilled nursing facility, convalescent hospital, or other minimum care facility? (circle) ________ Yes ________ No

Thank you for your help!
APPENDIX B
ADDITIONAL SURVEY QUESTIONS

At months 0, 6 & 12

(1) In the past 6 months, how many times did you visit a nurse practitioner/physician's assistant?

____________ times

(2) In the past 6 months, how many times did you go to an urgent care clinic?

____________ times

At months 6 & 12

(3) Has the Chronic Care Management Program helped to improve your health outcome?

☐ Yes

☐ No

If yes, describe how:

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

(4) What changes would you like to see in the Chronic Care Management Program to help improve your health outcome?

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
APPENDIX C

CHRONIC CARE MANAGEMENT PAMPHLET

Sign up for CCM.

A new Medicare benefit that you can take advantage of! Help your doctors help you to keep your medical conditions under control on an ongoing basis.

Contact Us:
Phone: (805) 578-2967
Fax: (805) 583-0179

Ask us about our new Patient Portal.

Patient Centered Medicare Benefit

Now you can access your health care information from anywhere!

Physicians and Staff
Jun Kim, FNP-C
Audrey Zeh, FNP-BC
Leslie Buchanan, PA-C
Smita Mehta, PA-C
Bobbi Dacus, FNP-C
Alberto Odio, MD
Masahiro Kushigemachi, MD
Bruce Nelson, MD
Dominic Muzsnai, MD
What is Chronic Care Management?

In an age when Medicare and other insurance companies are narrowing their scope of covered benefits, there is a new program of value available to many Medicare beneficiaries. The program is called Chronic Care Management Program (CCMP). It is available to those with two or more chronic conditions that are expected last at least 12 months, because these conditions could place a patient at risk of decline. Medicare is recommending this new program that provides each qualified Medicare beneficiary at least 20 minutes of non-face-to-face clinical staff time (when directed by a physician or other qualified health care professional) per month.

What does a Chronic Care Management Program provide?

Chronic Care management will provide help in: answering your questions about your care; coordinating care with other providers and specialists; and facilitating appointments, home health care services and social support structure.

This program can give you the help you need to continue to live in the comfort of your home.

An example of when to use your Chronic Care Management services: you are returning from a visit with one of your specialists and his/her plan for your medications is very different from the one your PCP has prescribed for you. You can pick up the phone and talk with your CCMP Nurse Practitioner or Physician’s Assistant. They will communicate with the specialist to coordinate the care that your PCP has initiated. It could save you a trip into the office and put your mind at rest that you are on the best care plan available for your conditions.

Examples of Chronic Conditions

Include, but not limited to, the following:

- Arthritis (osteo and rheumatoid)
- Asthma
- Atrial fibrillation
- Congestive Heart Failure (CHF)
- Depression
- Diabetes
- Hypertension
- Ischemic Heart Disease
- Cancer
- COPD (Chronic Obstructive Pulmonary Disease)
- Alzheimer’s disease and related dementia.

There are other chronic diseases that are not listed above.
APPENDIX D

CHRONIC CARE MANAGEMENT PROGRAM

INTRODUCTION LETTER

Dear Medicare Patient:

This letter is to introduce you to a new service that the Centers for Medicare and Medicaid has announced for Medicare beneficiaries. The program is called Chronic Care Management ("CCM") and these services offer comprehensive care coordination for patients that have been diagnosed with two or more chronic illnesses. You are receiving this letter because as your providers at Alta California Medical Group, we feel that you could benefit from this service.

The goal of CCM is to better coordinate your care, improve communication between your doctors, help you receive all the services that you need and are entitled to, and help you better manage and control of your medical conditions. This will be achieved by assigning you a Care Team that will help coordinate your care and be available to you at all times. To qualify for the program, you must have two or more chronic conditions such as: hypertension, diabetes, high cholesterol, kidney disease, arthritis, depression, or cancer, among others. By participating in this program, you will be able to get extra assistance by phone from our providers and licensed staff on medication management, appointment scheduling with us and other doctors, educational materials, phone advice for minor problems, coordinating the transfer of care from hospital, ER or urgent care visits back to our office and much more.

While Alta California Medical Group may have already been providing some of these services to you, this Medicare program is now supporting the systematic use of these services. As a result, we are now able to efficiently and effectively dedicate time to monitoring your health by phone. Medicare and supplemental insurances cover these services typically with no out of pocket costs to the patient. Those without supplemental insurance might have a small co-pay (about $8 a month regardless of how many times you used or were provided services in a month).

Please call our office at 805-578-2967 and let us know that you are interested in the CCM services. You will need to sign a consent form to begin. While these services consist of mainly telephone activities by the practice, you will need to have an enrollment visit at our office so that an accurate problem and medication list may be obtained and a shared care plan which includes your personal needs and goals can be developed. Only one medical office may offer CCM Services to you during a 30-day period. If you sign up with our office, you cannot sign up with another office for CCM services unless you cancel the agreement you have with us. You may stop CCM services at any time.

Our Board-Certified Nurse Practitioner, Jun Kim, FNP-C, will be heading up the program, working with you and answering any questions. Please call our CCM number to find out more about the program. The number is 805-578-2967. We look forward to hearing from you, and are excited about the opportunity to improve the health of our patients through this new service.

Thank you for taking time.

Sincerely,

The Physicians, Nurse Practitioners, and Physician Assistants at Alta California Medical Group
APPENDIX E

CHRONIC CARE MANAGEMENT PROGRAM CONSENT

ALTA CALIFORNIA MEDICAL GROUP, INC.
2925 N. Sycamore Drive, Suite 204/205,
Simi Valley, CA 93065
805.578.2967

CONSENT FOR CHRONIC CARE MANAGEMENT

By signing this Agreement, you consent to Alta California Medical Group (referred to as “Provider”), by providing chronic care management services (referred to as “CCM Services”) to you as more fully described below.

CCM Services are available to you because you have been diagnosed with two (2) or more chronic conditions which are expected to last at least twelve (12) months and which place you at significant risk of further decline.

CCM Services include 24-hours-a-day, 7-days-a-week access to a health care provider in Provider’s practice to address acute chronic care needs; systematic assessment of your health care needs; processes to assure that you timely receive preventative care services; medication reviews and oversight; a plan of care covering your health issues; and management of care transitions among health care providers and settings. The Provider will discuss with you the specific services that will be available to you and how to access those services.

Provider Obligations
When providing CCM Services, the Provider must:
• Explain to you (and your caregiver, if applicable), and offer to you, all the CCM Services that are applicable to your conditions.
• Provide to you a written or electronic copy of your care plan.
• If you revoke this Agreement, provide you with a written communication of the revocation, stating the effective date of the revocation.

Beneficiary Acknowledgment and Authorization:
By signing this Agreement, you agree to the following:
• You consent to the Provider providing CCM Services to you.
• You authorize electronic communication of your medical information with other treating providers as part of coordination of your care.
• You acknowledge that only one practitioner can furnish CCM Services to you during a calendar month.
• You understand that cost-sharing will apply to CCM Services, so you may be billed for portion of CCM Services even though CCM Services will not involve a face-to-face meeting with the provider.

Beneficiary Rights:
You have the following rights with respect to CCM Services:
• The Provider will provide you with a written or electronic copy of your care plan.
• You have the right to stop CCM Services at any time by revoking this Agreement effective at the end of the then-current month. You may revoke this agreement verbally by calling Jun Kim, FNP-C or in writing (to Alta California Medical Group). Upon receipt of your revocation, the Provider will give you written confirmation (including the effective date) of revocation.
Title of Study: IMPLEMENTATION AND EVALUATION OF CHRONIC CARE MANAGEMENT PROGRAM IN A PRIMARY CARE SETTING

My name is Jun Kim. I am a Certified Family Nurse Practitioner and a Doctorate of Nursing Practice (DNP) student from the California State University Consortium program associated with the School of Nursing at California State University, Long Beach. You are being asked to participate in a study conducted by myself under the direction of Dr. David E. Kumrow, Associate Professor in the School of Nursing at California State University, Long Beach.

You have been asked to participate in this study because you are (1) a Medicare recipient between the ages of 65 and 99, and (2) able to speak, read, and write English, and (3) have 2 or more chronic health conditions, and (4) have access to a phone, and (5) enrolled into the Chronic Care Management Program, and (5) do not have any cognitive impairments in your prior medical history.

Purpose of the Study

The purpose of this project is to evaluate the effectiveness of the Chronic Care Management Program among the Medicare enrollees and analyze its outcome based on your survey responses, HbA1C levels on type II diabetics, blood pressures on hypertensives and to observe the number of emergency room visits, urgent care visits, hospitalizations and skilled nursing facility admissions compared to the period before the Chronic Care Management service initiation.

Procedures

Your participation in this study is voluntary. If you choose to participate, you will be requested to fill out a survey which consists of five (5) background questions and an additional thirty four (34) questions regarding your health status and health care utilization. It is important that you answer each background question accurately and each health question closely as it assesses your current health status and health care practices. The entire survey should take about ten (10) minutes to complete. Follow-up surveys will be mailed out to your address filed under the medical records, with self-stamped envelope at six (6) months and twelve (12) months after the initial visit, with requests to be mailed back to the clinic. This will include the same set of surveys completed at the initial visit plus four (2) additional questions. In addition, if you have type II diabetes, HbA1C levels on type II diabetics and blood pressures of hypertensives will also be reviewed from your medical records to assess the effectiveness of the Chronic Care Management Program.
Potential Risks

Risk to study participants include A) the potential for perceived coercion relating to the principal investigator conducting the project where she also functions as the health care provider. Because this practice utilizes a team approach in delivering health care, there is a potential for the principal investigator to have provided health care to you at some point in the past and B) unlikely chance that non staff members overhearing care management phone conversations.

The following steps will be taken to protect the study participants from these risks: 1) The principal investigator’s current or past patients who have been seen by the student in the last 1 year will be excluded from this study to reduce the risk of coercion and 2) Participants will be enrolled into the study by a trained administrator, and 3) You may refuse to participate in the study without negative consequences and continue to receive monthly Chronic Care Management services and 4) You may withdraw from the study at any time without negative consequences and continue to receive monthly Chronic Care Management services and 5) All care management phone calls will be conducted in a closed, private office within the clinic.

Potential Benefits to Participants or Professionals

There will be no specific immediate benefits to individual participants expected from the research. This study is important in that it contributes to the scientific knowledge base in the field of nursing and medicine to improve the quality and efficiency of the health care delivery methods for Medicare recipients with chronic conditions. Results of this research may help identify areas needed to improve upon in caring for Medicare patient population.

Payment for Participation

There is no financial benefit for participation in this study.

Confidentiality

No personal individual identifier(s) will be collected as part of this project. Participants will be assigned identification numbers which will be linked to medical records. Addresses and names filed under the medical records will be used solely to mail out surveys. Any information that is obtained in connection with this study and that can be identified with you will remain confidential and will be disclosed only with your permission or as required by law.

Rights of Research Subjects, Participation and Withdrawal

Your participation in this study is voluntary. You may withdraw from participation at any time without consequence. Participation/non-participation does not affect your health care provisions or other personal rights. You may choose to leave
certain questions blank during this survey, if you feel uncomfortable in responding, yet remain in the study.

__________________________________                          ______________
Participant Signature                                                               Date

If you have questions regarding your rights as a research participant please contact:
The Office of University Research, CSULB
1250 Bellflower Blvd. Long Beach, CA  90840
University Phone: (562) 985- 5314
University E-mail: ORSP-Compliance@csulb.edu

Advisor/Faculty Supervisor of Student Research Project
If you have questions regarding this study please contact:
Jun Kim, MSN, FNP-C, Principal Researcher at (805) 578-9620; or
David Kumrow Ed.D., Assistant Professor, CSULB
University Phone: (562) 985-8082; Faculty E-mail: David.Kumrow@csulb.edu
APPENDIX G

PATIENT CENTERED CARE PLAN

PATIENT-CENTERED CARE PLAN
Patient name: ___________________________  DOB: ___________________________
Phone number: _________________________  E-mail address: _________________________
Provider name: __________________________ Date: ____________________________

Complete the next four sections prior to your visit:

Top concerns and barriers
The main things I would like to fix or improve about my health are:
•
•
•

The main things preventing me from improving my health are:
•
•

Symptom management
The main symptoms I wish to reduce or eliminate are:
•
•
•

To treat these, your provider will help you complete the "Summary of things I need to
do," next page, at your appointment.

Health care providers
List any other providers you see regularly for health care (for example, ophthalmologist, cardiologist, therapist):
•
•
•

Resources and supports
Besides your health care team, who could you turn to for help for health-related
problems (for example, family members, friends, a spiritual leader)?
•
•
Complete the remaining sections with your provider at your appointment:

**My medications** *(See attached)*

- □ I agree to do the following:
  - Discuss concerns I have about taking any of my medications with my primary care provider (PCP) and/or pharmacist,
  - Advise my PCP if I choose to stop my medication(s), including my reasons for stopping, and discuss potential alternatives.
  - Advise my PCP of bothersome side effects from my medication(s),
  - Inform my PCP if new medications are added by other providers.

- □ I have reviewed the current medication list and confirm that it is accurate.

**My allergies** *(See attached)*

- □ I have reviewed my list of conditions.

**My conditions** *(See attached)*

- □ I have reviewed my list of conditions.
Treatment goals/targets
These are mutually agreed upon, measurable goals to help me improve or control my medical conditions or manage their symptoms (for example, LDL cholesterol <100; BP <150/90; weight of 150 pounds; 7 hours of uninterrupted sleep; average pain level of 5; ability to walk to my mailbox daily);

Summary of things I need to do
List action needed and time frame for each item. If not applicable, indicate N/A or none;
Tests to complete

Other health professionals to see

Community resources to use

Medication changes to make

Other treatments to get

Health-related education to pursue

Short-term activities to do
Lifestyle changes to make (for example, quit smoking, lose 10 pounds, buy a pedometer and walk 5,000 steps per day; SMART goals – specific, measurable, achievable, realistic, time-bound – are recommended):

Diet

Exercise

Stress management

Safety

Smoking

Other habits

Frequency of planned future appointments here _________ per year

Care manager
If I need help arranging care outside this office or have questions or concerns about any of the things I need to do (above), I can contact:

Name: __________________________________________

Phone/email address: __________________________________________
  • I will ask other providers to send a summary of their care to this office.

Expected outcomes/prognosis
If I follow the treatment/action plan above, I can expect the following to happen:

•

Patient Signature: ________________________  Provider Signature: ________________________

APPENDIX H

AGENCY APPROVAL LETTER

ALTA CALIFORNIA MEDICAL GROUP, INC.
2925 N. Sycamore Drive, Suite 204/205,
Simi Valley, CA 93065
805 570 2977

FROM: Medical Director at Alta California Medical Group

NAME OF STUDENT: Jun Y. Kim, FNP-C

TITLE OF DOCTORAL PROJECT: Evaluation of Chronic Care Management Program in a Primary Care Setting: A Quality Improvement Change

EMPLOYER'S STATEMENT:

I, the director at Alta California Medical Group, give permission to Jun Y. Kim, a DNP student at the CSU DNP Program, to conduct and complete the research/project and other necessary tasks related to the development, implementation and evaluation of the Chronic Care Management Program, including: 1) Granting full access to electronic health records for reviewing participants’ medical records and 2) Developing pamphlets, introduction letters and consent forms to all eligible Medicare beneficiaries within the practice and 3) Mail out pamphlets and introduction letters to all Medicare beneficiaries within the practice and 4) Setting up a dedicated Chronic Care Management phone line for message intake and 5) Holding information sessions for staff members regarding the Chronic Care Management Program and quality improvement project and 6) Enrolling eligible participants into Chronic Care Management Program and 7) Enrolling eligible and willing participants into the project and administering Stanford Chronic Questionnaires and Additional Survey Questions (#1 & 2) at the initial visit and mailing out Stanford Chronic Questionnaire and Additional Survey Questions (#1 through 4) at months 6 and 12 and 8) Developing plan of care and conducting monthly telephone calls to monitor, coordinate and provide care services within the nurse practitioner’s scope of practice under the protocols of the practice and 9) Evaluating outcome based on participants’ surveys and medical records.

Risk to study participants include the potential for perceived coercion relating to the principal investigator enrolling patients into the study where she is also the provider. Because this practice utilizes a team approach in delivering health care, there is a potential for the principal investigator to have provided health care to the participant in the past. The following steps will be taken to protect study participants from these risks: 1) all attempts will be made by the principal investigator to enroll patients belonging to providers other than herself and 2) Enrollment and consenting process to the project will be done by a trained administrator and 3) Patients may refuse to participate in the study without negative consequences and 4) Participants may withdraw from the study at any time without negative consequences.

It is understood that the significance of this study is twofold: 1) It contributes to the scientific knowledge base in the field of nursing and medicine as it brings attention to the disparities which exist in elderly patients with chronic diseases. 2) It addresses current gaps in providing chronic care management services to reduce the overall health care spending and improve care coordination and communication.

My signature below certifies that I, as the employer of the principal investigator of this research have read and approve the above procedures.
Alberto Odio, M.D.

Medical Director

Alta California Medical Group
2925 N. Sycamore Dr. Suite 204/205
Simi Valley, CA 93065
805) 578-9620
APPENDIX I

A SCRIPT FOR INVITATION TO PARTICIPATE IN A RESEARCH STUDY

Title of Study: EVALUATION OF CHRONIC CARE MANAGEMENT PROGRAM IN A PRIMARY CARE SETTING

My name is ________________ and am a colleague of Jun Kim. She is a Family Nurse Practitioner and a Doctorate of Nursing Practice (DNP) student from the California State University Consortium program associated with the School of Nursing at California State University, Long Beach. Upon her request, I am recruiting participants for her current DNP study project, which is currently being overseen by Dr. David E. Kumrow and Dr. Margaret Brady, Professors in the School of Nursing at California State University, Long Beach.

You are being asked to participate in this study because you (1) are a Medicare recipient between the ages of 65 and 99, and (2) are able to speak, read, and write English, and (3) have 2 or more chronic health conditions, and (4) have access to a phone, and (5) have enrolled in the Chronic Care Management Program as recommended by your health care provider, and (6) do not have any cognitive impairments in your prior medical history.

Purpose of the Study

The purpose of this project is to evaluate the effectiveness of the Chronic Care Management Program among the Medicare enrollees and analyze its outcome based on your survey responses, HbA1C levels on type II diabetics, blood pressures on hypertensives and to observe the number of emergency room visits, urgent care visits, hospitalizations and skilled nursing facility admissions compared to the period before the Chronic Care Management service initiation.

Procedures

Your participation in this study is voluntary. If you choose to participate, you will be requested to fill out a survey which consists of five (5) background questions and an additional thirty four (34) questions regarding your health status and health care utilization. It is important that you answer each background question accurately and each health question closely as it assesses your current health status and health care practices. The entire survey should take about ten (10) minutes to complete. Follow-up surveys will be mailed out to the addressed filed under the medical records, with self-stamped envelope, at six (6) months and twelve (12) months after the initial visit, with requests to be mailed back to the clinic. This will include the same set of surveys completed at the initial visit plus two (2) additional questions. In addition, HbA1C levels on type II
diabetics and blood pressures on hypertensives will also be reviewed from your medical records to assess the effectiveness of the Chronic Care Management Program.

**Potential Risks**

Risk to study participants include A) the potential for perceived coercion relating to the principal investigator conducting the project where she also functions as the health care provider. Because this practice utilizes a team approach in delivering health care, there is a potential for the principal investigator to have provided health care to you at some point in the past and B) unlikely chance that non staff members overhearing care management phone conversations.

The following steps will be taken to protect the study participants from these risks: 1) The principal investigator’s current or past patients who have been seen by the principal investigator in the last 1 year will be excluded from this study and 2) Participants will be enrolled into the study by a trained administrator, and 3) You may refuse to participate in the study without negative consequences and continue to receive monthly Chronic Care Management services and 4) You may withdraw from the study at any time without negative consequences and continue to receive monthly Chronic Care Management services and 5) All care management phone calls will be conducted in a closed, private office within the clinic.

**Potential Benefits to Participants or Professionals**

Potential benefit to the participants include medication oversight, management of care transitions between providers, assessment and guidance of health care goals, management of care access and communication with other providers involved in health care.

Chronic Care Management services, sponsored by Medicare does not involve additional cost to the enrollees.

This study is important in that it contributes to the scientific knowledge base in the field of nursing and medicine to improve the quality and efficiency of the health care delivery methods for Medicare recipients with chronic conditions. Results of this research may help identify areas needed to improve upon in caring for Medicare patient population.

**Payment for Participation**

There is no financial benefit for participation in this study.
Confidentiality

No personal individual identifier(s) will be collected as part of this project. Participants will be assigned identification numbers which will be linked to medical records. Addresses and names filed under the medical records will be used solely to mail out surveys. Any information that is obtained in connection with this study and that can be identified with you will remain confidential and will be disclosed only with your permission or as required by law.

Rights of Research Subjects, Participation and Withdrawal

Your participation in this study is voluntary. You may withdraw from participation at any time without negative consequences. Participation/non-participation does not affect your health care provisions or other personal rights. You may choose to leave certain questions blank during this survey, if you feel uncomfortable in responding, yet remain in the study.

If you have questions regarding your rights as a research participant please contact: Jun Kim, MSN, FNP-C, Principal Investigator at (805) 578-9620.