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Designing A Care Delivery System Through Interprofessional Coordinated Care In A Medical Neighborhood Setting

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Abstract

The Patient Protection and Affordable Care Act (2010) has two significant aims: to improve the quality of healthcare and in doing so, to lower the cost of healthcare. The Centers for Disease Control and Prevention (CDC) reports that chronic health conditions, such as diabetes, hypertension, cardiovascular disease, and mental health, which in 2005 affected nearly one of every two Americans, continues to increase (CDC, 2010). Chronic health conditions and lack of access to care are both national and local concerns.

These challenges will require the exploration of new models for the delivery of care, as needs shift over time and as the healthcare industry moves from the traditional acute care focus to one of community-based population health focus. The Institute for Healthcare Improvement (IHI) developed the Triple Aim to simultaneously improve population health, improve the patient experience of care, and reduce per-capita cost, as a goal for all healthcare organizations (Stiefel & Nolan, 2012). The position statement released by both the American Organization of Nurse Executive (AONE) and the American Associate of Ambulatory Care Nurses (AAACN) emphasizes the need for nurse leaders to take a lead role in both care coordination and transition management as a substantial way toward the achievement of the Triple Aim (AONE, 2015). The concepts of care coordination, which includes an enhanced plan at discharge, will be embedded into a medical neighborhood setting. Patients will receive comprehensive out-patient medical care assembled under one roof, as well as the social and community services needed to regain and maintain health.

Key Words: care coordination, care navigation, medical neighborhood, chronic conditions.

Section II. Introduction

Background

The Patient Protection and Affordable Care Act (2010) has two significant aims: to improve the quality of healthcare and in doing so, to lower the cost of healthcare. Experts in Washington have recently claimed that there will be a decrease in federal health spending in the future. This confidence is the result of the Congressional Budget Office's (CBO) reduction of its projection of federal health spending for the next 15 years by 15%, from 9.6% of the gross domestic product (GDP) to 8% of GDP (Schulman, 2014). Medicare, the majority of the federal health spending, represents the trend of spending on healthcare in the United States. Currently, 54 million people in the United States are enrolled in Medicare Part A; the program is expected to grow to 70 million enrollees by 2023. Medicare spending is over $600 billion, with the federal contribution to the Medicaid programs of over $200 billion dollars (Schulman, 2014).

The Patient Protection and Affordable Care Act (ACA) includes steps to improve the quality of healthcare by focusing on avoiding costly mistakes and readmissions, keeping individuals healthy, rewarding quality instead of quantity, and creating the health information technology infrastructure that enables new payment and delivery models to work. Early results have shown that the 30-day, all-cause readmission rate is estimated to have dropped in October of 2012 to 17.8%, after averaging 19% for the past five years. This translates to about 70,000 fewer readmissions in 2012 (Centers for Medicaid and Medicare Services [CMS], 2014). Keeping people healthy and improving the overall experience and access to care of those living with chronic conditions will support the goals of the Affordable Care Act. In 2012, the Centers for Disease Control and Prevention (CDC) stated that chronic conditions, such as diabetes,

hypertension, cardiovascular disease, and mental health, which in 2005 affected nearly one of

every two Americans, continues to increase (CDC, 2010). Moreover, chronic conditions are

more prevalent in an aging population. The CMS 2012 publication, *Chronic Condition*

Chartbook, which focuses on the prevalence of chronic disease in the United States, reports the

prevalence and cost associated with chronic conditions has worsened. The proportion of all

Americans with two or more chronic conditions has increased, rising from 24% in 2001 to 28%

in 2006. Almost half of all people living with a chronic condition suffer from more than one

condition. People with chronic conditions, particular those with multiple chronic conditions, are

the heaviest users of healthcare services. In 1998, 78% of healthcare dollars was spent treating

those with chronic conditions, with an increase to 84% in 2008 (CMS, 2012). The presence of

more than one chronic condition has specific implications to both financial and quality

considerations. If this trend is going to be reversed, improvements need to occur with how care

is delivered, focusing on coordinated care to individuals based on their individual goals, opposed

to diagnostic-specific goals (The Robert Wood Johnson Foundation [RWJF], 2014).

The ACA established clear provisions for the coordination of care and improved

transition management from one clinical service to another. Both coordination of care and

transitions management will support the goal of providing safe, high quality care to at risk

populations, such as patients with multiple chronic conditions and patients with limited access to

care. Care provided through interprofessional teams, which include physicians, registered nurses

(RNs), advanced practice registered nurses (APRNs), and social workers, will realize improved

outcomes (Haas & Swan, 2014). Coordination of care is not new to the nursing profession; care

coordination is a core professional standard and competency for RNs and APRNs (American

Nurses Association [ANA], 2012). Focusing on the delivery of care needs to include the

creation of greater access to healthcare, which is also central to the ACA goal. Mostly recently,

the American Organization of Nurse Executives (AONE) and the American Academy of

Ambulatory Care Nursing (AAACN) released a joint statement: *The Role of the Nurse Leader in*

Care Coordination and Transition Management across the Health Care Continuum (AONE,

2015). This will require the exploration of new models for the delivery of care, as needs are

shifting over time as the healthcare industry moves from the traditional acute care focus to one of

community-based population health focus. The Institute for Healthcare Improvement (IHI)

developed the Triple Aim, defined as simultaneously improving population health, improving the

patient experience of care, and reducing per-capita cost as a goal for all healthcare organizations

(Stiefel & Nolan, 2012). The position statement released by both AONE and AAACN

emphasizes the need for nurse leaders to take a lead role in both care coordination and transition

management as a substantial way toward the achievement of the Triple Aim (AONE, 2015).

Local Problem

The national healthcare challenge of providing high quality care, improving the health of

a population, and avoiding high cost is played out daily on a local level throughout the country;

in order to achieve solutions, explicit needs of the regions needs to be considered. The specific

area addressed in this body of work is based on the needs of a rural area located in Western

Massachusetts. The identified area is Berkshire County; it is a largely rural area located at the

far western end of Massachusetts, adjacent to New York to the west, Vermont to the north, and

Connecticut to the south. Comprising roughly 15% of the landmass of Massachusetts, its

approximately 130,000 residents account for 2% of the population of the commonwealth. The

32 communities of Berkshire County cover almost 950 square miles and have an overall

population density of 141 persons per square mile, compared to 835 persons per square mile for

the commonwealth. The towns in the northern tier of the county, commonly referred to as

Northern Berkshire, are comprised of approximately 231 square miles and are home to just under

37,000 people, making for an area population of 174 persons per square mile. The age

stratification of the county (including Northern Berkshire) is older compared to state and national

distributions. On a percentage basis, Berkshire County has fewer children, a smaller proportion

of young adults (20 to 44 years of age), and larger proportions of older adults (45 to 64 years of

age) and elderly (65+ years of age), with approximately one-third more individuals above the age

of 65 than in the commonwealth as a whole (Massachusetts Executive Office of Health and

Human Services [EOHHS], 2014). Like the rest of the county, Northern Berkshire is a largely

rural area with small urban, agricultural, and post-industrial towns and cities. The healthcare

delivery system in Northern Berkshire County of the Commonwealth of Massachusetts has been

fragile and severely stressed for years, suffering from a serious shortage of providers. After

years of financial difficulty, the Northern Berkshire community hospital closed its doors.

Several of the towns that relied on the closed healthcare system and its affiliates are very

small, with fewer than 1,000 people in remote rural locations. Because of the remote rural

location and limited access to public transportation, many residents report having difficulty

accessing healthcare at all, but especially outside of the Northern Berkshire area. Economically,

Northern Berkshire, like Berkshire County as a whole, has lagged behind state benchmarks. The

median household income in Berkshire County is 31% below the State average (EOHHS, 2014).

According to the RWJF's 2013 *County Health Rankings & Roadmaps*, Berkshire County,

despite ranking near the top among Massachusetts counties for the quality of healthcare services

and exceeding the state's rate of diabetic screening of young adults, ranks only 11th out of the 14

counties in the commonwealth for overall health outcomes (the length and quality of life) and 9th

out of the 14 counties in health factors. This is principally due to health behaviors and social and

economic factors (RWJF, 2014). These factors include rates of adult smoking (Berkshire County

18%, state 16%) and physical inactivity (Berkshire County 23%, state 22%), with obesity rates

equal to the state (22%) (RWJF, 2014). Northern Berkshire is fully reflected in these statistics.

These health status challenges are coupled with a severe shortage of primary care services in the

county, most particularly in Northern Berkshire County. In 2013, the Massachusetts Medical

Society (MMS) Physician Workforce Study demonstrated that the physician shortage and

recruitment challenges in Berkshire County are substantially worse than the experience

elsewhere in the state. Based on a customized report from Sg2 Demand Forecast, a healthcare-

consulting firm based in Skokie, Illinois, Northern Berkshire needs more than 12 additional adult

primary care physicians to meet current health needs.

Intended Improvement

The opportunity is to implement a new model of care delivery and approaches to chronic

conditions that will meet the needs of a high-risk population of Northern Berkshire County. The

vision of this work is to establish accessible and affordable care in the community based on a

model of care that is a multi-dimensional health program that will coordinate multiple aspects of

care and to include services that address clinical, social, and behavioral health and substance

abuse needs in a unique setting based on the concepts of coordination of care in a medical

neighborhood. This work was facilitated utilizing an interprofessional team approach that

focused on laying a foundation of services co-located in one physical space. Co-location

supports the concept of a hub, which has shown to improve overall communication amongst

multiple care givers (Brown, Peikes, Peterson, Schore, & Razafindrakoto, 2012). Moreover,

technology will be leveraged to support cross setting care and drive improvements. All activity

is documented and tracked both within the neighborhood and outside of the neighborhood, as community services will be included in the delivery of care. This will enhance the ability to share resources and more importantly, to foster communication with members of the care team to enhance communication to benefit the individual participants. The models of community and primary care are based on the need to deliver additional care in the community and the need for seamless, coordinated care (Institute of Medicine [IOM], 2011). The joint principles of the Patient Centered Medical Home and Accountable Care Organizations will guide the services offered in the neighborhood (Greenburg, Barnett, Spinks, Dudley, & Frolkis, 2014). Both of these models recognize the key role of the interprofessional team in meeting the challenge of caring for those with chronic conditions.

Reducing readmissions will be achieved by offering community-based coordinated care to the targeted population that will bridge the transition from an inpatient acute admission into the newly created medical neighborhood setting. This effort required establishing effective partnerships with community-based social services, inpatient care providers, and primary care providers in the defined targeted location. The care navigation model will support keeping individuals in the community by coordinating care with appropriate clinical follow up, linking individuals and families with social services, and maintaining ongoing communication with the primary care clinician. All activity will be documented on a goal directed, individualized care plan that will provide a consistent and comprehensive tool used to communicate with the individual's primary care provider and other members of the team.

The aim of establishing an infrastructure to coordinate primary and secondary services to a patient population in a rural area will result in a 10% reduction in 30-day readmission rates by January of 2016.

Review of the Evidence

The project focus is to improve outcomes for a population that experiences chronic conditions and behavioral health and substance abuse conditions in an area with limited access to care. These areas were the focus of the evidence and literature reviews.

Evidence Supporting Improved Outcomes

The medical neighborhood is a relatively new concept that offers a place to provide coordinated care to those requiring coordinated specialty, primary, and social supports. The focus is to improve outcomes while being mindful of the need to be cost efficient. An interprofessional team provides the delivery of services. Establishing the viability of this concept is important and required a systematic review and rigorous search methodology. A system review was completed using the process outlined by Bettany-Saltikov (2010).

An evidence question was formulated using the population, intervention, comparative intervention, outcomes components, and time (PICOT) (Melnyk & Fineout-Overholt, 2015, p. 28). The PICOT was as follows:

P – General population

I – Medical neighborhood

C – Enhancing access to care

O – Improve Health

T – 2008-2015

The search question: What makes up a medical neighborhood, and what are the benefits of coordinated care when provided in a medical neighborhood? A search was conducted using CINAHL, Fusion, and Cochrane library, Med Par, and Google Scholarly. Limiters were English, peer-reviewed articles, and dates between 2008 and 2015. The search resulted in 82 articles,

which was narrowed down to 44, and resulted in seven articles relevant to this topic. The seven

articles were critically appraised using Johns Hopkins Evidence-Based Practice Research

Appraisal (JHEBPRA) (White & Poe, 2010) and then entered into an evidence table (see

Appendices A and B).

The model of care is based on a multi-dimensional health program that will coordinate

multiple aspects of care in unique settings based on the concepts of a medical neighborhood.

The goal of patient-centered medical homes is to provide a coordinated system involving all

providers that delivers care efficiently and effectively, with an alternative for smaller health

systems to provide similar coordinated medical care in a neighborhood that is accessible by

many primary care providers for their patients (Spatz, Bricker, & Gabbay, 2014). Given the

relatively small population of approximately 37,000 in the targeted population and the serious

shortage of physicians in the area, concepts of the medical neighborhood and care coordination

will be used to model this new delivery of care service. The goal of the model will be to expand

access to care and improve overall health.

The medical neighborhood is a relatively new delivery of care model that expands on the

patient-centered medical home concept, with the patient at the center of care that expands out to

include specialty care, primary care, hospitals, and social services (Huang & Rosenthal, 2014).

The goal of a medical neighborhood is a coordinated system that includes all providers. Studies

have been conducted analyzing care coordination in other settings, which have identified settings

and systems that either have improved or had not resulted in improvement with quality and cost.

Brown et al. (2012) made use of data from 15 program randomized control trials (CMS's

Medicare Coordinated Care Demonstration) to address critical questions of what actions have

had a positive effect or zero effect on the cost and quality of care. Of the 15 sites studied, only

four sites had made a significant impact on quality and cost for CMS beneficiaries. The main

element present in the successful sites were the amount of face-to-face contact between

coordinators and patients, which increased when members of the care coordination team were

located in the community in close proximity to the primary care providers. Other key features in

successful sites were when the care coordination team served as a communication hub, making

sure all providers and social support providers could access this hub; the use of evidenced-based

education and interventions for patients; and the timeliness and availability of the coordinator to

see a patient while in the hospital were also consistent themes with successful programs. The

successful program reduced hospitalization by 13% and 15 % of the control group mean; p

<0.10; the program with the widest confidence interval reduced hospitalization by 33%; p = .02.

Having a centrally-located facility that acts as hub and can facilitate frequent face-to-face

contacts supports the overall concept of a medical neighborhood, opposed to having services

limited to one office practice.

Peikes, Chen, Schore, and Brown (2009) conducted a similar study utilizing the same

database from the CMS study. The study identified only two of the 15 programs having an

impact on reducing hospitalization (17% and 19 %). The key factor noted by Peikes et al. was

having a strong transitional care component that included relying on face-to-face interactions,

opposed to telephone contact, and having the ability to link the care coordination activity that

starts in the hospital with a patient-centered outpatient setting. Care that is managed by the

primary care provider, opposed to a specific specialist, has a 33% lower cost of healthcare and

19% less mortality (Spatz et al., 2014). The increased prevalence of people with one or more

chronic conditions increases the use of specialists, which increases the amount of patients

potentially being managed by a specialist or that a primary provider needs to communicate with

an additional specialist. When the primary care provider is managing the care, the evidence

supports that a lack of communication amongst all providers is a significant barrier to providing

quality and efficient care. Spatz et al. (2014) report that the use of electronically shared

information will improve the exchange of information, not just from the primary care provider

and specialist but, from hospitals and emergency rooms, as well. In a fragmented care system,

the transition of care from acute care back into the community remains a high-risk episode for

the patient (Spatz et al., 2014).

Tuot et al. (2015) conducted a study to determine the usefulness of an electronic referral

system between primary care and specialty care. The goal of improving communication between

primary care and specialty care is to promote coordinated care, which is the foundation of the

patient-centered medical neighborhood. Between June 2011 and May 2012, 586 primary care

providers (PCP) rated the helpfulness and educational value of 2,189 specialist reviewer

communications for patients that did not have a face-to-face appointment with the specialist.

Overall, the PCP considered 71% of baseline specialist communications of high value (Tuot et

al., 2015). Improving access to specialty care and linking care back to the primary care

providers is essential. When there is a shortage of both primary care and specialty care, the

focus should be on care coordination, so both specialist and primary providers are well informed

about the on-going status of the patient. Care coordination was identified from the managed care

era when most of the control was given to the primary care providers and therefore, lacked

engagement by the specialist (Huang & Rosenthal, 2014).

In addition to the communication between primary providers and specialty providers,

another key factor that can be addressed by the medical neighborhood concept and the use of

technology is the need to address social determinants of health. Nguyen, Chan, Makam,

Stieglitz, and Amarasingham (2014) conducted a study on the need for improved communication between clinical and social support providers. The study was done because of the growing body of evidence, supporting the concept that social need, such as housing, food, and employment, has a direct correlation on an individual's health. In person interviews with 50 healthcare and social service providers were conducted to determine the feasibility of social service information exchange. The analysis of the interviews supported the need to have better linkage between healthcare and social service. The concept to increase the linkage of clinical and social providers to establish the framework of a medical neighborhood is supported by Pham (2009). Pham discussed the composition of a medical neighborhood that includes non-medical providers and facilities, such as hospitals, homecare agencies, and social service agencies, which would provide counseling and contribute to a successful neighborhood (Pham, 2009).

  A second evidence question was formulated around the concept of care coordination. Effective care coordination can, improve the need to balance the information that all healthcare providers need, in addition to incorporating the social needs of the individual. Care coordination is considered an essential component to accomplishing the Triple Aim of the CMS. A literature search was also conducted on the topic. The PICOT was as follows:

  P – Populations with chronic conditions, behavioral health, and substance abuse

  I – Coordinated care

  C – Managing chronic condition, behavioral health conditions, and substance abuse in a medical neighborhood

  O – Improved quality, decreasing hospitalizations

  T – 2003 -2015.

The search question was: How has coordinated care improved the outcomes of a

population experiencing chronic conditions, behavioral health, and substance abuse conditions?

The search was conducted using Fusion CINAHL, Cochran library, Med Par, and Google

Scholarly. The search resulted in 1,262 articles, with 64 articles identified from the abstract

description. Of the 64 articles 11 relevant resources were identified and are listed in the

evidence-based table (Appendix C).

The coordination of care by a team is an essential component to the model of care

outlined in this work. According to the National Quality Forum (NQF), care coordination is

foundational to quality health services (ANA, 2012). Several care delivery models, including

nurse-led models, have been evaluated in relation to improved clinical and financial outcomes.

In general, care coordination results in better care at a lower cost, particularly for populations

with multiple health and social needs (Craig, Eby, & Whittington, 2011). This is further

supported by the IOM's (2011) recommendation regarding the need to decrease medical error

and costs of care by increasing collaboration and teamwork and having professionals work to the

highest level of their education and licensure.

A review of the literature, primarily focused on care within the primary care medical

home model, suggests that the ideal framework for the care coordination process, particularly

among patients with complex chronic conditions, includes a multidisciplinary team. This model

showed the primary benefits were realized in reductions in emergency department visits and

hospitalization and re-hospitalization (Agency for Healthcare Research and Quality [AHRQ],

2011). Care coordination has been linked to improving patient safety. Forster, Murff, Peterson,

Gandhi, and Bates (2003) reviewed 400 consecutive patients discharged home from a medical

center. This prospective cohort study revealed 76 patents (19%) had adverse events within 2

weeks of discharge. The majority (66%) of these events were adverse drug events. System

problems contributed to all of the preventable and ameliorable adverse events. The most

common problem was in the discharge process when communication to primary care providers

or patients was poor at the time of discharge. The data showed that one in five patients

experienced an adverse event during the time of transition from discharge to home, with one-

third of these events deemed preventable (Forster et al., 2003).

        Manderson, McMurray, Piraino, and Stolee (2011) completed a systematic literature

review to describe existing navigator models relevant to chronic disease management; this

review included 15 articles documenting nine discrete studies. In summary of the nine studies

identified, five reported positive economic outcomes, two reported higher satisfaction with care

for providers and patients, and five reported increased patient quality of life or functionality

(Manderson et al., 2011).

        As previously stated, one in every two Americans is affected by mental health conditions.

Care coordination has demonstrated value in removing barriers to effective management of

mental health conditions. Christensen et al. (2008) reviewed 55 randomized and controlled

research trials in databases that focused on adults and which also included depression outcome

measures. The review found four key elements that were associated with improved outcomes for

patients with depression. The first review found that care coordination and tracking were

associated with improved outcomes. This included having the care coordinator communicate

directly to the physician about the patient. The second key finding was that the monitoring and

delivery of treatment was best done by health professionals with a mental health background,

this includes the management of care with tracking and monitoring by RNs, including a process

to support medication compliance and linking of patients to community based supports. A third

finding was the significant association between patient preferences and positive patient

outcomes. The fourth finding was that additional training provided to the general practitioners in

depression care and the provision of practice guidelines were not associated significantly with

improved outcomes (Christensen et al., 2008).

Team-based approach to care in the medical neighborhood has shown promising results

to those with diabetes. The complexity of these patients supports the need for more than the

medical home concept. According to Spatz et al. (2014), in order to improve quality and manage

cost, patients with diabetes will benefit from coordinated care that includes physicians, mental

health professionals, diabetic educators, pharmacist, and dieticians. These services are the

medical neighborhood that will link the patient-centered medical home with other specialized

services and supports (Spatz & Gabbay, 2014). The presence of a registered dietician in the

medical neighborhood will not only support those with diabetes, but can have a positive impact

on many individuals suffering from other chronic conditions. Jortberg and Fleming (2014)

support the medical neighborhood as an important part of patient-centered care. The team base

care approach to providing services for the individual should also include registered dieticians

and social service providers for optimal outcomes (Jortberg & Fleming, 2014).

Another discipline utilized in the coordination of care concepts is the use of the

community health worker (CHW). The role of the CHW was evaluated by Burns, Galbraith,

Ross-Degnan, and Balaban (2014) by conducting pilot test feasibility and preliminary effect of

CHW interventions to reduce hospital readmissions. The study was conducted within a 200-bed

academic medical center safety-net hospital. High-risk patients with chronic conditions, such as

congestive heart failure (CHF), chronic obstructive pulmonary disease (COPD), or pneumonia

were selected. Patients were identified using the electronic health record during a 6-month pilot;

526 patients were enrolled once admitted to the hospital. A random selection was made for those

patients receiving services from a CHW and those who were not receiving services. The

findings showed that patients having a CHW as part of their team had a 15.4% 30-day

readmission rate, compared to the control group, with a 17.9% 30-day readmission rate (Burns et

al., 2014).

Kangovi et al. (2014) conducted qualitative interviews with 65 low-income, recently

hospitalized patients, exploring their perceptions of what would improve their overall health

once discharged from the hospital. The qualitative study conducted in-depth semi-structured

interviews to explore perceptions of hospitalization and discharge, barriers to recovery, and ideas

for improving post-hospital transitions. The transcripts were analyzed using a constant

comparison method. Following the analysis of the data, a three-step mapping process was used

to translate the results into recommendations. The study team found three overarching themes

identified by the participants. The first theme was the feeling of being disconnected from the

caregivers. Patients felt they had little in common with the caregivers and felt the clinicians

could not relate to their individual concerns. This confirmed the hypotheses the team had about

the use of a CHW who was capable of providing empathetic support to this group of patients.

Second, patients felt they were being set up to fail when the team discharged the patient with

goals that were confusing, at times in conflict with the patient's own goals or unrealistic due to

financial constraints. The team agreed that the goals needed to be important to the patient. The

third finding was the patient's lack of primary care available to them after leaving the hospital.

This resulted in the recommendation that all patients have an appointment prior to leaving the

hospital (Kangovi et al., 2014)

As the percent of individuals who live with more than one chronic condition increases, as does the complexity of their care and the concerns the individual has with how their care is being coordinated. Maeng, Martsolf, Scanlon, and Christianson (2012) conducted a random digital-dial telephone survey of adults with chronic conditions. The survey measured respondent's self-report of care coordination problems and level of patient participation using the Patient Activation Measure (PAM-13). Logistic regression was used to assess association between respondent's self-report of care coordination problems and a set of patient characteristics. The conclusion was that the patient activation and complexity of care chronic illnesses are strongly associated with patients' self-report of care coordination problems (Maeng et al., 2012).

Theoretical Framework

The overall theoretical framework used to guide the implementation of a new delivery of care system is based on Leading Change, by John Kotter where he uses a eight step change process that supports leaders to bring about fundamental change. The steps are establishing a sense of urgency, creating the guiding coalition, developing a vision and strategy, communicating the change vision, empowering a broad base of people to take action, generating short-term wins, consolidating gains and producing even more change, and institutionalizing new approaches in the culture (Kotter, 1996). The urgency was clearly identified as a result of a local disruption in the delivery of care to a community. As each phase of the work was considered the framework outlined by Kotter was used to guide the steps in order for this new model of care to be accepted by both care givers and the community.

The theoretical frameworks followed for the planning and measuring this project are from the Institute of Healthcare Improvement (IHI). The first framework used for planning followed the IHI care coordination model. This model served as a framework that focused on identifying

those with multiple needs and facilitating coordination of services that will assist with improved

health and supporting individuals to meet their goals. The key areas identified in the framework

are patient identification, defining the program aim, and key innovations (Craig et al., 2011).

Framework I: IHI Care Coordination Model

Patient Identification

The first step is to identify those who would benefit most from care coordination and

enhanced services. Craig et al. (2011) suggest the best way to identify this group is to determine

who has required hospitalization. This can be considered a failure of the ability to access

primary care and other supports in the community. An assessment should be completed to gain

more information about some of the broad needs that will be needed to begin to form a plan.

The population was identified by the limited access to care of a defined geographic

region known as Northern Berkshire. To better understand the needs of the targeted population,

the overall use of inpatient services and readmission data was reviewed and evaluated by running

a report based on zip codes for 12 consecutive months, October 2013 through September 2014.

The overall inpatient encounters for this time frame was 2,298. Further analysis was completed

by running a 30-day readmission rate for the same time frame and targeted population. The

baseline readmission rate for the 12-month average was 15.62 %. The 12 months of data that

identified the number of readmissions were then stratified by the primary and secondary

diagnoses that were present at the time of readmission.

The care coordinator is the care provider who begins the process of working with the

individual to identify the health goals and to assist the individual to meet those goals. Based on

the needs of the individual will best determine the skill set of the care coordinator. Individuals

with most prominent needs with medical complexity will benefit from a registered nurse care coordinator, individuals with behavioral health and or substance abuse will be best served by working with a social worker care coordinator, and individuals with social instability or lack of social support may be best served by a social worker or community health worker (Craig et al., 2011).

Care coordination will begin once the individual from the targeted population has been identified by their zip code upon admission to the acute care facility. The care coordination team is made up of a RN and social worker. The primary reason for admission will determine which member of the team will establish contact and begin the assessment work. The RN care coordinator will see individuals with multiple chronic conditions admitted to the medical surgical units. Individuals admitted to behavioral health and the substance abuse unit will be seen by the social worker care coordinator. At this time either the RN or social worker care coordinator will see all of the patients for the initial assessment. The care coordinator will have expertise in self-management and patient advocacy. This will require formal education and competency-based certification.

Defining the Program Aim.

Reducing readmissions will be achieved by offering community-based coordinated care in a medical neighborhood to the targeted population. This will require establishing partnerships with community based-social services. The aim of establishing an infrastructure to coordinate primary and secondary services to a patient population in a rural area will result in a 10% reduction in 30-day readmission rates by January of 2016.

Key Innovations

All individuals need to have a care plan that accurately reflects the goals of the individuals. The care plans need to be shared and agreed upon with the primary care provider. The care coordinator is responsible for assessing the needs and working with the individual to create the beginnings of this plan. The care team should be based in the community to support integrated care (Craig et al., 2011).

The care coordinator is the care provider responsible for assessing and identifying whole person needs and health goals and provides the linkage to the appropriate resources in both the community and the medical neighborhood. Given the needs of the individual, the care coordinator will be either a RN care coordinator or social worker. In addition to this two-person team that is located in the acute care setting, there is an interprofessional team located in the medical neighborhood.

Framework 2: IHI's Guide to Measuring the Triple Aim for Population Health

The second framework followed is the IHI's guide to measuring the Triple Aim for population health with the following key components: (a) the need for a defined population, specifically a population denominator, which can be either a total or subtotal of a population; (b) the need to track data over time, which will allow for the ability to identify a special variance and the rate of change in the process; (c) the need to distinguish both the outcome and process measures; and (d) the use of benchmarks or comparison data, which will allow for the comparison with other organizations. The use of benchmarks is important to have clear definition that is consistent with the compare group selected. The most reliable method to achieve the correct benchmark and definition is to use measures that are available to the public (Stiefel & Nolan, 2012). These concepts were considered as the building of the documentation

of care was underway. The data elements will come from the original clinical document that is

entered into the documentation system. Understanding the data elements that need to be tracked

as part of the evaluation process is important as the documentation tool was being built.

Section III. Methods

Setting

The entry point into this model of care begins in the acute care inpatient setting. Once

individuals are admitted, the process of care coordination begins. Admissions are defined as

medical / surgical admission, behavioral health admission, or substance abuse admission. Once

participation is established, follow-up appointments are made for care to continue in the medical

neighborhood. The neighborhood is located in the town that is the center of the zip codes

identified as the target population. All services are co-located in the facility that was once the

community hospital for this population. This will enable the use of shared support resources,

such as registration and reception. More importantly, the co-location concept is a core part for

providers to easily communicate and collaborate with the patient and multiple caregivers to

support a patient-centered care plan. It should be noted, the location of the "neighborhood" is

not restricted to the brick and mortar of the facility. The staffing plan includes a community

health worker (CHW) who will spend the majority of her time in the community connecting

patients to existing community supports.

Planning the Intervention

The plan required a detailed project plan that was broken out into key areas: clinical

care, informational technology, finance, and communication. Weekly team meetings were held

utilizing the project plan to drive agendas and document progress (see Appendix D). The plan

served as a clear documentation tool to support both the planning effort, as well as the

implementation actions required. Interprofessional collaboration was achieved by identifying the

key stakeholders to be part of the planning and implementation. The team was lead by the chief

operating officer along with additional medical staff representation – chief of medicine, medical

director of population health, chairman of psychiatry, chief nursing officer, integrated care vice

president, chief information technology officer, senior vice president of community and wellness

programs, and the chief financial officer. This group participated in a weekly agenda driven

meeting in order to adhere to agreed task and timelines. An initial overall assessment and

strategic review was facilitated to explore the current status based on the strengths, weaknesses,

opportunities, and threats (SWOT) that existed pertaining to the implementation of this clinical

care design improvement project (see Appendix E). Each component identified during this

exercise was addressed throughout the planning and implementation phase of the project.

        The first action required in the planning phase was to understand the needs of the targeted

population and identify what specific actions would have the most impact. This was facilitated

by a review of data obtained from the inpatient electronic health record database, which was

filtered to include only the zip codes identified in the targeted population and a date range of

October 2013 to September 2014. The overall inpatient encounters for this time frame was

2,298. Further analysis was completed by running a 30-day readmission rate for the same time

frame and targeted population. The baseline readmission rate for the 12-month average was

15.62% (see Appendix E). The overall readmission rate increased after the closing of the

community hospital in February 2014 (see Appendix F). The readmission rate was then

stratified by primary and secondary diagnosis; the top four primary or secondary diagnoses were

diabetes, congestive heart failure, chronic obstructive pulmonary disease,   and behavioral health

(see Appendix G). Review of the data began the effort of exploring evidenced-based

interventions that would have the greatest impact on this population.

Clinical and Social Care

A driver diagram was used to support the planning process. Driver diagrams are a type of logic chart with three or more levels. This includes the goal/aim of the project, the high level factors that are needed to influence in order to achieve the goal called primary drivers, and the specific activities that will act upon these factors. This theory of change tool best supports these efforts due to the complex nature of the problem and the required interventions. The driver diagram (see Appendix I) helped to explore the factors the group believed would have the greatest change toward improving the goal. The diagram also effectively showed the connections of the individual interventions, as well as assisted in communicating the interventions that supported the aim (Bennett & Provost, 2015).

The clinical and social supports that coordinate, navigate, and deliver care from the acute care setting to the patient-centered medical neighborhood include a hospital-based care coordination team made up of a RN care coordinator and a social worker care coordinator. Based at the medical neighborhood is an APRN for general medical follow up, an APRN specializing in CHF, certified diabetic educator, masters prepared social worker care navigator, community health worker, behavioral health care manager, psychiatric APRN, and a psychiatrist that specializes in substance abuse and alcohol detoxification. In addition to this core staff, an arrangement has been made with the local substance abuse and counseling center to facilitate a day treatment program for substance abuse. This program will be located in the medical neighborhood, and all services will be available to individuals attending the program.

The use of flowcharts supported the planning effort. The first clinical phase of the plan is documented on the general flow chart that is broken up into three sections – inpatient, medical neighborhood, and intervention specific (see Appendix J). The overall flow of a patient begins

with the inpatient admission. The initial identification of a patient in the target group is

facilitated by a customized report that populates all patients in the electronic health record with

the target group zip code. As admissions occur, a report is generated for the care coordination

team located at the acute care facility. Either the RN care coordinator (who primarily initiates

the visit to individuals on the medical or surgical floor), or the social worker care coordinator,

(who will see individuals on the behavioral health units), makes the initial face-to-face

connection and begins to establish a relationship. Once initial contact has been made, the

assessment for services is made and the care plan begins. The initial assessment is documented

in the electronic tool with a general assessment to establish priorities and discuss interventions

available. As part of the communication strategy, an easy to read brochure was created so that

patients could learn about the services offered well before discharge (see Appendix K). Once the

care coordinator and the patient agree on the desired interventions, appointments are made with

the medical neighborhood staff and documented in the electronic plan. As previously stated in

the evidence appointments made prior to the inpatient discharge have a greater impact on the

positive impact of care coordination (Manderson et al., 2011) therefore all appointments are

made prior to discharge.

Each specialty area followed the same process by flowcharting how the individual moves

through the neighborhood, and at the same time, how each interaction will be documented. This

allowed for building the documentation tool that would not only improve communication

amongst the care team, but also provide needed data to drive improvements. The individual

entries are pulled together in a way that supports populating a patient-centered care plan. There

is an APRN on site at the medical neighborhood to see patients that may need an assessment

prior to seeing their primary provider. In addition, the APRN will support patients with COPD

to monitor their self care plan. The CHF services (see Appendix L) will be staffed by an APRN

who has experience working in both the inpatient and ambulatory CHF clinics. The goal is that

all patients requiring this service will be seen in the medical neighborhood within 48 hours of

discharge, providing both individual and group education sessions. The diabetic care services

are provided by a certified diabetic educator / RN. These interventions include diabetic

education and coaching, this will include patients, families, and caregivers. Blood sugar

assessment, treatment change facilitation, and medication adjustment via protocol will occur (see

Appendix M). A registered dietician nutritionist will offer nutrition counseling services. Both

individual and group sessions are being facilitated (see Appendix N). The behavioral health

supports are structured to support both mental health and substance abuse, with a psychiatric

APRN and a psychiatrist (see Appendix O). A master's prepared social worker and the

community health worker will provide the overall navigation of care between the neighborhood

and the community. All members of the neighborhood will see the community health worker in

order to assess any potential risks and opportunities for support within the community. The

CHW will link individuals with community social supports and track their participation. A

comprehensive review of all services has been made in order to bring the community into the

neighborhood. It is important to note that the neighborhood is built around the needs of the

patient and their family being at the center of care, with all services available to, all members of

the neighborhood (see Appendix P).

Planning the Study and Methods of Evaluation

Information Technology

All interactions, assessment, and goals will be documented in the care navigation

electronic tool called the Care Navigator. The use of the Care Navigator tool required each

content expert to work with an information technology analyst to build the assessment and

documentation in a way that would populate one individualized care plan to be shared with the

primary care providers. Subsequently, the information entered into Care Director was required

to be structured in a way that supported a retrieval method that could be easily formatted for

reporting, which is essential for converting discrete data into actionable aggregate data. The

process of clearly defining the definition of the denominator is a critical component to measuring

population health (Stiefel & Nolan, 2012). Each intervention has been assigned a clear definition

for both the numerator and the denominator. These measures are considered the process

measures, or how often something is occurring. There are 12 clearly designed process measures

(see Appendix Q) that are used to monitor the interventions and to understand if the utilization

will affect the outcome, which is the 30-day readmission rate. The tool has been built to easily

update information, which then documents either the creation or the progress of a goal (see

Appendix R).

An important aspect of effective communication is the ability to share information from

the social service community and caregivers (Nguyen et al., 2014). This goal was accomplished

by working with the vendor to customize the view of what the social agencies could see, while

ensuring their ability to enter information as individuals are using community-based services.

This did, however, create the need to work with the legal counsel of the organization to create a

specific informed consent document that specifically states providers outside of the health

system will be documenting in the Care Navigator tool (see Appendix S).

Monitoring

Monitoring the interventions will consist of both process and outcome measures. As

previously discussed the process measures will be documented and reported on from the Care

Director tool. As the processes for documentation were being built, attention was given to the need to be able to determine what services were offered, how timely were they offered, what services did individuals utilize, and how often; these are referred to as the program specific measures. The definition for each program measure is shared and agreed upon by the entire team. The process of documenting activity in the neighborhood is one of the data collection acts of the Plan Do Study Act (PDSA) process that is used continuously in order to affect change in time for the overall outcome to be effected.

For the first phase of this project, the PDSA process will be followed at the end of each day to ensure rapid identification of concerns and that they are brought forward, actions identified and implemented, followed by the review of the data to understand if the realization of the intended action has occurred. An example of an effective PDSA was noted early in the process. At the end of the third day, the entire team reviewed the data. It showed that a total of 13 patients were identified in the target population. Of those patients, only nine had a face-to-face meeting on the day of admission, and of those, four patients were not seen on day one and two patients were discharged without having been assessed. A review of the process determined the number of patients admitted to the medical surgical units far outweighed the number of patients seen in behavioral health. It was also noted that the two patients who left prior to being seen were admitted to a medical unit for alcohol withdrawal. This particular diagnosis had two key comments – both medical and behavioral health. As previously stated, the literature supports improved outcomes for patients seen for care coordination that have a behavioral health background (Christensen et al., 2008). The decision was made that patients admitted for substance abuse withdrawal on the medical surgical units would now be seen by the social worker care coordinator. A review of the data after this change was implemented showed that the

number of patients each coordinator assessed had evened out. Furthermore they are now better

aligned with expertise to support the appropriate patient, and there have been no further patients

discharged without first being seen by a member of the team. Because the data are entered as the

care team is delivering care, the data are readily available at the end of each day. The plan going

forward is that this review will move to a once-a-week check in meeting to review the process

data.

The next phase of reviewing the data will be reviewing the outcome data, in this case, the

30-day readmission rate. The outcome is reviewed in a control chart, which will allow for the

overall metric to be displayed demonstrating change over time has occurred. In addition, it will

provide information to determine unusual occurrences, which will trigger an investigation into

cause of variation from the standard process. In summary, the process metrics will be reviewed

weekly, with the intent to change processes if people are not getting the services needed and will

also identify the need for any scheduling changes based on the utilization of each services.

Monthly outcome metric reviews will be held. Looking at both of these indicators quarterly will

inform the group of whether utilization in a specific area is having a reduction in a subgroup's

readmission rate.

Analysis

The raw data representing the number of times a person has been readmitted within 30

days of discharge from the hospital will be taken out of the main electronic health record of the

inpatient facility. The raw data will be entered into an Excel QI Macro spreadsheet, which will

then be analyzed using a statistical process control (SPC) program. The SPC chart will support

display and analysis of the changes in the process overtime and determine if the aim has been

achieved. The specific type of control chart used will be an XmR chart. This chart is well suited

for variable data ,that is measured, that can conceivably be of any value, as long as it is

continuous, and will also provide use in determining the variation in the process (Nelson,

Batalden, & Godfrey, 2007, p. 351). This ability to signal special cause variation will be

important over time to support identifying times of needed additional data analysis. To date

readmissions dropped from the baseline of 15.6% to 12.3 % (see Appendix Y).

Financial

An equally important part of the planning phase is preparing the financial plan. Financial

planning began with preparing the actual cost of the services identified. The expense budget is

detailed in Appendix T. The majority of the expenses are in salary and fringe benefit dollars.

The positions detailed in the planning process total 10.45 full time equivalent positions. Based

on current salary and benefits structures this totals $1.1 million. The second significant expense

is the purchase and implementation of the electronic care navigation product; the initial purchase

and start-up costs were $140,000 (this was considered a capital expense). A variety of other

initial investments of $340,000 brought the total first year expenses to $1,442,731. These funds

are covered by a $3 million two-year grant. The purpose of the grant is to redesign care that will

have a positive impact on the health of a population, while decreasing the overall expense of

medical care. The current payment system for this population continues to be structured under

fee-for-service for both CMS and private payers, with minimal reimbursements targeted to

prevention and care coordination. It is important to take into consideration that quality

improvement efforts do not always initially reduce expenses based on the additional resources

that may be required. However, economics will dictate the sustainability without increasing the

overall cost, and should be achieved over time when an improvement has reached a production

level that will allow for cost efficiency (Waxman, 2013). Having the two-year grant funded

program will allow for a transition period, with careful attention focused on expanding the

utilization to decrease the cost per unit, at the same time gaining evidence that will be used with

payers to enhance the payment for these services based on the cost savings associated with

reducing the inpatient care.

The grant funding offers a bridge over the chasm between fee-for-service and value-

based reimbursement. The target of value-based reimbursement focuses on reducing the overall

cost of care and improving quality. Consequently, there are financial impacts that will benefit

the overall cost of healthcare while improving health. The first potential opportunity is the

overall reduction of the use of inpatient services. The goal of reducing readmissions by 10%

equates to avoiding 36 admissions, which currently have a cost of $15,000 per admission,

totaling $562,500. This is a conservative target given the amount of resources allocated to this

program. A stretch target of reducing readmissions by 20% would yield an annual savings of

healthcare dollars spent by $1,125,000. The potential return on investment is detailed in

Appendix U.

Avoiding cost of penalties can, in part, contribute to the sustainability of this program.

Currently CMS has sponsored a program called Value Based Purchasing (VBP), which penalizes

acute care providers for patients readmitted within 30 days of discharge. The readmission rate

and penalty are believed to increase substantially. At present, the readmission penalties are

based on specific chronic conditions. This policy is typical of how quality and cost efforts are

rolled out with CMS. They often start with a small sample group and then expand the program

throughout to cover all beneficiaries. If the Value Based Purchasing readmission penalty were

applied to all of Medicare patients at the sponsoring organization, the cost would be significantly

higher. Based on a 3% penalty, the adjustment to the Medicare rate itself is $100,000 given the

limited diagnosis included. However, if you apply the estimated, annual Medicare, acute in

patient discharges (close to 6,400) it extrapolates out to $1.9 million.

Lastly, in January 2015, CMS passed the CPT-99490 for care coordination for

beneficiaries with multiple chronic conditions. This will apply to those that are currently being

reimbursed in a fee-for-service program. This additional payment is recognition that CMS

recognized care management as one of the essential components that contributes to better health

for those with multiple chronic conditions (CMS, 2015). This is a positive step; however, there

are still limiting factors that will prevent these additional payments to offset the expenses

previously discussed. The medical neighborhood is designed so that any primary care practice

can utilize the services to assist in the management and coordination of the patient. As

previously mentioned, additional resources for each practice would be needed to meet the

requirements. The current rule for the additional code is structured that only the primary care

office can bill for this service. Physicians and non-physicians, including certified nurse

midwives, clinical nurse specialist, nurse practitioners, and physician assistants, are all eligible to

bill within a primary care office. There are also several requirements the office needs to meet to

be eligible for the $40.39 (as of June 2015 this is increased by 0.5%) reimbursement per

beneficiary per calendar month. One of the several requirements is the use of a patient-centered

plan based on physical, mental, psychosocial, environmental, and an inventory of resources. The

plan of care must be available electronically (CMS educations). The medical neighborhood will

have a plan with these elements, and the primary care office is an integral part of the plan. The

current strategy is to offer this plan to be jointly located in the primary care office and the

medical neighborhood in order to assist the offices with this requirement while providing a true

comprehensive plan for the patient.

Ethical Concerns

The closing of a community health system is a tragic event for any community. One could deliberate the closing of a hospital as the opportunity to "right size" the care available to a community and a natural response to the demand of the system. The ethical question raised in the community has been is it ethical to not re-open an inpatient hospital. Many public officials have claimed, though there is no direct evidence to support the contention, that access is disrupted or that patients suffer when a hospital is closed (Bindman, Kean, & Lurie, 1990). In an era of healthcare reform, healthcare delivery across the country is in a state of transition. Research suggests that less efficient institutions are more likely to close and that surrounding hospitals are able to increase efficiency as a result, of scale of economies (Capps, Dranvone, & Lindrooth, 2010).

There is also the quality of care question to be considered. The majority of hospitals that have closed in the United States over the past decade have been small hospitals with fewer than 70 licensed beds. Many studies confirm that volume in a particular medical condition matters for value. Providers with significant experience in treating a given condition have better outcomes, and costs improve, as well (Porter & Lee, 2013). These points are important to take into consideration, as healthcare is in a time of crisis, and we must begin to look at how to build sustainable care for all, which is the foundation of the Patient Protection and Affordable Care Act (2010).

The challenge and the ethical principle that binds the governing board of the existing healthcare system relies on the concepts of beneficence ,and non-malfeasance and, in practice,

would be to stabilize care emergently, while simultaneously begin to plan for the future to

provide care that will be sustainable given the volatile environment of the delivery of healthcare

services in rural areas. Taking the time to recognize the concepts of what opportunities can be

gained by the closing did present opportunities for solutions going forward toward sustainability

and access. While these questions are creating ethical questions at a global level, the recent

closing of a community hospital requires the same questions to be considered at the local level of

Berkshire County in the Western Massachusetts.

As the now sole community provider of care, the existing provider of care's governing

board and executives must consider the challenges of reestablishing services that a community is

asking for, while balancing the fiduciary responsibility to the system they are charged with

overseeing. A significant function of effective governance is preserving the community assets

while setting strategic direction, build community relationships, and establish ethical standards

(Arnwine, 2002).

Implementation of the Intervention

The project was implemented after running several real patient scenarios through the

patient flow charts that were created during the planning phase. During this phase, all

documentation was completed in the test version of the electronic Care Navigator. In the last

quarter of the planning phase, key milestones were agreed upon that needed to be reached in

order to keep the date of August to see the first patient. The areas that required hard stop yes or

no decisions about the go-live date were in the areas of hiring and orienting staff, enabling

technology, and scheduling (see Appendix V). All key milestones were met, and the leadership

and clinical team collectively agreed to the opening date of the Neighborhood for Health.

Communication

The communication plan was a significant part of the planning and implementation process. A detailed plan (see Appendix W) started with identifying key stakeholders and then planning what kind of communication would be required for each individual groups.

The North County patient advisory group serves as the voice of the consumer; this group will be the ongoing patient advisory group. Devising an ongoing patient representative group is just one aspect that will work toward ensuring patient and family engagement (AHRQ, 2011). The plan also included individual meetings with the community primary care providers to ensure they understood the basic concepts and had an opportunity to voice concerns and/or offer suggestions. In order to facilitate positive collaboration and communication with the community-based providers, a monthly meeting has been scheduled. The meeting may move to quarterly once all agree that the processes and communications are optimal.

The community was notified of the official opening by advertisements and notifications sent to the primary care offices. Communication included a clear description of the services and concepts, which were made into talking points to ensure a consistent message is being delivered (see Appendix X).

Section IV. Results

Evaluation and Outcomes

The baseline data used came from the time of the former community hospital closing. This allowed for understanding the impact and ongoing readmission rate. The planning and implementation took approximately seven months. The baseline data will serve as a means of setting a target and understanding the utilization patterns, including diagnosis.

The first set of results are linked to the process measures and the types and frequency, of utilized services. The first week of operation provided services to 48 people out of a possible 86. The goal for the ramp up phase was to be at approximately 50%, realizing processes needed review and the opportunity to identify areas of improvement. Using the PDSA concepts to identify and gain a rapid improvement, the team identified that those coming in late on Friday and being discharged over the weekend or early Monday are the individuals who were not being seen by a care coordinator. One potential solution that is being piloted for this is to educate the current care management staff that currently covers the weekend. At discharge, all patients will receive information from the case managers, and a neighborhood for health staff will connect with them first thing Monday morning. Table 1 represents the utilization for each service for the first three weeks. This goal has been moved to serving 100% of the eligible population. The overall readmission rate will not have full data available until the first week of October.

Table 1

Utilization of Services, First Four Weeks

Week	One	Two	Three	Four
Inpatient	48	78	81	76
CHF	2	5	4	6
General APRN	-	-	8	9
C.D.E/RN	5	4	6	5
COPD	-	-	3	8
Nutrition	4	3	7	6
Substance Abuse	17	12	8	10
Mental Health	6	4	7	6
Smoking Cessation	1	5	3	4

Section V. Discussion

All positions were successfully hired with the exception of the adult APRN. The decision was made to not postpone the opening of the neighborhood based on the fact that all other positions had been hired, oriented, and was ready to begin seeing patents. Until the APRN position is filled, other members of the team will be responsible for notifying the primary care providers in the community that their patient is participating in the neighborhood, and a review of the care plan will be completed.

As previously mentioned, the communication plan provided structure around meeting with community representatives prior to and posts the initial opening. The first meeting after the soft opening provided the opportunity to answer questions and learn about their perceptions of the neighborhood. We heard that the name "medical neighborhood" did not resonate with this group. They felt after hearing about the services being offered and understanding the ultimate goal to improve the health of people so that they can remain at home in the community, the word "medical" denoted the wrong focus. After some discussion, the community group and the leadership group agreed on the new name of The Neighborhood for Health. The Neighborhood for Health was used during the opening and process conference. The program was well received by over 200 community members, elected officials, and the press. Questions were raised about when the services would be expanded to include other specialties and how specific diagnoses were chosen. A detailed explanation was given about the chronic conditions and how the prevalence in North County actually mirrored what we are seeing as a nation. It will be important to continue to review the data and the utilization of the program specifics in order to determine when and what services should be expanded.

Relation to Other Evidence

Evidence was sought to explore how implementing a robust care coordination model of

care embedded into the concepts of a medical neighborhood would affect the health of a

population. The main barrier was the variety of definitions to what constitutes care coordination

and the lack of standardization of what a medical neighborhood encompasses. However, taken

both of these questions separately did allow for the group to understand and review key concepts

that could have a positive outcome on the population with specific chronic conditions. Bringing

these evidence-based efforts forward is what will create this particular population's

neighborhood for health. One definition of a medical neighborhood is the ability to individualize

to a particular community, which focuses on managing a population for better health, while

developing better community relationships (AHRQ, 2011, p. 2).

Barriers to Implementation / Limitations

The potential barriers to this project were mainly the availability of appropriate clinical

staff to provide the necessary services. This, however, only occurred in one area, the adult

APRN. As previously stated, the decision was made to not postpone the opening given the

number of patients that were being discharged to North County on a daily basis. On average,

eight patients were being discharged daily from the targeted population. Operating without an

adult APRN did heighten the efforts that the care coordinators in the hospital made to ensure the

patient had a follow-up appointment with a primary care provider. It was noted that many of the

patients did have a primary care provider, which was a barrier, but we worked with the primary

care offices to get the patient into a practice.

The other limitation noted was the amount of time designated to this service in the

budget. As discussed in the financial section, reimbursement does not currently pay for this

service, or least it does not pay the cost of the service provided. Much of what is being done is

currently a cost avoidance situation; the goal is that penalties will be avoided. If a bundle

payment goes into effect, decreasing utilization of high cost settings, such as hospitalizations,

will reduce the overall cost of care. In order to have the appropriate disciplines represented in

the neighborhood, the decision was made to staff the majority of the disciplines part time. This

presents a limitation on the number of patients that can be scheduled on any given day. The plan

is to review the utilization data and the schedules on a monthly basis to evaluate the possibility

of expanding schedules.

Interpretation

Early data reflect that continued work needs to be done to ensure the care coordination

team sees the number of eligible patients. After the first four weeks of operation, 78% of eligible

patients were seen in the hospital by the care coordination team prior to discharge. The

preliminary data shows that the majority of patients are being seen for support with behavioral

health, diabetes, and CHF. Not surprisingly, the majority of patients seen have more than one

chronic condition.

Conclusion

In summation, the combination of a medical neighborhood and care coordination

principles holds promise to restoring care in a community, that are based on the self-care and

wellness activities, that are based on managing chronic conditions. Early data represent that the

30-day readmission rates are beginning to decline. Prior to the final submission a 30-day

readmission rate report will be run to compare with the base line data.

Section VI. Other Information

Funding

Based on the needs of a population that were evident after the closing of a community

hospital within the Commonwealth of Massachusetts, the Health Policy Commission awarded a

Community Hospital (CHART) grant to fund work to support improving care that will be

sustainable over time for those residing in Northern Berkshire. My role in this work for the grant

is the Principle Clinical Leader. The grant award is $3 million over two years.

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Section VIII.

Appendices

Designing A Care Delivery System Through Interprofessional Coordinated Care In a

Medical Neighborhood Setting

Diane P. Kelly, DNP (c), MBA, RN, CENP

Appendix A
Evidence Rating Scale

Level I	Experimental study/randomized controlled trial (RCT) or meta analysis of RCT
Level II	Quasi-experimental study
Level III	Non-experimental study, qualitative study, or meta-synthesis
Level IV	Opinion of nationally recognized experts based on research evidence or expert consensus panel (systematic review, clinical practice guidelines)
Level V	Opinion of individual expert based on non-research evidence. (Includes case studies; literature review; organizational experience e.g., quality improvement and financial data; clinical expertise, or personal experience)

A High	Research	Consistent results with sufficient sample size, adequate control, and definitive conclusions; consistent recommendations based on extensive literature review that includes thoughtful reference to scientific evidence.
	Summative reviews	Well-defined, reproducible search strategies; consistent results with sufficient numbers of well defined studies; criteria-based evaluation of overall scientific strength and quality of included studies; definitive conclusions.
	Organizational	Well-defined methods using a rigorous approach; consistent results with sufficient sample size; use of reliable and valid measures
	Expert opinion	Expertise has been clearly evident
B Good	Research	Reasonably consistent results, sufficient sample size, some control, with fairly definitive conclusions reasonably consistent recommendations based on fairly comprehensive literature review that includes some reference to scientific evidence.
	Summative reviews	Reasonably thorough and appropriate search; reasonably consistent results with sufficient numbers of well-defined studies; evaluation of strengths and limitations of included studies; fairly definitive conclusions.
	Organizational	Well-defined methods; reasonably consistent results with sufficient numbers; use of reliable and valid measures; reasonably consistent recommendations
	Expert opinion	Expert opinion
C Low quality or major flaws	Research	Little evidence with inconsistent results, insufficient sample size and conclusions cannot be drawn undefined, poorly defined, or limited search strategies; insufficient evidence with inconsistent results; conclusions cannot be drawn.
	Summative Reviews Organizational	Undefined, or poorly defined methods; insufficient sample size; inconsistent results; undefined, poorly defined or measures that lack Adequate reliability or validity
	Expert Opinion	Expertise has been not discernable or has been dubious

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Appendix B

Question	Benefits of the Medical Neighborhood To Population Health						
Article #	Author/ Date	Evidence Type	Sample Size	Finding that help answer the question	Limitation	Evidence Rating Level / Quality	
1	Spatz, et al 2014	Research	N/A	Reviewed 6 key processes that were identified by the American College of Physicians as key to and effective patient centered medical home and patient centered neighborhood	Data supported care that was coordinated by PCP and Specialist, did not include other providers	IV	A
2	Xiayan et al, 2014	Expert Opinion	N/A	The success of a medical neighborhood rest on the alignment between the patient centered medical home and their neighbors (social supports, hospitals, long term care).	Identified lack of data secondary to lack of aligned payment system	IV	B
3	Tuot et al, 2015	Qualitative	19 specialist using the e-referral / 123,000 = N Referrals made	The quality e referral communication and the impact on specialty care. 71% of 2189 considered the quality high	Not extensive studies completed	III	A
4	Nguyen et al, 2014	Qualitative	50 health and social service providers	Reviewed need and potential barriers to a shared electronic records to enhance communication between social – community providers and healthcare providers	Conducted in a single county health system with a integrated Electronic Health Record Did not include key stakeholder's perspective – patient/ client	III	B
5	Pham, 2009	Expert Opinion	N/A	Explores how patient medical homes need to relate to the rest of the continuum, conceptual framework for medical neighborhood	Recognizes no single type of delivery system or medical neighborhood is likely to work for all communities	IV	B
6	Brown et al, 2012	Qualitative data analysis:	22,000 patient encounters	In person interviews and telephone interviews. This research made use from 15 program randomized control trial- by CMS. The research question was what works to improve care coordination. Person to person and telephone interviews was conducted utilizing a semi structured	The identified areas with improvement were only noted in one system	II	A

				discussion guides. A key finding was the concept of a single office based setting has minimal impact on both quality and cost: the recommendation is to consider moving out to a neighborhood approach. Another significant finding: three of the four successful models had mechanisms to inform care coordinators quickly when a patient was hospitalized and a process for a comprehensive plan to be developed. This included the ability for the care coordinator to be included in the inpatient care episode.			
7	Peikes et al, 2009	Qualitative	Original data 18309 – randomly selected 350 patients – treatment group, 350 patients control group	Individual interviews were conducted, along with original data analysis: Effects were calculated using prespecified analyses and an intention to treat design that included all sample members randomized to the treatment and control groups. A two-tailed statistical test were conducted by using SAS Treatments –control comparisons of hospitalizations, expenditures, and claims based quality of care measures were regressions adjusted by using ordinary least squares. Showed 2 out of 15 sites had a significant impact on quality and cost.	Sites varied in the level of services provided	II	A

Question :		Benefits of using care navigation to improve the health of a population?				
Author/ Date	Evidence Type	Sample Size	Finding that help answer the question	Limitation	Evidence Rating Level / Quality	
Craig et al, 2011 Care Coordination Model:	Qualitative Descriptive representing the opinion of nationally recognized experts		Framework based on the work of several teams, offers a methodical approach that was proven to be consistent over	The work was observed over a 6-month period of time.	IV	B
Forster et al, 2003 The Incidence and Severity of Adverse Events Affecting Patients after Discharge from the Hospital	Prospective Cohort Study	400 randomly selected patients	76 patients (19%) [95% CL, 15% to 23%]). Of these 23 had preventable adverse events (6%[CL, 4% to 9%]) and 24 had ameliorable adverse events (6%[CL 4% to 9%]). Adverse drug events were the most common type (66% [CL, 55% to 76%]) Nearly one in five patients experienced an adverse event during the time of transition in care.	Possible selection biases as non-responders were not assessed. Recall could have been a factor as the interview process was done at a variable amount of time.	II	B
Spatz et al, 2014 Patient centered medical neighborhood and diabetic care	Expert Opinion		Better diabetic care can now lead to both lower cost and higher quality, if the shift from fee for service occurs	Little evidence sited	V	C
Christensen et al, 2008	Randomized control	55 research trials,	Key findings were Case management and tracking	Search term " delivering care" may have been too	I	High

Models in the delivery of depression care:	Research The Chi Square (x2) statistic was used to determine differences in the proportion of positive outcomes as a function of intervention type	comprised of 29 – 4249/ means size of 623	were associated with positive depression outcomes monitoring of care was best done by people with a behavioral health background Significant association between patient preferences and positive depression outcomes Little impact when providing PCP with additional Behavioral Health training	restrictive. Outcomes were in terms of improvement over control rather in the form of an effect size would indicate the strength of the association.		
Maegn et al, 2012 Care Coordination	Qualitative Non Experimental Research	10,038	Measuring the patients perception of their care coordination and how was the response related to their acuity Logistic Regression used : Unable to link between perceptions of care coordination problems and actual problems experienced 9% care coordination is major problem 18% care coordination is a minor problem	Non response bias, based on the low return of survey rate	III	B
Kangovi et al, 2013 Designing patient centered CHW program	Non Experimental Qualitative Research	65 recently hospitalized patients	Modified grounded theory approach to design and intervention that would address barriers identified by patients Achieved by mapping qualitative data to intervention design	Small N	III	B
Jortberg et al, 2014 Registered Dietician Nutritionist Bring Value to Emerging Health Care Delivery	Expert Opinion		Defines the role of the RDN in achieving value in the context of new payment models	Limited studies to validate	V	C
Burns et al, 2014	Randomized Quality Improvement	423 patients discharged	Patients receiving follow up call from a CHW had a 15.4% readmission rate compared to	Low completion rate: Only 38% of eligible	V	C

Feasibility and evaluation of a readmission pilot	Intervention	to home	the base line of 17.9%	patients received their call		
Peikes et al, 2009	Qualitative study explored the results of a randomly selected to treatment or control status. Effects were calculated using prespecified analyses and an intention – to – treat design that included all sample members randomized to the treatment. Two-tailed statistical test were conducted by using SAS version 9.1 .	15 programs resulting in claims data for 18309 patients	The data from 15 CMS programs were reviewed to determine if care coordination programs reduced hospitalization and Medicare expenditures of the chronically ill population. 13 programs of 15 showed no significant difference (p<.05) in hospitalization. The exceptions showed 1-17% less hospitalization and 9% less cost than the control group, 2 – 19 % less hospitalization and 14 % – both of these programs utilized more face to face interventions opposed to telephone interventions.			
Manderson et al, 2011		Meta-synthesis, qualitative study	Systemic Literature review , 15 articles, 9 discrete studies All studies utilized randomized control Of the nine, 5 reported positive financial outcomes, 5 increases patients perception of improved quality of life	The definitions, outcomes, and measures – mixed record of success, lack of consistent programs.	III	B

Implementation	April 5	April12	April 19	April 26	May3	May10	May17	May24	June7	June14	June21	June28	July 5	July12	July19	July 26	Aug 2	Aug9	Aug 23	Aug 30
Budget Preperation																				
FTE Expense	G	G																		
Information Technology Expense			G	G	G	G														
Budget Approval							Y	G												
Human Resource Considerations	Gr																			
Job Descriptions			G																	
Schedules						G														
Candidates Screened and Interviewed								G	G											
Basic Orientation											G									
Techninal Training										Y	Y			G	G					
Coaching and Interviewing Education															G	G				
Shadow Opportuntity											G	G								
Data Review				G	G	G	G													
Cinical Planning/ FlowCharts									G	G	G	G	G	G						
Communication Plan (See Tab)															Y					
Information Technnology Plan (See tab)															Y					
GO LIVE	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G		

General Plan

Care Director Project Timeline Information Technology	June 8	June 15	June 22	June 29	July 6	July 13	July 20	July 27	Aug 3	Aug10	Aug 17	Aug 24	Aug 31	Sept 7	Sept 14	Sept 21	Sept 28
System Admin Training	G																
System Configuration	G	G	G	G	G												
Build Configurable Lists	G	G	G	G	G												
Build Care Plans	G	G	G	G	G												
Problems	G	G	G	G	G												
Goals	G	G	G	G	G												
Assessments	G	G	G	G	G												
Patient Upload																	
End User Training						O	**On site training days will be July 15th and 16th (9-12 and 1-3)**										
Deploy Configuration to Production																	
Pilot -							B	B	B								
Phase I Go Live - Medical Neighborhood										P							
							P	P									
Meditech ADT Testing			O	O	O	O	O	O	O								
Build VPN			O	O	O												
Test Data Elements For Rerporting										G	G	G	G	G	G	G	G
Allscripts Integration																	
Complete	G																
IT Function	O																
Test Phase	B																

Technology Plan

Appendix E

Strength	Weakness
• Strong community based network of services available • Well established community based substance abuse program willing to collaborate with this project to enhance care for the targeted population • Available accessible space • APRNs presence in the community care environment • Grant funded • Engaged primary care offices to support effort	• Misaligned reimbursements system • Provider shortage • Potential limited hours of care givers • No current patient centered medical home in North County
Opportunities	**Threats**
• Piloting the use of community based care navigation • Increased competency training and certification for RNs and Social Workers on Care Coordination/ Navigation • Opportunity to build partnerships with CBO (community cased organizations) • Opportunity to support primary care offices with a shared patent care plan	• Potential mistrust of the community • Bundle Payments/ or ACO structure not initiated- care will be costly – decrease current revenues as they are fee for service

Appendix F

Baseline Performance

Represents monthly and year average readmission rate for
target population .

	Oct 13	Nov 13	Dec 13	Jan 14	Feb 14	Mar14	Apr 14	May 14	Jun 14	Jul 14	Aug 14	Sep14	Avg.
Readmits	15	16	25	31	37	37	34	49	53	43	8	11	30
Discharges	155	155	176	238	248	237	274	274	241	130	101	105	192
Rate (%)	9.68	10.32	14.20	13.03	14.92	15.61	14.29	17.88	21.99	33.08	7.92	10.48	15.62

 Goal of a 10% Improvement From 15.62% = 14.06%results in preventing 37
admissions

 Stretch Goals of a 20% Improvement From 15.62% = 12.5 % results in
preventing 75 admissions

Appendix G

North County
Readmission Rates

UCL
27.06

North County Community
Hospital Closed

CL
15.99

Ryx = 0.068
Slope = 0.128
Sigma = 3.693
Probability = 0.576

4.91

LCL

Readmission Rates

13-Oct 13-Nov 13-Dec 14-Jan 14-Feb 14-Mar 14-Apr 14-May 14-Jun 14-Jul 14-Aug 14-Sep
10/2013 - 9/2014

Appendix H

Counts of Readmitted Encounters For Principal OR Secondary Diagnosis

Readmitted Count of Readmitted Cases From North County Zipcodes

Principal OR Secondary Diagnosis

October 2013 – September 2014

Target population based on the readmission based line data

Appendix I

Driver Diagram

Reduce 30-day readmissions for all inpatient discharges of Northern Berkshire County residents by 10 % by January 2016

Care Coordination for patients discharged from Acute to The Medical Neighborhood (team is RN, SW)

Develop individual care plans via multidisciplinary input while at BMC or satellite emergency facility for patients with high risk features (including high utilizers, CHF, COPD, , BH *, social complexity)

Ensure timely post-hospital clinic follow up (APRN) as needed x 30 day post acute episode

Address social issues that lead to recurrent acute care utilization

Hire field–based Social Workers to support Care Navigation

Support diabetic care – provide on site diabetic education, individual support, & home visits

Expand CHF clinics to the medical neighborhood , working in collaboration with Care Navigation Team

Provide enhanced care for patients with priority chronic conditions

Deploy medical neighborhood based Registered Dietician to provide nutritional counseling and support via groups, home visits, and grocery store visits

Engage existing community based social supports to work in collaboration with the Medical Neighborhood – (Community Health Worker)

Increase access to Behavioral Health**

Engage exciting community based substance abuse treatment center to facilitate a day treatment program at the medical neighborhood

Leverage technology to support cross setting care and drive improvement

Care coordination / performance management platform to track post – hospital services delivered & outcomes for all discharges from acute care to Northern Berkshire County*

Utilize technology to enable real-time identification & tracking of patient in target population

* Target population definition includes all payers and ages 18+; excluding OB, deaths, transfers to acute inpatient; inclusive of North Adams, Adams, Cheshire, Williamstown, Savoy, Florida, Rowe, and Monroe (02147, 01220, 01225, 01267, 01256, 01247, 01367, 01350).
* * Definition of behavioral health is mental health & substance abuse disorders

Appendix J

Communication & Documentation

BMC

Patient scheduled in MT as BMC INPATIENT

**We need reports to reflect the North County patients and also the patients who are being seen in the Medical neighborhood

NPR report is generate daily with admissions and intent to discharge

CARE DIRECTOR

Allscripts PM

Allscripts EHR

Meditech

ADT Feed from Meditech to Care Director of all North County Patients

Receptionist schedules appointments in Allscripts PM

Populates the worklist in Care Director

Patient seen by the SW/RN team (8-9 pts/day)

SW/RN team completes initial assessment in Care Director

Assessment will prioritize patient needs
*Assessment
*Referrals

SW/RN revisits the patient to discuss care Plan

If possible patient is connected with receptionist and MN Clinician via Skype to make appointments & enhance patient engagement

Patient Discharged from BMC

Clarify and coordinate Care Plan with BMC Case Manager and PCP office

Standardized Note is added to Discharge Summary describing referring to MN and developing care plan and sent to PCP

MEDICAL NEIGHBORHOOD

Morning Huddle with Care Team to review Patient List for the day

Patient Presents at Medical Neighborhood

Receptionist arrives them in PM and gives them their appointments for the day as well as a copy of their med list

What services will they receive today?

Appropriate Clinician see Patient

Patient Visit is complete

Phase I – care plan sent to PCP?
Phase II – Care plan sent to dbMotion, Patient Portal and PCP

REPORTING Data Available

INTERVENTION SPECIFIC

5/28/15

Smoking Cessation

Nutrition

Diabetes

Behavioral Health/ Substance Abuse Day Treatment

CHF

APRN Provides Summary Primary Care Provider

Appendix K

Dear Patient,

Your health care team at the hospital wants you to have follow-up care after you leave. This is a great idea. At Berkshire Health Systems, we want everyone in our community to be as healthy as possible. But sometimes, it isn't easy to reach that goal.

It can be hard for you to make appointments and drive to different offices to get the care you need. This may be even harder after you've been sick, or need help and support to make changes in your life. That's why BHS created the Neighborhood for Health at the North Adams Campus of BMC. Located on the second floor, the Neighborhood For Health has a full range of services that will support you in caring for yourself. In fact, this is the first time in our area that these important services have been pulled together, all under one roof, to help you get better and stay healthy.

How the Neighborhood For Health Works

You are the most important leader in your health care planning. Care Navigators will visit you in the hospital. They will work with you to begin creating a plan that will guide your follow-up care. They will also work with your healthcare team and your primary care physician. Everyone's input will be discussed as part of your plan.

If you choose, your Care Navigators will give you one or more appointments to visit the Neighborhood For Health shortly after you leave the hospital. When you arrive, your healthcare team will be there, ready to provide the services you need to get back on the road to health.

This means your care will be managed by professionals who will work together for you. Their goal is to make it easy for you to get services, learn how to be healthier, prevent future illness, and help you stay out of the hospital. You will leave each appointment with a copy of your care plan. We will ask you to sign a consent form so that the care plan you select can be shared with your team at the Neighborhood For Health and your primary care physician.

Your Team at the Neighborhood For Health

The process begins with your Care Navigators at the hospital. Depending on your needs, your team may also include Social Workers, Nurse Practitioners, and professionals who will provide teaching and healthcare services during your recovery.

Research proves that the best healthcare is delivered through a clinical and community approach that includes both medical and social support. Social workers will work with you to remove barriers that can keep you from being well, such as transportation issues or access to healthy food. Community agencies have a great range of excellent programs that can assist in your recovery and staying well.

Services at the Neighborhood For Health

- **Care Coordination at BMC and in the Neighborhood For Health**
- **Diabetes Education**
- **Congestive Heart Failure Clinic**
- **Nutrition Counseling**
- **Expanded Behavioral Health Services**
- **Substance Abuse Disorders**
- **Detox Center**
- **Smoking Cessation**

Services are Covered at the Neighborhood For Health

Your services at the Neighborhood For Health will be paid for by your insurance, a state grant, or by Berkshire Health Systems through its commitment to our mission, which is to improve the health of people, regardless of their ability to pay.

The Neighborhood For Health is located at the North Adams Campus of BMC
77 Hospital Avenue
North Adams, MA 01247

Berkshire Health Systems
www.berkshirehealthsystems.org

Welcome to the Neighborhood For Health

Where your healthcare needs are accessible

Your services are coordinated

And where everyone on the team works together for you

Neighborhood For Health
North Adams Campus of Berkshire Medical Center

Appendix L

CHF WORKFLOW FOR MEDICAL NEIGHBORHOOD

PREPING FOR PATIENT

| Receive referral on all target patients | NP/SW/CHW completes heart failure assessment risk assessment tool | NP/SW coordinates with Michelle who currently works in hospital with HF patients | Heart Failure RN / Heart Failure NP logs into Meditech and reviews labs, diagnostic tests, notes, & care plans | Review all information and enter into initial assessment summary form | Prepare education materials included in initial Heart Failure Care Plan |

PATIENT PRESENTS AT MEDICAL NEIGHBORHOOD

| Patient Presents at Medical Neighborhood | Patient arrived by Receptionist and given appointments for the day. Goes to waiting room | HFNP strategized on timing and seeing patients 15-60 minutes | NP/HCW/SW updates HF NP on any new information since patients's arrival | HF NP reviews new patient information including last note | HF NP meets patient in waiting room and escorts to Health Failure Service Office | HF RN completes initial assessment and documents in assessment form |

HF NP updates care plan and starts education process including review of the printed materials

What is next visit type?

Referral

HF NP Provides referrals to appropriate PCMN services as identified in the Assessment

Receptionist schedules next visit

Patient seen "X" number of times, each visit there will be and AS progress note

Final Visit *Assess knowledge and compliance

Copy of Care plan to patient and PCP

Congestive Heart Failure Care Work Flow

Appendix M

Diabetic Care Work Flow

DIABETES WORKFLOW FOR MEDICAL NEIGHBORHOOD

PREPING FOR PATIENT

Receive referral on all CHART patients → NP/SW/CHW completes diabetes assessment tool → CDE logs into Meditech/ Allscripts and reviews labs, diagnostic tests, notes, & care plans → Prepare education materials included in initial Nutrition Plan

PATIENT PRESENTS AT MEDICAL NEIG...

Patient Presents at Medical Neighborhood → Patient arrived by Receptionist and given appointments for the day. Goes to waiting room → CDE strategized on timing and seeing patients 15-60 minutes → NP/HCW/SW updates RD on any new information since patients's arrival → CDE reviews new patient information including last note → CDE meets patient in waiting room and escorts to Nutrition Office → CDE completes initial assessment and documents in assessment form

CDE updates care plan and starts education process including review of the printed materials → What is next visit type? → Individual → Receptionist schedules next visit with RD or CDE → Patient seen "X" number of times, each visit there will be pdoc/ → Final Visit *Assess knowledge and compliance → Copy of Care plan to patient and PCP

What is next visit type? → GROUP → Receptionist Schedule into next group class → Does patient still need group or individual → Individual → Receptionist schedules next visit with RD or CDE

Patient seen "X" number of times, each visit there will be pdoc/ → Scan care plan into Meditech until she moves to AS

INPATIENT WORKFLOW

Inpatient Mon-Fri Run tracking report with DX of diabetes → All cases are reviewed –high risk patients are seen → Also receives referral from hospital staff or patient request (ED too) → Diabetes Progress Note done in MT → Provide patient education; input to Medical tx plan, d/c plan → Schedule f/up appointments with specialists as needed, get a free meter

Appendix N

Nutrition Work Flow

DIABETES WORKFLOW FOR MEDICAL NEIGHBORHOOD

PREPING FOR PATIENT

Receive referral on all CHART patients

→ NP/SW/CHW completes diabetes assessment tool

→ CDE logs into Meditech/ Allscripts and reviews labs, diagnostic tests, notes, & care plans

→ Prepare education materials included in initial Nutrition Plan

PATIENT PRESENTS AT MEDICAL NEIG...

Patient Presents at Medical Neighborhood

→ Patient arrived by Receptionist and given appointments for the day. Goes to waiting room

→ CDE strategized on timing and seeing patients 15-60 minutes

→ NP/HCW/SW updates RD on any new information since patients's arrival

→ CDE reviews new patient information including last note

→ CDE meets patient in waiting room and escorts to Nutrition Office

→ CDE completes initial assessment and documents in assessment form

CDE updates care plan and starts education process including review of the printed materials

→ What is next visit type? — Individual → Receptionist schedules next visit with RD or CDE → Patient seen "X" number of times, each visit there will be pdoc/ → Final Visit *Assess knowledge and compliance → Copy of Care plan to patient and PCP

GROUP → Receptionist Schedule into next group class → Does patient still need group or individual — Individual

Scan care plan into Meditech until she moves to AS

INPATIENT WORKFLOW

Inpatient Mon-Fri Run tracking report with DX of diabetes

→ All cases are reviewed –high risk patients are seen

→ Also receives referral from hospital staff or patient request (ED too)

→ Diabetes Progress Note done in MT

→ Provide patient education; input to Medical tx plan, d/c plan

→ Schedule f/up appointments with specialists as needed, get a free meter

Appendix O

Behavioral Health Care Work Flow

Behavioral health from Inpatient

North County Patient admitted with Alcohol DX

RN/SW receivs paper order to review chart

Completes Alcohol assessment in CD

BH/Psych or Med/McGEE

Coordinates with Hospitalist and PCP

Not appropriate detox

Not Appropriate for Out Patient Detox

Does pt want Inpatient Detox

Yes

Transfer to McGee

Needs Meds?

Meet with MD/ APRN one on one to review other alternatives

NO

YES

Sees Social Worker

Sees APRN

Apply criteria for Day TX

Appropriate for inpatient detox

Initial evaluation done by APRn or SW, begins the Care Plan

Refer to MD who will see patient in the hospital to make plans to start outpatient tx starting the next day

Does his clinical note in Allscripts

Orders Medications in Meditech for dispensing

Assessment in Care Director

*Prescribes meds if needed
*Stable to go back to PCP
*Mental health referred to BRIEN

Appendix P

Patient and Family Centered Care

Appendix Q

Process Measures

Measure Definition	Numerator	Denominator
Patient identification and contact	Number of patients with an inpatient status seen "In" patient to discuss program / services prior to discharge	All patients in cohort
Patient participation rate	Patients agree to services	All patients in cohort
CHF measure (what percent require CHF resources)	# of patients with primary or secondary Dx of CHF referred to CHF resources in the Medical Neighborhood	All patients in cohort
Timeliness of CHF patients receiving services	#of patients seen by CHF clinician within 48 hours of post discharge	# of patients with primary or secondary Dx of CHF referred to CHF resources in the Medical Neighborhood
Care navigation linking CHF population to support services	# of services CHF patients access based on referral	# of referrals made to services with primary / secondary Dx of CHF
Percentage of patients requiring diabetic resources	# of patients with a primary or secondary Dx of Diabetes referred to the CDE resources in the Medical Neighborhood	All Patients in cohort
Timeliness of care provided to patients w/ diabetic Dx primary or secondary	#of patients seen by CDE clinician within 48 hours of post discharge	# of patients with primary or secondary diabetic Dx referred to CDE resources in the Medical Neighborhood
Care navigation linking patients with primary or secondary Dx of diabetes to support services	# of services patients with diabetes access based on referral	# of referrals made to patients with primary / secondary Dx of Diabetes

Appendix Q

Process Measures

Updated Measure Definition	Numerator	Denominator
Behavioral health Dx (primary and secondary) with substance abuse	# of patients with a Behavioral Health (primary or secondary Dx) with substance abuse seen for initial visit while inpatient	# of patients d/c with a BH Dx (primary / secondary) with substance abuse
Care navigation linkage to services	# of services patients with BH (primary / secondary) with substance abuse access based on referral	# of referrals made to services with primary / secondary Dx of BH with Substance Abuse
Behavioral health Dx (primary and secondary) w/o substance abuse	# of patients with a Behavioral Health (primary or secondary Dx w/o substance) seen for initial visit while inpatient	# of patients d/c with a BH Dx (primary / secondary w/o substance abuse)
Timeliness of services provided to patients w/ behavioral health (primary or Secondary) Dx with substance abuse	#of patients seen by BH clinician within 48 hours of post discharge	# of patients with primary or secondary BH with Substance Abuse Dx referred to BH resources in the Medical Neighborhood
Care navigation linkage to services	# of services patients with BH (primary / secondary) access based on referral	# of referrals made to services with primary / secondary dx of BH
BH Readmissions	# of patients with BH Dx (primary and secondary) readmitted to BMC	# of patients with BH Dx (primary and secondary) discharged from BMC in last 30 days

Appendix R

Appendix S
Patient Consent
Medical Neighborhood Program

Important Background
Berkshire Medical Center (BMC) has been awarded a grant from the Massachusetts Health Policy Commission to fund a Community Hospital Acceleration, Revitalization & Transformation Program. This program, referred to as the Medical Neighborhood, is designed to enhance the delivery of efficient and effective care to patients in Berkshire County. Healthcare providers participating in the Medical Neighborhood program have agreed to share certain patient information electronically through a central hub in order to better coordinate and integrate patient care.

What is the purpose of this Consent?
This consent authorizes your healthcare providers who are participating in the MEDICAL NEIGHBORHOOD program to share certain health information about you with each other and with your primary care physician.

Who will have access to my electronic health information in the MEDICAL NEIGHBORHOOD central hub?
Healthcare providers employed by Berkshire Health Systems-affiliated entities (Berkshire Medical Center, Fairview Hospital and Berkshire Faculty Services) and in partnership, other healthcare providers involved in your MEDICAL NEIGHBORHOOD care, will have access to the health information about you in the MEDICAL NEIGHBORHOOD central hub. Care Plans developed for you as part of the MEDICAL NEIGHBORHOOD program will be accessible through that central hub to those providers, to you, and to your primary care physician.

What information will be shared?
Health information about you that your providers believe to be important to developing your Care Plan will be shared. That may include sensitive information relating to:
- Mental health conditions and treatment for these conditions; or
- Substance (drug and alcohol) abuse and treatment for substance abuse (excluding McGee Recovery Center records).

Will my health information be secure?
Electronic transmission of protected health information is subject to both state and federal laws that require health care providers to reasonably protect the privacy and security of your protected health information. Strong data encryption and user-specific password protection are among the technologies employed to keep your data private. Audit logs will be used to monitor activity in your record.

Your Consent:

> **I GIVE CONSENT for my** BHS and other healthcare providers participating in the MEDICAL NEIGHBORHOOD program to share with each other electronic health information about me described in this form, including the Care Plan that will be developed for me.

☐ **I DENY CONSENT** and do not want to participate in the MEDICAL NEIGHBORHOOD program.

Print Name of Patient

Signature of Patient or Patient's Legal Representative   Date   Time

---

Print Name of Legal Representative (if applicable)   Relationship of Legal Representative to Patient (if applicable)

Appendix T
Financials

Salary Expenses + Fringe @ 20 %	FTE	Year 1	Year 2
APRN / Adult	.5	68640	71386
CDE/ RN	.4	45926	47763
CHF / APRN	.4	54912	57108
APRN/ Psychiatry	1	137280	142771
MD/ psychiatry	.75	168,480	175219
RN/ Coordinator	1	119808	124600
MSW/ Navigator	3	247104	256988
CHW	1	40735	42364
Registered Dietician	.4	45926	47763
Scheduler/ Coordinator	1	49920	51917
Program Director/ MSN	1	124,000	152000
Total	10.45	1102731	1169879
Non Salary			
I.T Expense/ Care Navigator		140,000	68,000
Contract/ Day Treatment Program		80,000	80000
Social Support Needs Fund *		70000	70000
Minor Equipment / Furnishings		50,000	25000
Program Food/ Supplies		56, 000	56000
Non Salary Total		340,000	299000
Total		1,442,731	1,468,879

* Year two includes a 4% salary increase

**Social Support Needs Funds – The funds will be allocated by the Care Team to individuals to support transportation, emergency housing, food, clothing, medications. This fund can be used only after all other sources have been exhausted.

Appendix U

Return on Investment Considerations

Program	Activity	Current Cost	Gains = Penalty Avoided / Expense Reduction
Value Based Purchasing	3 % Readmission Penalty based on current included diagnosis is If 3% were expanded to include all Medicare patients this potential penalty would increase to 1.9 million	$ 100,000	If all Medicare patients were included approximately 1/3 is from the target population = $ 600,000
Healthcare Dollars Savings (Prepare for bundle payment/ ACO)	20% reduction = 72 avoided admissions 10% reduction = 36 avoided admissions		15,000 per discharge = $ 1,125,000 15,000 per discharge = $ 562,5000

Return On Investment

Program	Year 1	Year 2
Value Based Purchasing Readmission Penalty Avoidance	1,125,000	1,125,000
Expenses		
Salary	1,102,731	1,169,879
Non – Salary	340,000	299,000
Total	1,442,731	1,468,879
Net	(317,731)	(343,879)

Reducing readmissions can reduce the CMS penalty that could cover all but approximately 350,000 per year. This should be considered a transition phase until the bundle payments are implemented, in addition this information should be used to renegotiate payment options with the payers to save on the overall cost of a covered life.

Appendix V

Key Milestone Dates
That Must Be Achieved For Go Live Date

| Key Milestones	Dates
Positions Posted For Hiring Process	6/ 2015
Execute Contract for Care Navigator	6/2015
Enabling Technology suite testing initiated	7/2015
Enabling technology suite – go live	7/2015
Test Report of Process Measures	7/ 2015
Execute Contract with service delivery partners (Day Treatment)	7/2015

Training Completed –
 	
        Interview Techniques/ Forming Alliances
    Health Literacy
    Care Navigation I.T.
	8/2015

Schedules Complete / Staffing to handle 50% of planned patient capacity for readmission reductions goal	8/2015
First Patient Seen (ramp up phase- 50% of eligible patients)	8/2015
Schedules Complete to handle 100% of planned patient capacity for readmission reduction goal	
Full Go Live/ Public Announcement	9/2015

Appendix W

Communication Plan

Communication Plan						
Topic		**Details**	**Audiences**	**Preperation & Communication**	**Due Date**	**Completed**
Goals						
		Achieve stated aim metrics	Care team	review data / clearly communicate AIM statement to team	April	cmpleted
		Prepare internal primary teams/ departments	Community Coalition	meeting community agencies to establish relationship and partnerships	May	completed
		Faciliate coordnated Care	care team and PCP			
		Promote patient engagement and educations	Management Team			
		Promote new services	PCP, North County public			
		Generate excitement		Management Team Meeting	August	completed
				Medical Executive Meeting	Septemer	completed
				Quarterly Forums	October	pending
Stake Holders						
		Patient from north county zip codes		Primary Care meeting prior to	June- July	Completed
		Speciaist		Power Point to be used for meeting to review process	June	Completed
		Staff directly connected to the effort		Fact Sheet (for media , public, and internal use)	August	completed
		Community based coalition		Attend Noth County Patient Advisory committee	August	completed
		Broad communtity		Press Confrence on site	Sept	completed
		Media		Community Open House (Immeditely follow press confrence	Sept	completed
				Brochure for patients to review and learn about the program	Sept	completed
		Primarcy care providers		PCP Dinner Scheduled for quarterly updates on progress	June (set date)	scheduled 9/15

Appendix X

Talking Points (Part of the Communication Strategy)

The Neighborhood For Health

Where a patient's healthcare needs are accessible

Their services are coordinated

And where everyone on the team works together
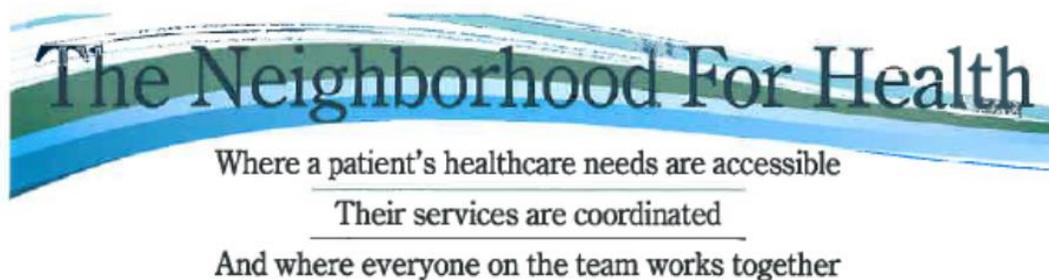
What's happening?

Berkshire Health Systems will open a Neighborhood For Health on the second floor of the North Adams Campus of BMC. This innovative program is designed to improve access to healthcare and improve health for North Berkshire patients by focusing on their needs and the reasons why people often require repeated trips to the hospital. The new service starts during an admission at Berkshire Medical Center and will include expanded services after discharge. The Neighborhood For Health will bring together – all under one roof – all of the clinical and community services typically needed by patients to regain their health and stay healthy. The Neighborhood For Health will not only house all of the services, it will also be the hub for coordination of care and communication, and will work closely with the patient's primary care provider and other physician specialists. The second floor of the North Adams Campus of BMC has been refurbished for the Neighborhood For Health, and a team has been hired to implement and manage this effective new model.

What does this mean for our patients?

In essence, managed, coordinated care designed specifically for each patient, all in one accessible location. The Neighborhood For Health is designed to meet the immediate and holistic needs of patients following hospitalization. All patient care – including appointments – will be managed by the Neighborhood For Health so that patients can see their entire Neighborhood team when they arrive. The strong clinical/community collaboration (including social workers) means that the Neighborhood For Health will expand access to the right care, while also eliminating previous barriers to care such as transportation issues or access to healthy food or a safe environment. The goal is an accessible and coordinated approach to helping our patients return to the best health possible.

How will the Neighborhood For Health work?

The process begins as soon as a North Berkshire resident appears at BMC. Their zip code will activate a call to a Care Navigator at the hospital, who will visit the patient, confer with the patient's hospital healthcare team, and work with the patient to prepare a care plan of medical and social needs once he/she goes home. The Care Navigator will also arrange the first visit to the Neighborhood For Health upon discharge, and ensure that all of the right clinicians and community support are there to meet the patient. BHS hopes that it will soon be able to expand the benefits of the Neighborhood For Health by enabling primary care physicians to refer patients to these services.

Appendix Y

Summary Data Post Implementation

Full Readmission Rate = 12.3%

Appendix Z

UNIVERSITY OF SAN FRANCISCO School of Nursing and Health Professions

The aim of the project is to improve the process or delivery of care with established/ accepted standards, or to implement evidence-based change. There is no intention of using the data for research purposes.	x	
The specific aim is to improve performance on a specific service or program and is a part of usual care. ALL participants will receive standard of care.	x	
The project is NOT designed to follow a research design, e.g., hypothesis testing or group comparison, randomization, control groups, prospective comparison groups, cross-sectional, case control). The project does NOT follow a protocol that overrides clinical decision-making.	x	
The project involves implementation of established and tested quality standards and/or systematic monitoring, assessment or evaluation of the organization to ensure that existing quality standards are being met. The project does NOT develop paradigms or untested methods or new untested standards.	x	
The project involves implementation of care practices and interventions that are consensus-based or evidence-based. The project does NOT seek to test an intervention that is beyond current science and experience.	x	
The project is conducted by staff where the project will take place and involves staff who are working at an agency that has an agreement with USF SONHP.	x	
The project has NO funding from federal agencies or research-focused organizations and is not receiving funding for implementation research.	x	
The agency or clinical practice unit agrees that this is a project that will be implemented to improve the process or delivery of care, i.e., not a personal research project that is dependent upon the voluntary participation of colleagues, students and/ or patients.	x	
If there is an intent to, or possibility of publishing your work, you and supervising faculty and the agency oversight committee are comfortable with the following statement in your methods section: *"This project was undertaken as an Evidence-based change of practice project at X hospital or agency and as such was not formally supervised by the Institutional Review Board."*	x	

ANSWER KEY: If the answer to ALL of these items is yes, the project can be considered an Evidence-based activity that does NOT meet the definition of research. **IRB review is not required. Keep a copy of this checklist in your files.** If the answer to ANY of these questions is NO, you must submit for IRB approval.

*Adapted with permission of Elizabeth L. Hohmann, MD, Director and Chair, Partners Human Research Committee, Partners Health System, Boston, MA.

STUDENT NAME (Please print): Diane P. Kelly

Signature of Student:
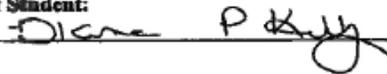
Diane P Kelly   DATE 7·16·14

Signature of Supervising Faculty Member (Chair):
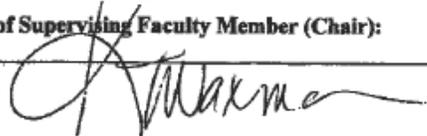
       DATE 7/16/14

Appendix AA

**Berkshire
Medical Center, Inc.**
BERKSHIRE HEALTH SYSTEMS, INC.

725 North Street
Pittsfield, MA 01201
(413) 447-2000

September 15, 2016

This letter is to acknowledge and approve the clinical work Diane P Kelly completed and documented in

final paper titled: Designing a Care Delivery System through Interprofessional Coordinated Care in a

Medical Neighborhood Setting.   I recognize this work fulfills a requirement and that Berkshire Medical

Center / Berkshire Health Systems may be mentioned in the body of work.

David Phelps, CEO

President, Berkshire Health Systems

A Major Affiliated Teaching Hospital of the University of Massachusetts Medical School