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

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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
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-based 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*

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


https://pcmh.ahrq.gov/sites/default/files/attachments/Coordinating%20Care%20in%20the%20Medical%20Neighborhood.pdf


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

<table>
<thead>
<tr>
<th>Level</th>
<th>Description</th>
<th>Research</th>
<th>Summative reviews</th>
<th>Organizational</th>
<th>Expert opinion</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A</strong></td>
<td>High</td>
<td>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.</td>
<td>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.</td>
<td>Well-defined methods using a rigorous approach; consistent results with sufficient sample size; use of reliable and valid measures.</td>
<td>Expertise has been clearly evident</td>
</tr>
<tr>
<td><strong>B</strong></td>
<td>Good</td>
<td>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.</td>
<td>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.</td>
<td>Well-defined methods; reasonably consistent results with sufficient numbers; use of reliable and valid measures; reasonably consistent recommendations.</td>
<td>Expert opinion</td>
</tr>
<tr>
<td><strong>C</strong></td>
<td>Low quality or major flaws</td>
<td>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.</td>
<td>Undefined, or poorly defined methods; insufficient sample size; inconsistent results; undefined, poorly defined or measures that lack adequate reliability or validity.</td>
<td>Adequate reliability or validity.</td>
<td>Expert opinion has not been discernable or has been dubious</td>
</tr>
</tbody>
</table>

The Johns Hopkins Hospital
## Appendix B

<table>
<thead>
<tr>
<th>Article #</th>
<th>Author/ Date</th>
<th>Evidence Type</th>
<th>Sample Size</th>
<th>Finding that help answer the question</th>
<th>Limitation</th>
<th>Evidence Rating Level / Quality</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Spatz, et al 2014</td>
<td>Research</td>
<td>N/A</td>
<td>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</td>
<td>Data supported care that was coordinated by PCP and Specialist, did not include other providers</td>
<td>IV A</td>
</tr>
<tr>
<td>2</td>
<td>Xiayan et al, 2014</td>
<td>Expert Opinion</td>
<td>N/A</td>
<td>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).</td>
<td>Identified lack of data secondary to lack of aligned payment system</td>
<td>IV B</td>
</tr>
<tr>
<td>3</td>
<td>Tuot et al, 2015</td>
<td>Qualitative</td>
<td>19 specialist using the e-referral / 123,000 = N Referrals made</td>
<td>The quality e referral communication and the impact on specialty care. 71% of 2189 considered the quality high</td>
<td>Not extensive studies completed</td>
<td>III A</td>
</tr>
<tr>
<td>4</td>
<td>Nguyen et al, 2014</td>
<td>Qualitative</td>
<td>50 health and social service providers</td>
<td>Reviewed need and potential barriers to a shared electronic records to enhance communication between social – community providers and healthcare providers</td>
<td>Conducted in a single county health system with a integrated Electronic Health Record Did not include key stakeholder’s perspective – patient/ client</td>
<td>III B</td>
</tr>
<tr>
<td>5</td>
<td>Pham, 2009</td>
<td>Expert Opinion</td>
<td>N/A</td>
<td>Explores how patient medical homes need to relate to the rest of the continuum, conceptual framework for medical neighborhood</td>
<td>Recognizes no single type of delivery system or medical neighborhood is likely to work for all communities</td>
<td>IV B</td>
</tr>
<tr>
<td>6</td>
<td>Brown et al, 2012</td>
<td>Qualitative data analysis:</td>
<td>22,000 patient encounters</td>
<td>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</td>
<td>The identified areas with improvement were only noted in one system</td>
<td>II A</td>
</tr>
</tbody>
</table>
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.

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.
<table>
<thead>
<tr>
<th>Question</th>
<th>Benefits of using care navigation to improve the health of a population?</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Author/ Date</strong></td>
<td><strong>Evidence Type</strong></td>
</tr>
<tr>
<td>Craig et al, 2011</td>
<td>Qualitative Descriptive representing the opinion of nationally recognized experts</td>
</tr>
<tr>
<td>Care Coordination Model: Forster et al, 2003</td>
<td>Prospective Cohort Study</td>
</tr>
<tr>
<td>The Incidence and Severity of Adverse Events Affecting Patients after Discharge from the Hospital</td>
<td>Expert Opinion</td>
</tr>
<tr>
<td>Spatz et al, 2014</td>
<td>Randomized control</td>
</tr>
<tr>
<td>Patient centered medical neighborhood and diabetic care</td>
<td></td>
</tr>
<tr>
<td>Models in the delivery of depression care:</td>
<td>Research The Chi Square (x²) statistic was used to determine differences in the proportion of positive outcomes as a function of intervention type</td>
</tr>
<tr>
<td>---</td>
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</tr>
<tr>
<td>Maegn et al, 2012</td>
<td>Qualitative Non Experimental Research</td>
</tr>
<tr>
<td>Kangovi et al, 2013</td>
<td>Non Experimental Qualitative Research</td>
</tr>
<tr>
<td>Jortberg et al, 2014</td>
<td>Expert Opinion</td>
</tr>
<tr>
<td>Burns et al, 2014</td>
<td>Randomized Quality Improvement</td>
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</table>
### Feasibility and Evaluation of a Readmission Pilot

<table>
<thead>
<tr>
<th>Intervention</th>
<th>to home</th>
<th>the base line of 17.9%</th>
<th>patients received their call</th>
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</thead>
<tbody>
<tr>
<td>Peikes et al, 2009</td>
<td>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 tests were conducted by using SAS version 9.1.</td>
<td>15 programs resulting in claims data for 18309 patients</td>
<td>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&lt;.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.</td>
</tr>
<tr>
<td>Manderson et al, 2011</td>
<td>Meta-synthesis, qualitative study</td>
<td>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</td>
<td>The definitions, outcomes, and measures – mixed record of success, lack of consistent programs.</td>
</tr>
</tbody>
</table>
## General Plan

### Care Director Project Timeline

<table>
<thead>
<tr>
<th>Information Technology</th>
<th>JUNE</th>
<th>JULY</th>
<th>AUGUST</th>
<th>SEPTEMBER</th>
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<tbody>
<tr>
<td>System Admin Training</td>
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<tr>
<td>System Configuration</td>
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<tr>
<td>Build Configurable Lists</td>
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<tr>
<td>Build Care Plans</td>
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<tr>
<td>Problems</td>
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<td></td>
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<tr>
<td>Goals</td>
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<tr>
<td>Assessments</td>
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<tr>
<td>Patient Upload</td>
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<tr>
<td>End User Training</td>
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<tr>
<td>Deploy Configuration to Production</td>
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<td><strong>On site training days will be July 15th and 16th (9-12 and 1-3)</strong></td>
</tr>
<tr>
<td>Pilot</td>
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<tr>
<td>Phase I Go Live - Medical Neighborhood</td>
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<td><strong>Purple</strong></td>
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<td>Meditech ADT Testing</td>
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<td>Allscripts Integration</td>
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<tr>
<td>Complete</td>
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<tr>
<td>IT Function</td>
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<tr>
<td>Test Phase</td>
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</tbody>
</table>

## Technology Plan
## Strength
- 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

## Weakness
- Misaligned reimbursements system
- Provider shortage
- Potential limited hours of care givers
- No current patient centered medical home in North County

## Opportunities
- 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 based organizations)
- Opportunity to support primary care offices with a shared patient care plan

## Threats
- 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.

<table>
<thead>
<tr>
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<tbody>
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<td>Readmits</td>
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<td>16</td>
<td>25</td>
<td>31</td>
<td>37</td>
<td>34</td>
<td>49</td>
<td>53</td>
<td>43</td>
<td>8</td>
<td>11</td>
<td>30</td>
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<tr>
<td>Discharges</td>
<td>155</td>
<td>155</td>
<td>176</td>
<td>238</td>
<td>248</td>
<td>237</td>
<td>274</td>
<td>274</td>
<td>241</td>
<td>130</td>
<td>101</td>
<td>105</td>
<td>192</td>
</tr>
<tr>
<td>Rate (%)</td>
<td>9.68</td>
<td>10.32</td>
<td>14.20</td>
<td>13.03</td>
<td>14.92</td>
<td>15.61</td>
<td>14.29</td>
<td>17.88</td>
<td>21.99</td>
<td>33.08</td>
<td>7.92</td>
<td>10.48</td>
<td>15.62</td>
</tr>
</tbody>
</table>

Goal of a 10% Improvement From 15.62% 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 Community Hospital Closed

North County Readmission Rates

- UCL: 27.06
- CL: 15.99
- LCL: 4.91

R Sy = 0.068
Slope = 0.128
Sigma = 3.09
Probability = 0.576

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)
- Address social issues that lead to recurrent acute care utilization
- Provide enhanced care for patients with priority chronic conditions
- Increase access to Behavioral Health**
- Leverage technology to support cross setting care and drive improvement

- 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
- 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
- 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)
- Engage existing community based substance abuse treatment center to facilitate a day treatment program at the medical neighborhood
- 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 patients and age 18+: excluding CHF, diabetic, transfers to acute hospital, inclusive of North Adams, Adams, Cheshire, Williamstown, Great Barrington, Hoosac, North Adams, and Monroe (92147, 01201-91220, 01267).
** Definitions of Behavioral Health & Mental Health & Substance Abuse Disorders
Appendix J

MEDICAL NEIGHBORHOOD

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

Patient Presents at Medical Neighborhood

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

Appropriate Clinician see Patient

Patient Visit is complete

What services will they receive today?

Receptionist schedules appointments in Allscripts PM

SW/RN revisits the patient to discuss care plan

Assessment will prioritize patient needs. *Assessment *Referrals

Clarify and coordinate care plan with BMC Case Manager and PCP office

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

Patient Discharged from BMC

Standardized Note is generated daily, with admissions and intent to discharge

NPR report is generated daily with admissions and intent to discharge

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

CARE DIRECTOR

Allscripts PM

Allscripts EHR

Meditech

BMC

Patient scheduled in MT as BMC INPATIENT

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

Populates the list 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

Patient scheduled in MT as BMC INPATIENT

Communication & Documentation

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 healthcare team at the hospital wants you to have follow-up care after you leave. This is a great idea. As 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 Berkshire Health is now offering care on the second floor, the Neighborhood for Health.

How the Neighborhood For Health Works

If you choose, your Care Navigators will give you access to a Neighborhood for Health shortly after you leave the hospital. While you’re here, your health care team will be there, ready to provide the support you need before you return to your home in health.

This team will be your home in health navigation team, working together for you. Their goals are to make sure your time together is meaningful, focused on your health and help you avoid the读first time return to the hospital. You will receive free, ongoing appointments, in a call center, and on a call center. We will also do the call center for you. Your team will work with you to make sure you don’t return to the hospital during your care.}

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 service at the Neighborhood For Health will be paid for by your insurance, 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.

Welcome to the Neighborhood For Health

Where your healthcare needs are accessible.

Your services are coordinated, and everyone on the team works together for you.

The Neighborhood For Health is located at the North Adams Campus of BMC

77 Hospital Avenue
North Adams, MA 01247

Berkshire Health Systems

North Adams Campus of Berkshire Medical Center
Appendix L

CHF WORKFLOW FOR MEDICAL NEIGHBORHOOD

**Prepping for Patient**
- Receive referral on all target patients
- NP/SW/CHW completes heart failure assessment risk 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 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?

Receptionist schedules next visit

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

Final Visit *Access knowledge and compliance

Copy of Care plan to patient and PCP

Congestive Heart Failure Care Work Flow
Appendix M

Diabetic Care Work Flow
Appendix N

Nutrition Work Flow

**DIABETES WORKFLOW FOR MEDICAL NEIGHBORHOOD**

**PREP FOR PATIENT**

- Receive referral on all CHART patients
- NP/SH/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 NEIGHBORHOOD**

- Patient arrives by Receptionist and given appointments for the day. Goes to waiting room
- CDE strategizes on timing and seeing patients 15-60 minutes
- NP/HOW/SW updates RD on any new information since patient’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

**GROUP**

- Receptionist schedule into next group class
- CDE updates care plan and starts education process including review of the printed materials

**INDIVIDUAL**

- What is next visit type?
- Does patient still need group or individual

**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 (RD tool)
- Diabetics 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

Not appropriate detox

Does pt want Inpatient Detox

Transfer to McGee

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

Appropriate for inpatient detox

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

Assessment in Care Director

Orders Medications in Meditech for dispensing

Does his clinical note in Allscripts

Orders

Prescribes meds if needed

Stable to go back to PCP

Mental health referred to BRIEN

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

Refer to MD

Orders

Prescribes meds if needed

Stable to go back to PCP

Mental health referred to BRIEN

Appropriate for inpatient detox

Needs Meds?

Sees APRN

Apply criteria for Day TX

No

Sees Social Worker

Yes

Not Appropriate for Out Patient Detox

RN/SW receives paper order to review chart

Completes Alcohol assessment in CD

SH/Psych or Med/MGSE

Coordinates with Hospitalist and PCP

North Country Patient admitted with Alcohol DX

Patient admitted with Alcohol DX
RN/SW receives paper order to review chart
Completes Alcohol assessment in CD
SH/Psych or Med/MGSE
Coordinates with Hospitalist and PCP
No

Sees Social Worker

Yes

Apply criteria for Day TX

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

Appropriate for inpatient detox

Not appropriate detox
Appendix P

Patient and Family Centered Care
Appendix Q

Process Measures

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

Process Measures

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

Sample of Care Navigation Screen / Adding Problem To The Care Plan

1. Click "+Add problem"
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

<table>
<thead>
<tr>
<th>Salary Expenses + Fringe @ 20 %</th>
<th>FTE</th>
<th>Year 1</th>
<th>Year 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>APRN / Adult</td>
<td>.5</td>
<td>68640</td>
<td>71386</td>
</tr>
<tr>
<td>CDE/ RN</td>
<td>.4</td>
<td>45926</td>
<td>47763</td>
</tr>
<tr>
<td>CHF / APRN</td>
<td>.4</td>
<td>54912</td>
<td>57108</td>
</tr>
<tr>
<td>APRN/ Psychiatry</td>
<td>1</td>
<td>137280</td>
<td>142771</td>
</tr>
<tr>
<td>MD/ psychiatry</td>
<td>.75</td>
<td>168,480</td>
<td>175219</td>
</tr>
<tr>
<td>RN/ Coordinator</td>
<td>1</td>
<td>119808</td>
<td>124600</td>
</tr>
<tr>
<td>MSW/ Navigator</td>
<td>3</td>
<td>247104</td>
<td>256988</td>
</tr>
<tr>
<td>CHW</td>
<td>1</td>
<td>40735</td>
<td>42364</td>
</tr>
<tr>
<td>Registered Dietician</td>
<td>.4</td>
<td>45926</td>
<td>47763</td>
</tr>
<tr>
<td>Scheduler/ Coordinator</td>
<td>1</td>
<td>49920</td>
<td>51917</td>
</tr>
<tr>
<td>Program Director/ MSN</td>
<td>1</td>
<td>124,000</td>
<td>152000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>10.45</td>
<td>1102731</td>
<td>1169879</td>
</tr>
</tbody>
</table>

| 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

<table>
<thead>
<tr>
<th>Program</th>
<th>Activity</th>
<th>Current Cost</th>
<th>Gains = Penalty Avoided / Expense Reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value Based Purchasing</td>
<td>3 % Readmission Penalty based on current included diagnosis is</td>
<td>$100,000</td>
<td>If all Medicare patients were included approximately 1/3 is from the target population = $600,000</td>
</tr>
<tr>
<td></td>
<td>If 3% were expanded to include all Medicare patients this potential penalty would increase to 1.9 million</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Healthcare Dollars Savings (Prepare for bundle payment/ ACO)</td>
<td>20% reduction = 72 avoided admissions</td>
<td></td>
<td>15,000 per discharge = $1,125,000</td>
</tr>
<tr>
<td></td>
<td>10% reduction = 36 avoided admissions</td>
<td></td>
<td>15,000 per discharge = $562,500</td>
</tr>
</tbody>
</table>

Return On Investment

<table>
<thead>
<tr>
<th>Program</th>
<th>Year 1</th>
<th>Year 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value Based Purchasing</td>
<td>1,125,000</td>
<td>1,125,000</td>
</tr>
<tr>
<td>Readmission Penalty Avoidance</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Expenses

<table>
<thead>
<tr>
<th>Expense</th>
<th>Year 1</th>
<th>Year 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salary</td>
<td>1,102,731</td>
<td>1,169,879</td>
</tr>
<tr>
<td>Non-Salary</td>
<td>340,000</td>
<td>299,000</td>
</tr>
<tr>
<td>Total</td>
<td>1,442,731</td>
<td>1,468,879</td>
</tr>
<tr>
<td>Net</td>
<td>(317,731)</td>
<td>(343,879)</td>
</tr>
</tbody>
</table>

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**

<table>
<thead>
<tr>
<th>Key Milestones</th>
<th>Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positions Posted For Hiring Process</td>
<td>6/2015</td>
</tr>
<tr>
<td>Execute Contract for Care Navigator</td>
<td>6/2015</td>
</tr>
<tr>
<td>Enabling Technology suite testing initiated</td>
<td>7/2015</td>
</tr>
<tr>
<td>Enabling technology suite – go live</td>
<td>7/2015</td>
</tr>
<tr>
<td>Test Report of Process Measures</td>
<td>7/2015</td>
</tr>
<tr>
<td>Execute Contract with service delivery partners (Day Treatment)</td>
<td>7/2015</td>
</tr>
<tr>
<td>Training Completed – Interview Techniques/ Forming Alliances</td>
<td>8/2015</td>
</tr>
<tr>
<td>Health Literacy</td>
<td></td>
</tr>
<tr>
<td>Care Navigation I.T.</td>
<td></td>
</tr>
<tr>
<td>Schedules Complete / Staffing to handle 50% of planned patient capacity for</td>
<td>8/2015</td>
</tr>
<tr>
<td>readmission reductions goal</td>
<td></td>
</tr>
<tr>
<td>First Patient Seen (ramp up phase - 50% of eligible patients)</td>
<td>8/2015</td>
</tr>
<tr>
<td>Schedules Complete to handle 100% of planned patient capacity for readmission</td>
<td></td>
</tr>
<tr>
<td>reduction goal</td>
<td></td>
</tr>
<tr>
<td>Full Go Live/ Public Announcement</td>
<td>9/2015</td>
</tr>
</tbody>
</table>
## Appendix W

### Communication Plan

<table>
<thead>
<tr>
<th>Topic</th>
<th>Details</th>
<th>Audiences</th>
<th>Preparation &amp; Communication</th>
<th>Due Date</th>
<th>Completed</th>
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</thead>
<tbody>
<tr>
<td>Achieve stated aim metrics</td>
<td>Care team</td>
<td></td>
<td>review data / clearly</td>
<td>April</td>
<td>completed</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>communicate AIM statement to</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>team</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prepare internal primary</td>
<td>Community Coalition</td>
<td></td>
<td>meeting community agencies</td>
<td>May</td>
<td>completed</td>
</tr>
<tr>
<td>teams/departments</td>
<td></td>
<td></td>
<td>to establish relationship</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>and partnerships</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Facilitate coordinated care</td>
<td>Care team and PCP</td>
<td></td>
<td></td>
<td>May</td>
<td>completed</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Promote patient engagement</td>
<td>Management Team</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>and educations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Promote new services</td>
<td>PCP, North County public</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Stake Holders</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient from north county</td>
<td>Primary Care meeting prior to</td>
<td></td>
<td></td>
<td>June</td>
<td>Completed</td>
</tr>
<tr>
<td>zip codes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Specialist</td>
<td>Power Point to be used for</td>
<td></td>
<td></td>
<td>June</td>
<td>Completed</td>
</tr>
<tr>
<td></td>
<td>meeting to review process</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Staff directly connected to</td>
<td>Fact Sheet (for media, public,</td>
<td></td>
<td></td>
<td>August</td>
<td>completed</td>
</tr>
<tr>
<td>the effort</td>
<td>and internal use)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Community based coalition</td>
<td>Attend North County Patient</td>
<td></td>
<td></td>
<td>August</td>
<td>completed</td>
</tr>
<tr>
<td></td>
<td>Advisory committee</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Broad community</td>
<td>Press Conference on site</td>
<td></td>
<td></td>
<td>Sept</td>
<td>completed</td>
</tr>
<tr>
<td>Media</td>
<td>Community Open House (</td>
<td></td>
<td></td>
<td>Sept</td>
<td>completed</td>
</tr>
<tr>
<td></td>
<td>immediately follow press</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>conference</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary care providers</td>
<td>Brochure for patients to</td>
<td></td>
<td></td>
<td>Sept</td>
<td>completed</td>
</tr>
<tr>
<td></td>
<td>review and learn about the</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>program</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>PCP Dinner Scheduled for</td>
<td></td>
<td></td>
<td>Sept</td>
<td>scheduled</td>
</tr>
<tr>
<td></td>
<td>quarterly updates on progress</td>
<td></td>
<td></td>
<td></td>
<td>9/15</td>
</tr>
</tbody>
</table>
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

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.

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.

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.

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.

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.

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 SONHIP.

The project has NO funding from federal agencies or research-focused organizations and is not receiving funding for implementation research.

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.

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."

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: [Signature]

Signature of Supervising Faculty Member (Chair): [Signature]

DATE: 7/14/14
September 15, 2016

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