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Evaluation of a Health System’s Community Targeted Program for Individual’s with Increased Risk for Cardiovascular Disease and Diabetes

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Evaluation of a Health System’s Community Targeted Program for Individual’s with Increased Risk for Cardiovascular Disease and Diabetes

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November 12, 2018
Abstract

Introduction: Lack of a program evaluation plan for a community targeted primary prevention program poses a risk for undefined program effectiveness. Conducting a systemic program evaluation helps determine program effectiveness and value. The purpose of this paper is to discuss the process of implementing a program evaluation during a Doctorate of Nursing Practice (DNP) scholarly project.

Objectives: The objectives of this project were to apply a scholarly approach to program evaluation utilizing evidence-based practice tools, demonstrate DNP Essentials and health systems leader competencies, and describe the steps taken during the process.

Methods: The CDC Framework for Program Evaluation (2011) was the design used for this project. The setting was a department within a West Michigan health system. The sample would have been on <60 African American participants. Analysis of the participants was incomplete due to limitations within the organization.

Results: Implementing the evaluation framework in this department drove program focus and redesign for this program and others within the department.

Conclusions: Following the systemic process and implementing an evidence-based program evaluation tool into practice that affected change at a systemic level within a large West Michigan health system.

Implications: Practice changes should include an evaluation plan at the beginning of program conception or implemented as soon as possible to confirm program effectiveness or the need for restructure and/or redesign.

Keywords: program evaluation, quality improvement, primary prevention program evaluation, evaluation limitations
Acknowledgements

*Special Thanks to my husband and two girls who cheered me on the whole way. I am forever grateful that you exist in my world and I get to exist in yours.*
Executive Summary

An organizational assessment was conducted using the Burke-Litwin (1992) Organizational Performance and Change (OP&C) model. This assessment tool allowed for gathering multiple factorial dimensions and identification of their relational effects on each construct. A strength, weaknesses, opportunities, and threats (SWOT) analysis was also completed.

A literature review was completed utilizing the Preferred Reporting Items for Systemic Reviews and Meta-Analysis (PRISMA) guideline as a framework. Five articles were identified to address the aims of the literature review. Review of the evidence identified the program’s relevance to practice.

The Health Belief Model (1974) was used as the phenomenon’s conceptual model. The Center for Disease Control and Prevention’s (CDC) framework for program evaluation in public health (1999) was the implementation model used to help navigate the evaluation plan. The project implementation steps, results, and limitations are included in this document.
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Evaluation of a Health System’s Community Targeted Program for Individual’s with Increased Risk for Cardiovascular Disease and Diabetes

Program evaluations are an effective and systemic way to improve and account for program actions through incorporating procedures that are useful, accurate, feasible and ethical (Center for Disease Control and Prevention (CDC; 1999). Quality improvement measures taken in this manner guarantee an in depth examination of key components involved in the programming process. The purpose of this project was to evaluate a community targeted program for individual’s with increased risk for cardiovascular disease and diabetes.

Background

In a report conducted by BBC Research and Consulting (BBC; 2017) for Grand Rapids African American Health Institute (GRAAHI), 10 health conditions were identified with significant health inequalities for African Americans (AA) and other minorities compared to Caucasians within Kent County. Heart disease, stroke, diabetes, cancer, and obesity are ranked among those top 10 conditions, all of which have unhealthy diet and sedentary lifestyle as risk factors (BBC Research & Consulting, 2017). Interventions to improve both dietary and exercise practices are imperative to the reduction of morbidity and mortality related to preventable diseases in the AA population. According to Di Noia, Furst, Park, & Byrd-Bredbenner (2013), interventions should be culturally sensitive to enhance relevance and impact.

Preventative health is not a top priority for many Americans. It is an objective that citizens have been conditioned to not prioritize, especially since healthcare is often accessible. There are opportunities for all Americans related to prevention (Center for Disease Control and Prevention (CDC), 2017b). Some chronic diseases are preventable like diabetes and heart disease
by eating healthy and regularly exercising (CDC, 2017b). There are many benefits to preventative health services including the deterrence of disease (CDC, 2017b).

However, since AA are disproportionately affected by preventable diseases, including cardiovascular disease (CVD) and diabetes mellitus (DM), their care greatly impacts the healthcare system. Hence, if education is given, resources are provided, and care is accessible, improved health outcomes can be realized. Interventions to improve both dietary and exercise practices are imperative to the reduction of morbidity and mortality related to preventable diseases in the AA population and other ethnicities as well.

Evaluating the effectiveness of a program striving to improve health outcomes for those disproportionately affected by disease could serve as a model for other programs with the same desired goals. This project clearly identified the evidence related to a community-based prevention program and focused on an evaluation plan for this health system’s prevention program. A scholarly and systematic approach utilizing the evaluation framework to identify the value and effectiveness of the program.

**Organizational Assessment**

The Burke-Litwin Organizational Performance and Change (OP&C) model (1992) was used to assess the organization (see Figure 1 in Appendix A). This cause and effect model helps to predict both behavior and performance outcomes (Spangenberg & Theron, 2013). The OP&C model depicts relational links that propose what effects internal and external factors may have on performance (Burke & Litwin, 1992). Permission to use this model can be found in Appendix B.

**Framework for Assessment**

The Burke-Litwin OP&C model has 12 organizational dimensions that should be considered when assessing an organization. The 12 dimensional factors are: external
environment, mission and strategy, leadership, organizational culture, structure, management practices, systems, work unit climate, task and individual skills, individual needs and values, motivation, and individual and organizational performance (Burke & Litwin, 1992). These factors are foundational to this model and distinguish between transactional and transformational dynamics within an organization.

Burke and Litwin (1992) describes the transactional dimensions of organizational change as managers in relation to those that are transformational and relate more so to leadership practices of the organization. Transformational factors are concepts of change that influence or are influenced by the environment. The environment, both external and internal, can impact an organization’s performance as well. The OP&C key concepts that are transformational include: external environment, mission and strategy, leadership, organizational culture, and individual and organizational performance (Burke & Litwin, 1992). The transactional factors are short-term interactions between people and groups (Burke & Litwin, 1992). These factors include: management practices, structure, systems, work unit climate, task and individual skills, motivation, individual needs and values, and individual and organizational performance. Transactional factors are those that represent structural effects on climate (Burke & Litwin, 1992).

The complexity of this organizational assessment model aligned with the nuances that needed to be considered for the program that was assessed. The program is operated inside a department that is a part of a larger West Michigan health care system, so each layer was considered during the assessment. The breadth and depth of this model was necessary for accurate assessment related to organizational performance.
Ethical Considerations and Protection of Human Subjects

Ethical considerations were made before the implementation of this project. An application for review and approval or exemption was submitted to Spectrum Health Human Research Protection Program Office of the Institutional Review Board (IRB) and forwarded to Grand Valley State University Institutional Review Board. The proposed project was reviewed and determined to be quality improvement (see Appendix C), so it does not meet the definition of research and therefore, does not require the approval of Spectrum Health IRB. Compliance with the Health Insurance Portability and Accountability Act (HIPPA) (Office of the Assistant Secretary for Planning and Evaluation (ASPE, 1996) will be enforced.

The purpose and scope of this project is limited to quality improvement. No identifiable patient information will be collected. Since no physical, social, psychological, legal, or economic threats to patients are associated with this project, it is anticipated that the impact of the project will pose minimal or no risk to participants. Inconvenience or any effect associated with the request for anonymous and voluntary participation in the project may have an impact. All members of the team have completed human subjects protection training via the Collaborative Institute Training Initiative (CITI, n.d.) and their interactions with patients will be guided accordingly.

Setting

This scholarly project was conducted in a department within a large West Michigan health system. The department is dedicated to improving the health of the community. The program evaluated within this department is preventative care focused. There are many programs within this department that offer care across the lifespan. Programs range from preventing infant mortality to supporting mothers and babies up to their first year of age, to preventative care
through support for managing chronic illnesses. These programs support the Kent County, Grand Rapids, MI area with partnerships extending throughout the city as well.

The services being provided through this program are biometric screenings, education, physical activity classes, and connection to community resources through partnerships for additional services including education, mental health referrals, primary care physician referrals, free fitness and cooking classes. There used to be two staff members dedicated to this particular program, one is the community health program specialist and the other a nurse case manager.

The program also has an AmeriCorps VISTA worker supporting this program. This individual has recently been hired as a community health worker for the program and is dedicated to this specific program as well. The program shares some staff members with its sister program within the department including the supervisor and manager. There are some instances like participant load and staff availability when other resources are shared including but not limited to other nurse case managers and community health workers as needed. This program has less than 60 currently enrolled participants, but expects continual growth going forward. Approval has been granted to perform an evaluation of this program as an intern student at the site (see Appendix D).

**Stakeholders**

Attention to stakeholders is crucial. The careful analysis of stakeholders enables the organization’s administrators to immerse themselves in factors surrounding the organization such as politics and networks. Understanding the stakeholders relationships, either actual or potential, can reveal organizational context, build strategy, and indicate issues (Bryson, 2011).

Key stakeholders for this project included the West Michigan health care system administrators, community partners, participants, and department staff. Community partners are churches within
the west Michigan area, a small community wellness center that offers fitness classes and nutrition education, and other community non-profit organizations aiming to revitalize the inner-city Grand Rapids community.

Early stakeholder engagement in program development and evaluation is important in order to define a common goal for the program. Priority stakeholders for this program recommended engaging internal stakeholders only for this project and that recommendation was followed as advised. Internal stakeholders included administrators, management, and program staff.

**SWOT Analysis**

Identifying strengths, weaknesses, opportunities, and threats (SWOT) is a strategic management process by which organizations can analyze their environment (Hollingsworth, 2011). It is a key tool that can be used to deliberately analyze the management process. This analysis highlighted areas where the organization is most vulnerable, “where it is constrained, and where it can leverage strengths to increase market share” (Hollingsworth, 2011, para. 1).

<table>
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<th>Strengths</th>
<th>Weaknesses</th>
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<tr>
<td>• Comparable program already running</td>
<td>• Program launched too early</td>
</tr>
<tr>
<td>• Program already funded</td>
<td>• Program not fully developed</td>
</tr>
<tr>
<td>• Employees committed to the work</td>
<td>• Unengaged key stakeholders at conception</td>
</tr>
<tr>
<td>• Evidence-based prevention methods</td>
<td>• Lack of program evaluation plan for effectiveness</td>
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<td></td>
<td>• Management's time not equally divided between programs</td>
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<tr>
<td></td>
<td>• Lacking data definitions</td>
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<td></td>
<td>• Need to identify set points to identify engagement for participation variables throughout the program</td>
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The SWOT analysis conducted for the primary prevention program was essential for strategically planning and identifying areas needing more focus. The lack of a program evaluation plan was a priority weakness that would be addressed. Determining the effectiveness of the existing program would help explicitly account for the value of the program. The SWOT analysis and organizational assessment helped guide the direction of the literature review.

Clinical Practice Question

What is the impact of a community-based prevention program that utilizes a biometric screening tool, nurse case management, and resources for nutrition and physical activity on reducing the risk of CVD and DM?

Literature Review

Many chronic diseases in the United States are preventable. Seven out of 10 deaths among Americans are from preventable diseases, such as heart disease, cancer, and diabetes (Centers for Disease Control and Prevention (CDC), 2017b). These chronic diseases and their high mortality rates account for 75% of the nation’s health spending (CDC, 2017b).

According to the CDC (2017b) preventive services are used about 50% of the recommended rate for Americans nationally. Modifiable risk factors such as healthy eating, active lifestyle, and preventive screening services are ways Americans can stay healthy. Due to lack of access to health services and fresh produce, safe areas to be active, and financial barriers,
including cost sharing, many Americans go without the necessary preventative practices irrespective of their benefits. AA adults are 2 times more likely to die from heart disease than white adults (CDC, 2017a). According to Caffrey (2016), one in four AA adults have diabetes; heart disease and diabetes among other chronic diseases are preventable.

The correlation between CVD and DM is important when considering prevention. Preventing diabetes has the best probability of preventing CVD (Ganda, 2018). Individuals with diabetes increase their chance of mortality from heart disease by up to four times (American Heart Association (AHA), 2015). The purpose of this literature review is to acquire knowledge in determining effectiveness of community programs focused on preventing CVD and DM.

**Review Method: PRISMA**

**PRISMA.** The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guideline was the framework used for this review (Moher, Liberati, Tetzlaff, Altman, & PRISMA Group, 2009). A comprehensive electronic search was conducted in the electronic databases listed below and was limited to reviews in the English language during the period of 2013 to 2018. Keywords were primary prevention programs, community health, CVD prevention, diabetes prevention programs, atherosclerotic cardiovascular disease (ASCVD) risk score, and fasting glucose.

**Inclusion and Exclusion Criteria.** Articles included in the search were narrowed to 5 articles. Inclusion criteria included having a full text online article, be a primary prevention program so no participants had been previously diagnosed with CVD or DM, have an adult population targeting AA but not exclusively, and be defined as research according to Melnyk and Fineout-Overholt (2015) as evidenced by falling within their definition of levels of evidence (see Appendix E). All other articles were excluded. The final exclusion of articles was due to not
having full text online articles, lacking primary preventative programing, not being scholarly or peer-reviewed, not being published within the last 5 years, having medicinal interventions, including the pediatric population as participants, or participants having already received a diagnosis of heart disease or diabetes.

**Population.** Featured samples included culturally specific communities. Community populations range from locally, from within the United States, to globally studied populations. Populations include communities in America, Japan, Korea, Austria, India, Germany, Australia, Finland, United Kingdom, Netherlands, Italy, Spain, and Poland. All studies had an adult population, age 18 years of age and older. All studies included had participants not currently diagnosed with CVD or DM. One study of the five explicitly compared urban AA to White Adults (Kuczmarski, Bodt, Shupe, Zonderman, & Evans, 2018).

**Intervention.** All five studies evaluated implications of CVD and/or DM. Interventions ranged in intensity level and duration of programing. However, all included studies intervened with prescreening, education, physical activity and/or diet, and post screening. Physical interventions included specified components such as counseling, sports lessons, coaching, group sessions, and peer-led groups.

Nutritional interventions included using the Dietary Approaches to Stop Hypertension (DASH) approach, Healthy Eating Index (HEI) - 2010, and Mean Adequacy Ratio (MAR) was measured in one study (Kuczmarski et al., 2018). These are all diet quality measurement tools. Another study utilized the penetration, implementation, participation, and effectiveness (PIPE) framework to evaluate diabetes prevention programs effectiveness in the last 15 year (Aziz, Absetz, Oldroyd, Pronk, & Oldenburg, 2015). Another study of the five, utilized the Pooled Cohort risk (PCR) equation to identify CVD risk (Loprinzi & Addoh, 2016).
Studies from Yang, Zou, Xu, Li, & Yang (2016) included lifestyle interventions such as losing weight, increasing physical activity, recommendations of diet and exercise sent weekly by phone and internet. In addition interventions included correcting macronutrient imbalance, reducing total energy intake while also increasing basal physical activity, dietary advice and education on diabetes-related definitions. Although there were multiple interventions among the five studies, all five studies evaluated programs implemented utilizing a pre-post study design, focusing on program effectiveness, and reducing the risk of CVD and/or DM.

**Comparison.** Comparisons between pre and post interventions were made in each study. Studies interventions ranged from singular interventions to multi-modal interventions. Comparisons could also be made regarding the interventional effectiveness in each study. Comparing biometric data before and after interventions including, blood pressure, body mass index, lipid profile, glucose level and hemoglobin A1C helped determine program effectiveness (Rodrigues, Ball, Ski, Stewart, & Carrington, 2016). Aziz et al. (2015) evaluated participation rates which served as a proxy measurement to identify engagement through those who are enrolled and actively participating in programming. Three of the five studies compared impact of diet and exercise on preventing CVD and/or DM.

**Outcome.** Outcomes of preventative care in the included studies are mostly favorable for decreasing risks for CVD and DM. Overall, participation impacts program effectiveness within each study. Ultimately, improved participant outcomes reflect post intervention success through decreased risks for CVD and DM in varying populations. Studies that included methods with inappropriate measures like medicinal or surgical were excluded.

The community primary prevention programs identified in these studies decreased risk of CVD and/or DM. The amount of engagement a participant has in a program does impact their
ability to reduce risk of CVD and DM (Aziz et al., 2015; Rodrigues et al., 2016; Yang et al., 2016). The more a participant is engaged in a program that reduces the risk of CVD and DM related to improving diet and increasing physical activity the more likely they will decrease their risk for disease (Kuczmarski et al., 2018).

**Search Outcomes.** The search yielded 8,812 items through the Grand Valley State University electronic library database. Items included books, magazines, newspaper articles, newsletters, dissertation/thesis, journals, government documents, reports, transcripts, or web resources. Databases included in this search were CINAHL Complete, Medline Plus, PubMed, Cochrane Library, and ProQuest Medical Database. Each article was screened using inclusion and exclusion criteria according to PRISMA criteria (Moher et al., 2009) (see Appendix F). Permission for use of PRISMA can be found in Appendix G.

Use of the search filter to include only full text articles that are scholarly and peer-reviewed, within the last 5 years, and exclude children was completed along with manual exclusion of articles. Manual exclusion included studies that were duplicates or contained participants that were diagnosed with heart disease or diabetes. Both the manual exclusion and filter use excluded a total of 8,753 items. Review of 59 article titles and abstracts resulted in removal of 22 articles that did not meet the inclusion criteria. In addition, 34 studies were excluded after an in-depth analysis of content and did not meet inclusion criteria. An additional search meeting the inclusion criterion was completed to identify articles specifying the use of ASCVD risk screening including two articles in this review. The remaining three articles, plus the two additionally searched and screened articles were included in this review, yielding a total of 5 articles.
Summary of Results

Five papers met the inclusion criteria and are included. There are three level I evidence based studies in this review. Of the three studies, one is a systemic review, one is a systemic review and meta-analysis, and the other is a meta-analysis. The other two studies are both level IV evidence and are cross-sectional cohort studies. A table of the five articles can be found in Appendix H.

Study Characteristics. Each study targeted specified populations within certain communities. One study focused on urban AA compared to White adults and their consumption of Western diets (Kuczmarski et al., 2018). Another study focused on Korean adults only (Loprinz & Addoh, 2016). The systemic reviews and meta-analysis examined communities around the world. All studies focused on prevention and therefore community participants had not previously been diagnosed with CVD or DM.

Intervention and Comparison Characteristics. Intervention and comparison characteristics are concentrated on participant engagement. Participant engagement was identified as a key factor in the intervention’s effectiveness (Aziz et al., 2015). Engagement affects participant outcomes related to decreasing their risk for CVD and/or DM. Participant engagement was captured by the number of participants enrolled in the intervention divided by the number of individuals reached/invited (Aziz et al., 2015).

Measures. Biometric data measures used in the studies found to identify the risk for participants related to CVD or DM varied in content. Most studies measured blood pressure, body mass index, some degree of a lipid profile (not all measured total cholesterol or HDL), most measured weight, not all measured triglycerides, and most measured some variant of a fasting glucose level (impaired fasting glucose, non-fasting glucose, and/or hemoglobin A1C).
Most studies measured a lipid profile, vital signs, age, and smoking status to identify risk for heart disease (Rodrigues et al., 2016). All five studies accounted for program effectiveness related to their intervention, such as nutrition and/or exercise, lifestyle and behavior, nurse case management or education.

**Evidence to be used for Project**

The evidence that was used for this project indicated how an effective evaluation tool is essential to measuring program efficacy. Overall interventions to prevent CVD and DM consisting of nutrition and activity were all statistically significant. Efficacy of programs was determined by participation during the program’s duration and the production of favorable outcomes. Factors including penetration of communities and variation in implementation was also considered.

According to Aziz et al. (2015) penetration is the number of people reached versus the amount of people in the targeted population, and implementation focuses on process, duration of program, and fidelity or standardization of curriculum. Six of 38 (16%) studies from Aziz et al. (2015) reported high risk reduction for patients having diabetes with high or moderate effectiveness in their programs. According to Rodrigues et al. (2016) community based programs obtained mostly good results for risk factors being more favorable in short-term programming instead of long term programs. Short term programs yielded systolic blood pressure (SBP) decrease by 4.02 mmHg versus long term programs decreasing SBP by 3.63 mmHg.

Strategically planning to evaluate the programs and interventions was a design component for each study. Each study was able to accurately measure program effectiveness and impact of interventions. The essential evidence used for this project was collected for the implementation of a program evaluation.
Phenomenon Conceptual Model

The Health Belief Model (HBM) of 1977 was developed by a group of social psychologists who worked for the U.S. Public Health Service in 1950 (see Appendix I; permission to use the HBM can be found in Appendix J). Wanting to improve the public’s usage of preventive services they assumed fear of disease would promote health actions then health benefits would be obtained (McEwen & Wills, 2014). The HBM addresses an individual’s perception of a health problem and its probability of being a threat. The model provides modifying factors related to the individual’s perceptions’, awareness is raised and barriers are removed, leading to the likelihood for an individual to take the recommended preventative health action(s) (McEwen & Wills, 2014). Understanding program design and participant’s health behaviors was done through the HBM and its constructs. In evaluating the primary prevention program and the interventions thereof, it was important to utilize this model to understand and frame rationales for participant’s wanting to prevent disease.

Health Belief Model Constructs. The HBM is made up of several constructs: perceived susceptibility of the health problem or threat, perceived severity or consequences of the threat or condition, perceived benefit of changing the behavior, perceived barriers or obstacles to changing the behavior, cues to action or awareness triggers of the health threat, and self-efficacy or belief that one can change their own behavior recognizing that personal health practices and choices can positively influence health (McEwen & Wills, 2014).

Health Belief Model as Framework for Community-Based Prevention Program. Using the HBM and its constructs, the community-based prevention program aims to increase the likelihood of a participant taking the recommended preventive health action(s). Individual perceptions are discussed during a class discussing their “why” for living healthy. During the
class individuals learn basic knowledge regarding the importance of preventing CVD and DM. The curriculum also illustrates what is going on inside the body with these diseases and why it should be important to those at potential risk. Individuals can form their own beliefs and opinions from discussing personal experiences or encounters related to diseases with friends or family.

The biometric screening time with the nurse is an opportunity for the individual and nurse to discuss and determine the individual’s perceived severity, benefits of changing unhealthy behaviors, and describe barriers specific to them. The nurse, who is the case manager for enrolled participants, creates a plan of care for them based on their biometric screening data in the moment, while also providing cues to action. Individuals who are high priority because they have high risk of CVD or DM are re-screened in six months. These individuals are aware of the threat and encouraged to seek further intervention including primary care physician follow-up or follow specific recommendations including intense nutrition and exercise modifications.

The concept of self-efficacy is the latest addition to the health belief conceptual model, added in 1988. The self-efficacy concept was added to address the challenge(s) of changing habitual, unhealthy behaviors such as overeating and being sedentary (McEwen & Wills, 2014). Inspiring the likelihood of an individual taking the recommended actions for preventive health like improving diet and increasing activity, the community-based health program removes cost as a barrier offering their biometric screening service free of charge. This program is also offers free fitness classes and education regarding nutrition. The program is committed to utilizing community partners that offer free fitness classes and other free or low cost resources.
Project Plan

Purpose of Project and Objectives

The purpose of this project was to conduct a program evaluation utilizing the CDC’s (2011) framework to analyze the effectiveness of the West Michigan community-based program. The objective was to evaluate the biometric screening data from program participants and determine how effective the program is in reducing the risks of CVD and DM, as evidenced by reducing their risk scores. The goal was to identify whether a wellness program impacts participants risks for CVD and DM.

Design for the Evidence-based Initiative

The design used for this project was deemed a quality improvement activity. The CDC’s Framework for Program Evaluation in Public Health (1999) was used to guide an effective evaluation of the community health program (see Appendix K). The concept of the model guided the development of an evaluation plan that was used to define the strategy for monitoring, evaluating, and clarifying the intended use of the evaluation results. Determining the use of the evaluation results was crucial for program improvement and decision making (CDC, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health (OSH); Division of Nutrition, Physical Activity, and Obesity (DNPAO), 2011).

Participants

The target population for the health screening program are English speaking residents of Kent County that are 18 years of age or older and experiencing limited or no access to healthcare. The program especially targets the African American population who may be at risk for CVD and diabetes, without discrimination toward any other race that may be English speaking with the same risk factors and showing interest in the program. Participants are enrolled
in a three year program aimed to reduce risk through prevention mechanisms and early detection through screenings.

Program staff will also be evaluated as they are an integral component for the program’s success. Evaluating their engagement and roles within the department will help to thoroughly depict the program and its parts. Understanding staff’s perspectives may present key factors regarding the program’s processes and barriers.

**Framework Guiding Evaluation**

The CDC’s framework for program evaluation aided in the development of an evaluation plan that could be used to formally evaluate the outcomes of the program and determine its effectiveness. Although this framework’s description is in a linear, step by step process, it is well defined that the process may be ongoing and iterative in nature (CDC, 2011). Steps in the process may need to be revisited or portions addressed concurrently for all actions in the process to be effective (CDC et al., 2011). The CDC (2011) describe four key attributes that must be considered to guard against possible errors or mistakes as standards for “good” evaluation; these key attributes are utility, feasibility, accuracy, and propriety. These standards apply to all steps within the evaluation plan (CDC et al., 2011).

Utility defines how usable the information is for the users. It describes whether it serves the intended users information needs. Feasibility refers to being realistic, prudent, frugal, and diplomatic. Propriety refers to legal and ethical behavior. It is ensuring the proper welfare of those involved and others who may be affected. Accuracy certifies the process by maintain the comprehensiveness of evaluation and its foundation in the data (CDC et al., 2011).

Engaging stakeholders is the first step in the CDC Framework for Program Evaluation (2011). Engaging stakeholders is foundational to identifying the purpose of the evaluation and
constructing the plan. Generally, stakeholders are those who plan to use the evaluation results, will support or maintain the program, and/or those affected by the activities or evaluation results (CDC et al., 2011).

The next step is to describe the program. In describing the program, a shared understanding of the program can be defined. “A program description clarifies the program’s purpose, stage of development, activities, capacity to improve health, and implementation context” (CDC et al., 2011, p. 12). A logic model is typically one of the elements used to help describe the program for evaluation purposes. Utilizing the logic model in the process of evaluation helps to conceptualize the program and determine a quality evaluation plan.

Focusing the evaluation design is the next step. It is important to focus the design because the amount of available information surrounding the program may be very broad and wide; essentially, there may be limitless information. Narrowing the focus of the evaluation design is beneficial in pinpointing the program evaluation depth. Scope and depth is dependent on stakeholder priorities, available resources, staff availability, and amount of committed time to conduct the evaluation (CDC et al., 2011).

Gathering credible evidence is the next step in developing the evaluation plan. During this crucial step, the evaluator must be mindful of the evaluation’s purpose, confirm that the methods fit the question, and clearly determine appropriate sources of evidence (CDC et al., 2011). In this step it is also expected that roles and responsibilities are defined and a methods grid is utilized for shared understanding of the evaluation plan overall and timeline of activities (CDC et al., 2011).

Justify conclusions is the next step. During this phase data analysis from the collected information takes place; interpretation of that data, and drawing conclusions from the collected
The purpose of this step is to turn collected data from just data, into meaningful, useful, and accessible information (CDC et al., 2011).

The final step, is to ensure use and share lessons learned. This step should be determined from the beginning of evaluation planning, in order to plan how the results will be used, how they will be shared, and what lessons were learned in the process (CDC et al., 2011). Recommendations include that this be completed concurrently with the first step as it is important to be determined from the beginning of evaluation planning (CDC et al., 2011). Strategic evaluation planning considers use up front because it directly impacts who and how the information will be used.

**Evaluation Steps and Strategies**

Implementation of this quality improvement program evaluation consisted of the following steps and strategies using the CDC Framework for Program Evaluation in Public Health (1999) as a guide. See Appendix L for an actual timeline of each step.

1. **Engage stakeholders.** Identification of intended users of the evaluation data was conducted through the West Michigan Health System’s Community Health program. Their input was essential in identifying key stakeholders that will utilize the evaluation data. Solidification of key stakeholders, internal only – as recommended, was completed by August 28, 2018. The DNP student met with new program manager and team, presented evaluation plan and started informal stakeholder mapping on September 13, 2018. The engaged stakeholder workgroup (ESW) completed internal stakeholder mapping at a administration meeting September 25, 2018.
2. **Describe the program.** Description of this community health program for English speaking populations while targeting African Americans has already been defined by the department. However, review of the description with key stakeholders helped facilitate the shared understanding of the program. The logic model was viewed on September 13th and 25th to present a clear depiction of the link between activities and intended outcomes.

3. **Focus the evaluation design.** An attempt to focus the evaluation design was conducted through multiple meetings beginning August 24, 2018 and still remains unresolved. In attempting to focus the evaluation design, key stakeholders identified ambiguity in the program design, and therefore, efforts were deterred from program evaluation to program re-design. Stakeholders agreed that focusing the program design would better position the organization and participants for evaluation success. It would also improve participants care, ensuring interventions directly impact participant outcomes. ESW meeting to review business case for “Changing the model to address the social determinants that reduce health equities for DM and CVD prevention,” A3, and changes to logic model on November 6, 2018.

4. **Gather credible evidence.** Selecting the best method(s) to answer the evaluation question was not completed. A recommendation of methods was formulated by the Doctor of Nursing Practice (DNP) student prior to meeting with key stakeholders on September 25, 2018. The original plan was to use Tableau’s software programming, which interfaces with the electronic health record (EHR) from the organization to form a dashboard for what content would be drawn out of the EHR for analysis.
5. **Justify conclusions.** Turning the data into meaningful, useful and accessible information was a key step in the evaluation process. Recommendations for action would have been based upon the recommended methods from the DNP student, biostatistician, and data analysis team from the health system. Conclusions could not be justified related to program effectiveness or impact since no data were withdrawn from the EHR.

6. **Ensure use and share lessons learned.** A collaborative meeting will be conducted to communicate results to the key stakeholders with successes, barriers, challenges, and lessons learned with recommendations and actions for sustainability tentatively on November 30, 2018.

**Shift from Evaluation Plan to Program Re-design**

Step 3 of the evaluation process was a pivotal phase. The ultimate goal was to focus the evaluation design so it reflected the stage of program development (CDC et al., 2011). The ESW were reluctant in measure current program data because participant pool was low, dashboards were not yet built to retrieve data from the EHR, and there was hesitancy regarding what results might reveal. In an attempt to focus the evaluation design, definition of the current program became the priority.

Focusing the program design would empower the team to evaluate the process and be better positioned to receive desired outcomes. The ESW decided that this was an opportune time to re-design the program to address social determinants that reduce health equities for CVD and DM prevention, and also focus the evaluation design for measuring the re-designed program’s value and effectiveness. Primary prevention interventions compared to secondary interventions being the most effective for current and future participants is being discussed as well. The
business case includes adopting the evaluation plan as originally proposed by the DNP student (see Appendix M for Business Case excerpt).

**Measures**

Pre and post biometric screening data would have been measured to identify changes in risk factors for CVD and DM. Pre and post biometric data from each participant include: blood glucose, blood pressure, body mass index (BMI), body fat percentage (BFP), cholesterol, HDL, LDL, triglycerides, weight, height, and potentially Hemoglobin A1C. Informal interviews and observational surveillance would have also taken place with staff, participants of the program, other employees within the department, and administrative personnel. Attendance would have also been taken and collected to measure participant engagement in offered interventions such as physical activity classes, nutritional and health education.

Measures were shifted to re-align with the decision to better define the program. A business case was developed and is being finalized in regard to re-designing the program. Components of the business case include a modified logic model. The new logic models, one for preventing CVD risks and the other for preventing DM risks, combines the resources and plans for intervention to promote better utilization of the staff (see Appendix N for De-Identified Logic Models).

A business case A3 was also created as a process improvement tool for ongoing measurement of the current and future state (see Appendix O for the De-identified A3). The A3 clearly displays the gap analysis. It also describes desired metrics to evaluate the program in its future state. Evaluating two clinical outcomes and two population health/operational outcomes will be essential in describing the program’s effectiveness.
Data Collection Procedures

The biostatistician responsible for all reports, analysis, and figures regarding program evaluation in this department has been consulted throughout this project. There are data scientists that report up to the biostatistician. The current process is to have the data scientist run the data analysis and reports through a program called Tableau™. Tableau™ is a server that allows organizations to explore and filter data as needed, aimed to empower organizations in a protected environment to use data and analytics as needed.

The data that would have been collected and evaluated for this DNP scholarly project would have been all enrolled participants for the English-speaking wellness program only. Data would have been extracted from the EHR into Tableau™ and used to analyze with the given biometric screening filters. Tableau™ would have been utilized to then define historical trends, and identify discriminators between high priority participants and low risk participants.

Data was not collected due to low enrollment, the restructuring of the program, and the lack of a customized dashboard to analyze it. In the current state, a dashboard needs to be built to retrieve data from Tableau™ to be analyzed. The low number of enrolled participants made the ESW hesitant. Program re-design consumed time and resources because it was now the priority focus for the team.

Data Management

Data would be maintained within the hospital organization. The compiled data would have been used in the DNP scholarly project and would have been Health Insurance and Accountability Act (HIPAA) compliant. Data belongs to the health care organization, department, and program to use as deemed appropriate.
Analysis Plan

Data analysis would have been conducted by the Data Scientists utilizing Tableau™ and overseen by the Biostatistician of the department. The DNP student would have been able to analyze the data for identification of pertinent information related to this scholarly project. Initial data analysis would have included demographic information for enrolled participants including: ethnicity, gender, age, geographical location. Biometric screening data for participants would have also been a component of initial data analysis including: height, weight, BMI, BFP, BP, lipid panel (cholesterol, HDL, LDL, triglycerides), blood glucose, and HbA1C as indicated. Data analysts would have been asked to discriminate between high priority variables and participants falling in the low priority variable. High priority participants, according to the program, should be rescreened in 6 months and low priority participants – CVD risk score less than 10% and fasting blood glucose less than 125 mg/dL should be rescreened annually. Description of this information can be depicted in Tableau™ as a box plot and histogram, both forms would have been assessed.

The outcomes from the evaluation data would have been used to determine program effectiveness related to decreasing CVD and DM risks for participants. Initial screening of participants’ biometric screening data and their rescreened data would have been compared as pre-post data analysis. Comparison statistics were recommended. The DNP student recommended using the raw data from the screenings to determine effectiveness before and after interventions. Another recommendation was to use one way analysis of variance (ANOVA) to determine statistical significance. Using nutrition and physical activity as two independent variables with final CVD risk score as the dependent variable was recommended. The same type of ANOVA was suggested for DM utilizing blood glucose value or HbA1C as the dependent
variable for the sample. Data were to be analyzed in graphs, tables, and charts to produce a wholistic depiction of the program’s effectiveness and value.

Data was not collected because the team needed time to decide how programming would proceed. Deliberate attention was needed to hone in on whether this program would continue as a primary prevention program or consider secondary prevention interventions instead. The restructuring process takes time and valuable resources to ensure safe and quality care are guaranteed for current and future participants. Strategic planning utilizing the evaluation plan will require appropriate analysis of the re-designed program.

**Resources & Budget**

Resources were utilized through the departmental budget which was delineated by the health care organization. Time was the largest resource utilized for this project to meet with staff and develop a plan to analyze data. Employees in this department were paid either salary or hourly. The budget for the program was owned by the department and utilized for employment and supplies. The department also received funds from grants to keep screening and fitness class free of charge to participants. There was not an expense budget for the DNP student, but cost to run the program remained the same and proceeded as usual.

Cost to run the community-based prevention program included wages of a salary supervisor, program specialist, nurse case manager, and an hourly community health worker. These costs were shared between programs if additional resources were needed. The cost of equipment including supplies for screenings, facility use and utilities, and educational materials were also considered and remained the same. There were also costs for publications including flyers, screening documents, and educational material.
Timeline

The DNP student has had an awareness of this community-based program targeting AA since last year. Initial contact was made with the manager of community programs and later a relationship developed with the supervisor of the program. In January 2018, the supervisor agreed to be the organizational advisor and completed the intern agreement in March 2018. An organizational needs assessment was completed by March 2018. From April to June 2018, a comprehensive literature review was conducted.

Evaluation steps for the community-based program began September 2018. The program team decided to re-focus on the program design before continuing with the program evaluation plan October 24, 2018. DNP student’s project defense is planned for November 28, 2018. Again, the program re-design took precedence over evaluating the current program’s effectiveness.

Results

An evaluation plan is a critical and integral component of any program. Therefore, the lack of a program evaluation can be detrimental to a program when it comes to proving the program’s effectiveness. Determining the value of the program is the primary purpose of a program evaluation, as well as determining the worth of individual program elements (Billings & Halstead, 2005). Measuring program effectiveness utilizing a systematic approach during evaluation is an essential way to account for programming that affects patient and health outcomes.

The CDC’s Framework for Program Evaluation (2011) was the framework used during this scholarly project. The assumptions made during the process were that 1) stakeholders would be engaged, 2) the CDC framework would determine program value as it relates to its impact on participant’s health, 3) the CDC framework was the most appropriate model to use for this
program evaluation, and 4) that there would be adequate time allotted to complete all six steps of the program evaluation plan. The CDC Framework for Program Evaluation was expected to work because by using and understanding the elements of this framework, it can be a driving force for planning effective strategies, refining existing programs, and demonstrating the results of resource investments (CDC, 2017c).

The purpose of this project was to utilize the CDCs Framework for Program Evaluation as a DNP scholarly project by way of a systematic approach to a primary prevention program within a health system. The intended goal of this project was to determine the effectiveness of the primary prevention program with metrics to establish the programs value. Using the framework to develop a program evaluation plan will improve accountability and ensure the interventions of the program are useful, feasible, ethical, and accurate (CDC, 2017c).

**Methods**

This DNP scholarly project was a quality improvement project utilizing the CDC’s Framework for Program Evaluation to address the organizational diagnosis: lack of a program evaluation. When using the CDC’s Framework for Program Evaluation, there were four standards that were important to consider for each of the six steps in the process. The standards included utility, feasibility, propriety, and accuracy. Following the standards and steps ensured that program context would be a significant factor and improve how the evaluation could guide daily operations. These standards are described in detail below.

Utility refers to the information needs served to the intended users. Feasibility is how realistic is the action but also how sensible, practical, and wise it should be. Propriety deals with behavior and how those involved and affected are handled legally, ethically, and with due regard
for welfare. Accuracy indicates comprehensive evaluation grounded in the data (CDC et al., 2011).

**Intervention**

The intervention used in this project was a quality improvement method of evaluation. It is a six step iterative process. Although all six steps considers the four standards, any of the six steps may be repeated or done as many times as needed.

**Step 1. Engage stakeholders.** In order to engage the stakeholders the initial step was to identify who the stakeholders would be in this program. The program supervisor and team decided that it was best be to engage internal stakeholders only for this evaluation process. Internal stakeholders included the program administrators and staff. After meeting with the staff and administrators they too agreed that they should be the only stakeholders included at the time.

Stakeholders are those who will use the evaluation results, maintain and/or support the program, and those who may be affected by the program activities or evaluation results. Engaging stakeholders through the mapping exercise enhanced their understanding and ensured their acceptance of how the evaluation information would be used (CDC et al., 2011). The evaluation stakeholder workgroup mapping exercise completed after these meetings can be find in Appendix P.

**Utility.** Utility for the stakeholders was completed by presenting the proposal defense highlighting the project plan to the staff members. After gaining buy-in from the staff, the manager of community programs scheduled a meeting with the administration team. The administration team meeting also highlighted the proposal plan, ultimately seeking buy-in as well. During the administration meeting the supervisor was empowered to focus the program design in an effort to move forward in the steps to complete the program evaluation utilizing the
CDC’s framework as a guide.

**Feasibility.** Diplomacy was highlighted during both the meeting with the staff and before the administrators meeting. It was highly encouraged to have a separate meeting with the biostatistician in this space before the administrators meeting. The general consensus after meeting with the internal stakeholders was that the evaluation plan was feasible and all of the tools were in place to evaluate the program.

**Propriety.** Engaging stakeholders is both a legal and ethical process. In terms of propriety the welfare of the participants is always considered. Access to risk management, an ethical team, and legal support are all available as a part of and in support of the department.

**Accuracy.** In an effort to ensure accuracy of who the internal stakeholders should be, help from the supervisor and manager of the program was key. Engaging the administration team including the vice president of the department, finance and operations, biostatistician, manager of education, and manager of community programs ensured that the internal key stakeholders were present for the evaluation process.

**Step 2. Describe the program.** A logic model was used to describe the program (see Appendix Q). Understanding the program, problem, assumptions, input, activities, output and outcomes were all essential components for the evaluation process. Signs of discrepancies became apparent during the “description of the program” portion.

**Utility.** Information needs varied by users. The administration team and the staff did not agree upon the current program model, what it had been previously, nor what it should truly be in the future. Instead, the description of the program was based on which stakeholder described the program.

For example, if the administration team describe the program it was a population health
model, which provided preventative care services to vulnerable populations, targeting African Americans. If the participants participated in the services offered then they would decrease their risk of cardiovascular disease and diabetes. However, the staff operated and described the program as a case manager focused program, which guided participants through the process of a biometric screening, offered a variety of activities, and graduated bi-annual or annual screening participants after three years of the program. Description discrepancies between stakeholders provided clear rationale to define and focus the program design.

**Feasibility.** The logic model utilized to describe the program was very realistic and approved by staff and administration. The logic model captured the desired thoughts, assumptions, and outcomes for the program. Feasibility of a prevention program targeting lifestyle changes, like nutrition and physical activity, are realistic according to evidence. However, the program’s impact of lifestyle changes are not currently being measured.

**Propriety.** Construction of the logic model was done legally by the DNP student. Ethically it was displayed to the staff and administration team as well to insure the situation, assumptions, inputs, activities, and outputs were agreed upon.

**Accuracy.** The accuracy of the logic model’s use in describing the program was essential to help articulate the programming and its relation to the desired outcomes. To ensure accuracy feedback was welcomed by the team and displayed during presentations that allowed for open dialogue. The logic model can be changed in the future to ensure accuracy remains a standard in this phase.

**Step 3. Focus the evaluation design.** In an attempt to focus the evaluation design, the DNP student made recommendations and also met with the organization’s biostatistician. The recommendations for the evaluation design focus was to use a pre and post data analysis for the
biometric screening results and an analysis of variance (ANOVA) for variables.

Retrieving the pre/post biometric screening data could allow for the utility of bar graphs, box charts, plot charts, and discriminatory analysis for high versus low priority participants. A pre/post evaluation design would be able to identify clinically significant changes in individual participants risk factors and behaviors. It would clearly identify changes in blood pressure, lipid panel results, weight in pounds, body mass index, and body fat percentage. All of which are contributing factors to cardiovascular disease and diabetes risks.

It was also recommended that the proper tools to evaluate interventions would also be in place before identifying the program evaluation design. For educational interventions, attendance and a mixed methods survey that assesses participant’s understanding is recommended (see Appendix R). Attendance should be captured for activity and nutritional related offerings as well. Nurse case management should include number of contacts with participants whether in person, by phone, email, or text. The tracking of interventional impact is essential when justifying conclusions in step 5. The details regarding how to properly evaluate each interventional component is still being established.

ANOVA was recommended to assess for statistical significance of the interventions. The purpose of the ANOVA is to allow for testing of varying groups to identify any potential differences among them. For instance, if a one-way ANOVA was used, independent variable one (IV1) could have been nutrition, while independent variable number two (IV2) could have been physical activity; the dependent variable (DV) in the first case could be final CVD risk score will making the DV in case two DM. Understanding and identifying the relationships between variables could have statistically defined the effectiveness of the program.

During the meeting with the biostatistician, it was identified that regression analysis was
previously utilized in another program and deemed a possibility for this one as well. It was also highlighted that due to the low participation rate, it would be unlikely to find statistical significance but clinical significance for individual participants may be an option. It was also suggested to utilize longitudinal analysis with cross-sectional points over time. It was highly encouraged to design evaluation questions and let the data analysis team decide the best approach to gathering the data. The evaluation design was halted after meeting with the administration team due to the need to re-focus the program design before being able to focus the evaluation design or plan. According to the CDC et al., (2011), it is in this step where “you may begin to notice the iterative process of developing the evaluation plan as you revisit aspects of Step 1 and Step 2 to inform decisions to be made in Step 3” (p.18).

**Utility.** Information needs of intended users for this phase was not concrete. The program was based on an old logic model that did not specify the direction of the program in detail. Two new logic models were constructed that are better indicative of prevention for CVD and DM. A business case was built for which direction was the most appropriate for those involved. The idea is to potentially have a mixed model of case managed participants and a population health model which will both need to be evaluated for program effectiveness.

**Feasibility.** It is very realistic to re-focus the evaluation design. However, it will take time and dedication. It is also recommended that step one be revisited after the program design has been solidified to re-engage stakeholders. Stakeholders would be interested in identifying how the newly designed program would yield outcomes and what is the evaluation plan going forward.

**Propriety.** Collaborating with key stakeholders and consulting the legal and ethical team will promote appropriate behaviors to ensure the welfare of participants. Being proactive
regarding how information will be collected from participants should also be identified in this step. Lastly, it would be beneficial to ensure and abide by privacy and confidentiality requirements before gathering any evidence in the next step.

**Accuracy.** Accuracy during this phase is foundational to being able to successfully complete the remaining steps in the program evaluation. The evaluation design must be accurate in order to determine how evidence will be gathered. Accurately focusing the evaluation design is guaranteed through identification of the most appropriately asked evaluation questions.

**Step 4. Gather credible evidence.** The data analysis team under the direct supervision of the biostatistician would be utilized to gather credible evidence. Traditionally, the team utilizes dashboards in a software program, Tableau™. Utilizing the electronic health record evidence can be gathered to analyze the data and account for variance. Gathering credible evidence, such as the documented electronic health records positions a program to move forward to the next step of then justifying the gathered evidence. There is not currently a dashboard built to retrieve data from the electronic health record and transfer to Tableau™, but it is a component of the business plan which will be presented at a later date.

**Utility.** The evaluation questions that need to be determined and answered will be important in identifying the utility of the gathered evidence. Step one may need to be revisited if stakeholders have discrepancies based on priority shifting or changes to the process since initially engaging them. How the evidence will later be disseminated should also be considered during this step.

**Feasibility.** Feasibility for gathering credible evidence is high for this program since current stakeholders have been through the process before with another program. The inquiry of gathering credible evidence is realistic and would be utilizing the services of already employed
staff members. It would not require any additional team members nor external participants participation at this time. Credible evidence was not gathered presumably due to low enrollment numbers, no current case manager to manage cases, and the concern for the data to show minimal to no effect clinically or statistically.

**Propriety.** The evidence must not be compromised in any way. All current confidentiality and privacy laws, policies, and procedures will be in place. The protection of patients and their personal health information will continue to be a priority for the program and organization. Identical to the other steps legal and ethical team members could be consulted on an as needed basis.

**Accuracy.** This is potentially the most important part of this step. Ensuring accuracy of the gathered data would be top priority for the data analysis team. Translating that data into the software program would also need to be accurate before moving forward to the next step.

**Step 5. Justify Conclusions.** The plan to justify conclusions would have been a joint effort between the data analysts, biostatistician, DNP student, and program supervisor. All other stakeholders would also have the opportunity to agree or negate findings following the written report draft. This is a critical step for utilizing the data to determine meaningful, useful information, and its interpretation for action.

**Utility.** Utility is the priority standard during this step. What the data is used for could be pivotal to the program design, continuation, or demise. Biases regarding what conclusions can potentially be justified can hinder the process from moving forward as was the case for this program. For example if participants enrolled in the program did not decrease their risk for CVD or DM, then a conclusion could be that the services and program provided is not effective.

**Feasibility.** Justifying conclusions from the gathered data would be feasible for this
program. Expertise within the organization could add to its validity and reliability as well. There were concerns regarding the number of program participants returning in 6 months and the ability to justify statistical significance based on a small sample size at this time. However, the recommendation to focus on clinical significance and utilize the current data to focus on how current programming is impacting participants has not been implemented at this time. Clinical significance measures the difference in treatment effects, for instance having balanced nutrition causes weight loss by how many pounds.

**Propriety.** Allowing time for stakeholders to review the report that justifies conclusions is critical to developing transparency and validity of the results (CDC et al., 2011). Deidentification of results would help in ensuring the welfare of the participants is being considered. Legal and ethical team members are always available as needed for questions or recommendations.

**Accuracy.** The accuracy of the collected data would be implicit since it would be data pulled directly from the electronic health record. Questioning key stakeholders regarding the validity and reliability of the results and their interpretations of this data would be an essential component for building a trusting relationship. Accurate data are essential whether the results reveal what was hypothesized or caused the team to consider the need for restructure, reprogramming, and/or re-evaluation.

**Step 6. Ensure use and share lessons learned.** Lessons learned will be shared during a follow up meeting. The only way to ensure proper use is to make sure to properly engage stakeholders during step one. Understanding the priorities for stakeholders and developing the evaluation plan from the beginning of program will provide meaningful use and learned lessons.

**Utility.** Ensuring use will be key in whether the evaluation report is useful or not. Meeting and collaboratively designing the evaluation plan will help to guarantee utility. Sharing
lessons learned is useful for next steps and entering the iterative process of program evaluation.

**Feasibility.** Sharing lessons learned is feasible whether in person, via email, or telephone conference. Ensuring use of the evaluation plan report would need to have intentional planning around when to use and how integration into practice could be the most beneficial. At least quarterly evaluation, continued use, and lessons learned is recommended.

**Propriety.** Data from the evaluation plan would be de-identified to ensure patient privacy and confidentiality per the organizations policies. Ethical and legal use and sharing would be implied and enforced as a part of the company. Meetings regarding use and lessons learned should be held on the organizations premises only.

**Accuracy.** Accuracy of use and lessons learned may vary between stakeholders. Finance may use the data for identification and validation of budgeting, while clinicians may use the data to verify improved patient outcomes and in this case a decrease in CVD and DM risk scores. Capturing intended would be important to identify in step one.

**Approach**

In order to assess the impact of the program evaluation, the intention was to complete the six step process and capture key stakeholders thoughts regarding impact through conducting informal interviews at the lessons learned meeting. Collaboration with the biostatistician and the data analysis team to interpret whether the evaluation design and justification of conclusions proved value of the program. The evaluation steps and the CDC’s framework would be incorporated in the final program evaluation report to view and continue to use for future evaluation processes, not just for this program but the department as well.
Measures

“Measure to learn” (Berwick, 2017). Measurement for learning not just for reports and comparisons could have been a great way to utilize current data for current programming. Measuring current data would have given the program a baseline for changes and alterations to programming moving forward. However, the ESW decided that data would not be measured at this time due to utilizing their resources to focus on the program re-design.

Measures that would have been used for this project would have been informal stakeholder interviews, data from evaluation plan, and successful completion of all six steps in the evaluation framework. Informal interviews with stakeholders could have displayed the value of utilizing this framework and assessed for intentions to continue to use. The lack of a fully developed program hindered the ability to fully develop an evaluation plan and therefore no validity or reliability was necessary without tools. The program functioned as a screening service with minimal follow-up on intervention plans and a patient-centered plan of care.

Step 3 of the CDC’s evaluation framework, focusing the evaluation design, would have been the critical step for deciding the appropriate measurement tools. There is only one current measurement tool, which is biometric screening data from the participants. It was recommended to identify tools to capture attendance rates during physical activity and nutritional offerings, case management impact including education, and resources including referrals.

Analysis

It was recommended by the DNP student to use pre/post analysis method and ANOVA statistical analyses for nurse case management, physical activity, and nutrition wellness interventions. The biostatistician suggested continuing regression analyses as done with the parallel program and also a longitudinal cross-sectional analyses for the case management
component. Also the need to identify and measure clinical endpoints to assess population health model impact. A clinical endpoint is a way to track participants who may experience an adverse event such as a heart attack while in the program. There was more discussion on how the data could also be stratified for gender, race, age, and socioeconomics as well. There is a business plan being built to decide the best direction for the program and its evaluation.

Results

Currently there are no results showing statistical nor clinical significance. No data were collected or pulled from the electronic health record nor populated into Tableau™. However, the findings from attempting to evaluate the wellness program are still valuable as it led to the decision to enhance the design of the program and potentially increase its effectiveness.

Discussion

Although program participants’ data were not analyzed during this project, several valuable lessons were learned. The first lesson was practicality and reality. The time constraint of completing the six steps within the allotted time frame from start to finish without interruption was unrealistic. Time was not built in to allow room for the iterative nature of the evaluation process. The second lesson was how to appropriately address the political process when navigating a collaborative evaluation plan. Engaging stakeholders became more than a one step process. After engaging with the manager of the program, the DNP student then engaged the team and later administration. The third lesson was related to learning and growth. Upon approaching step three and realizing the team needed to focus on the program design before the evaluation design could be focused was a breakthrough for the team, administration, and the participants in the program. One team member stated “we have been piecing together this program and it finally feels like we are headed in the right direction.” Although the evaluation
was stalled in the moment, there could be growth in restructuring and redefining what the program should be. There can also be growth when determining the best way to evaluate the redefined program.

**Limitations**

During this process there were many barriers. Some great and some small but they all affected the process of how to effectively evaluate a program. Navigating and resolving the limitations is an expectation for all health systems leaders and this process was no different.

**Shift in Roles and Responsibilities**

During this process the loss of middle management weighed on the staff. The lack of oversight for community programs including this one needed to be readjusted. During the same time the supervisor was without clear direction on focusing the current program and providing clear direction for the team.

The lack of role clarity for the supervisor and others on the team was also a barrier. The supervisor during this time was asked to fulfill managerial tasks such as providing role clarity for team members and self, creating, proposing, and managing the fiscal budget, developing programming, building community business relationships and partnerships, and managing community programs. Role clarity is essential for teams when considering daily operations and productive individual and organizational performance. Insufficient information about goals of the job results in inefficient efforts, misdirected tasks, and ultimately reduces job performance (Hall, 2008).

The lack of understanding regarding the design model for the current program became evident during Step three, when trying to focus the evaluation design. The process of program evaluation planning caused intentional identification of what the program design was and how it
needed to be redesigned to yield desired results. This process expedited intentional work around the program design including, an A3 - a quality tool, a business case, a proposal for restructuring interventions with evaluation plans, change management and practice implementation.

Briefly before the organizational assessment took place in this program, a case manager was hired to address the needs of the participants of the program. Prior to that, the supervisor filled the case manager’s role in addition to the supervisor responsibilities. Before step one of the program evaluation process, the recently hired case manager resigned. The loss of the case manager that was hired to specifically manage the program’s participants caused program tension and team anxiety related to an increased workload. This was also one of the reasons for the lack of precise definition around role clarity. Roles and responsibilities had to shift among staff to keep participant engagement and maintain organizational integrity.

The program recently added a community health worker for the program as well. Previously, the community health worker had been working with the program in a grant funded position and, therefore, understands the culture, history, and reality of the program’s current state. The community health worker brings multiple links to community resources and will be strategically utilized to engage low priority participants throughout their journey to wellness. Participants who are considered low priority exhibit minimal to no risks for CVD and/or DM. However, participation in the program can be justified through social determinants of health (SDoH) gaps/needs and the ideology to stay well. While adding a community health worker to the program is an opportunity to grow and better develop the program, it was also a hinderance in the evaluation process because the interventions that will be provided by this employee also need to be a component of focusing the evaluation design. The functions of this role are unclear, thus making the program design even more uncertain.
History of the Program

The conception of the program began by mirroring another existing program that followed the New Ulm Project of 2009 (Vanwormer, Boucher, Sidebottom, Sillah, & Knickelbine, 2017). Replicating the existing author’s program substantiated value because it had proven through initial participant screenings and regression analysis to some degree. Even with models to mimic before the start of this program it lacked program identity and focus.

The mirror program that is already running was challenging to gather information regarding data definitions being utilized for evaluation. Data definitions would have been beneficial during data interpretation and identifying how the other program defined success. While data definitions are not currently being utilized, their creation will be implemented for both programs and potentially the entire department in the future.

Another barrier with attempting to mirror the other program was the variance in cultural sensitivities for the different populations. The initial program excelled at ensuring the participants primary language of Spanish would be highly visible through signage, forms, and concordant staff. The goal throughout that process was to remove linguistic barriers for the Spanish-speaking population being served. The same participants in the program also faced fear of deportation as a major barrier for attendance and participation rates. Although these were not the same factors that affected the targeted African American population, the AA participants faced other cultural barriers. The staff were not concordant and the historical fear of experimental health held an underlining tone, often presenting the need to convince participants why they should participate in a service being offered to them free of charge.
Redesigning the Program

The program is currently being redesigned with the evaluation plan in mind. Current redesign is a barrier to program evaluation that will have to halt momentarily and then resume potentially at the beginning of the coming year. The time constraints limits the work the DNP student is able to complete, unlike the employees who have time to readjust and engage in the true iterative process of a program evaluation.

Conclusion

The delay in conducting a scholarly program evaluation was the impetus for implementing a quality improvement project of this magnitude. During implementation, strengths and opportunities were revealed. The opportunity to re-design the program together with an evaluation plan to encourage a focused design presented itself. Therefore, it can be hypothesized that a program evaluation is essential to determining the effectiveness and value of a program.

Implications for Practice and Further Study in the Field

Using the CDC’s framework (2011) for program evaluation is a practical tool to use in determining the value and effectiveness of a program. Implementation science became a reality through navigating the barriers presented when translating evidence into practice. Fallacies in the program design were exposed. Change management was also critical for staff during this time and will continually be a strength for health systems leaders through guiding practice changes.

Sustainability Plan

The sustainability plan for this project is to leave the staff and administration with the framework plan and encourage them to evaluate as recommended. The program supervisor and manager will be responsible for re-design and evaluation on an ongoing basis. Future DNP
students can complete re-evaluation of programming to continually monitor effectiveness and/or the need for interventions guiding the implementation of evidence into practice. A critical step will be to re-engage key stakeholders to ensure program direction and value after evaluation.

**Dissemination of Results**

The results of this project will be presented in a meeting with key stakeholders inside the organization’s department that runs the program. Results will also be displayed at a poster reception in the College of Health Sciences. The final project document will be inputted into ScholarWorks through Grand Valley State University. Lessons learned will be presented to the project advisory team, invited guests, and others interested during the final project presentation.

**Reflections on DNP Essentials and AONE Competencies**

DNP graduates are prepared with curriculum elements and competencies that must be outlined in the graduate school program that confers the degree (American Association of Colleges of Nursing (AACN), 2006). Skills knowledge and abilities regarding nurse executive competencies are also emphasized by the American Organization of Nurse Executives (AONE, 2014), during the degree seeking process for health system leadership focused student. As these competencies and essentials overlap in content, reflection upon them during the process will as well.

**Essential I: Scientific Underpinnings for Practice**

The nursing discipline focuses on implementing science-based theory to impact positive changes in healthcare. This can be measured by the evaluation of outcomes. As an evaluation project, this project exemplified how utilizing science based theory can influence change. Leadership and knowledge of the healthcare environment ensures nurse leaders are utilizing
these high reliability concepts into the organization (AONE, 2014). Critically analyzing the program for issues after evidence review was important to the future of this program.

**Essential II: Organizational and Systems Leadership for Quality Improvement and Systems Thinking**

Developing and evaluating care delivery approaches for the population demonstrates that a nurse leader has knowledge of the healthcare environment. For this project there was a SWOT analysis conducted that also displays the business skills used during the process. Systems thinking was completed by engaging stakeholders and collaborating with others to confirm each step in the process was ethical, respectable, usable, and accurate.

**Essential III: Clinical Scholarship and Analytical Methods for Evidence-Based Practice**

Scholarship and evidence-based research are essential to DNP education. For this project, functioning as a knowledgeable consultant and specialist was a priority. Communicating clearly to team members and administration was the best way to foster relationships and articulate the translation of evidence into practice. The ability to disseminate findings was important through all routes of communication including meetings, reports, and email.

**Essential IV: Information Systems/Technology and Patient Care Technology for the Improvement and Transformation of Health Care**

Using information systems and technology to transform healthcare and improve patient care is a key component for doctoral education. The exhibition of professionalism as a leader when evaluating consumer health information is of great importance. Ensuring information sources are handled with timeliness, accuracy, and appropriateness is a must. If analysis of the patient data would have been completed, abiding by strict HIPAA and compliance laws would have been mandatory.
Essential V: Health Care Policy for Advocacy in Health Care

Health care policy sets a framework for how care should be delivered, even at the institutional level. During this project critical appraisals of policy and proposals were completed. Communicating to non-nursing partners regarding participant’s health and outcome goals was an important part of the role and responsibility to communicate and build relationships.

Essential VI: Interprofessional Collaboration for Improving Patient and Population Health Outcomes

Interprofessional collaboration is a pillar in healthcare today. It equips interdisciplinary teams to provide the best care for patients. Interprofessional collaboration guarantees a holistic view of patients, interventions, and the best approaches to achieve healthy outcomes. This project benefitted greatly from interprofessional collaboration with the stakeholders to improve patient outcomes. The program will continue to benefit during the re-design phase from interprofessional collaboration for the same reason.

Essential VII: Clinical Prevention and Population Health for Improving the Nation’s Health

Health promotion and disease prevention was the aim of the program included in this project. Clear communication and relationship building was a priority for each participant to establish trust between participants and the health care providers. Exhibiting professional behaviors when dealing with participants and their clinical information is a leader's responsibility. Embedding an evaluation plan would help track trends regarding health in the community and add perspective to population health as well.
Essential VIII: Advanced Nursing Practice

Conducting a systemic assessment utilizing evidence based tools like Burke-Litwin OP&C model and the CDC Framework for program evaluation were foundational to this project. Having knowledge of the healthcare environment as a leader was an important factor. Providing systems thinking and change management approaches without causing harm to the participants was a priority throughout the entire process. The DNP health systems leader education represents the impact of integrating the DNP essentials and AONE competencies to impress positive health care changes locally, nationally, and globally.

This project was intended to be a program evaluation but had limitations that were unresolvable in a timely manner. However, through implementing the program evaluation, program re-design became more of a priority. This experience required critical thinking and leadership skills acquired through education and furthermore, allowed for the demonstration of an analytical approach to program evaluation, which rendered the benefits of its process.
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Appendix A

*Figure 1. Burke-Litwin organizational performance & change model*

(Stone, 2015, p. 36)

Used with permission
Appendix B

Permission to use Burke-Litwin Model
Appendix C

Internal Review Board (IRB) Determination Letter

NON HUMAN RESEARCH DETERMINATION

March 29, 2018

Phallon LoveLady, Doctor of Nursing Practice
Spectrum Health
100 Michigan St.
Grand Rapids, MI 49503

SH IRB#: 2018-108

PROTOCOL TITLE: Evaluation of a Health System’s Community Targeted Program for Individuals with Increased Risks for Cardiovascular Disease and Diabetes

Dear Ms. LoveLady,

On March 29, 2018, the above referenced project was reviewed. It was determined that the proposed activity does not meet the definition of research as defined by DHHS or FDA.

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

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

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

Your project will remain on file with the Office of the IRB, but only for purposes of tracking research efforts within the Spectrum Health system. If you should have questions regarding the status of your project, please contact the Office of the IRB at 616-486-2031 or email irb@spectrumhealth.org.

Sincerely,

Jeffrey Jones MD
Chair, Spectrum Health IRB

cc: Quality Specialist
Appendix D

Intern Agreement Form

RESEARCH INTERN AGREEMENT

Name: Phallon LoveLady
School/University: Grand Valley State University
Email: loveladp@mail.gvsu.edu
Phone Number: 616.318.9930

Thank you, Phallon ("You"), for your interest in clinical research at Spectrum Health Hospitals and its affiliates (collectively, "Spectrum Health"). During the course of your participation in research activities at Spectrum Health, you may hear, see, or learn highly confidential information, including health information that is protected by law. You may also have access to information systems and other resources that are critical to the clinical and research operations of Spectrum Health. It is very important that you access and use Spectrum Health resources appropriately and that the information and ideas to which you are exposed remain confidential.

In exchange for the opportunity to be involved in clinical research at Spectrum Health, you agree as follows:

1. Research Activities at Spectrum Health. You acknowledge that your assignment to work on research project(s) at/through Spectrum Health is educational in nature and designed for your benefit to advance your educational interests. You further acknowledge and agree that any duties and activities performed by you in connection with such research project(s) are performed under supervision of Spectrum Health personnel, as part of your educational experience. Spectrum Health is not responsible for any claims, damages, costs, expenses or losses or any other liability that you or a third party may incur arising out of or as a result of your acts or omissions in connection with this Agreement.

2. No Employment With Spectrum Health. You understand and agree that you are not an employee of Spectrum Health for any purpose, including compensation, fringe benefits, workers' compensation, unemployment compensation, minimum wage laws, income tax withholding, or social security. You understand that you will not be paid for your research activities at Spectrum Health and that you will not necessarily be entitled to a job at the conclusion of your research work.

3. Definitions.
   a. "Protected Health Information" means any individually identifiable health information (as that term is defined by federal regulations). Protected Health Information may be transmitted or maintained in electronic form or in any other medium and may include, but is not limited to, patient names, medical conditions, medical events, and any details regarding participation in clinical research or treatment or medical care received by any person at Spectrum Health.
   b. "Confidential Information" includes means any information (a) if disclosed in written or electronic form, is marked "confidential," "Proprietary" or in some other manner to indicate its confidential nature; (b) if disclosed orally, is either (i) stated to be considered confidential or (ii) from all circumstances should reasonably be assumed to be confidential; and (c) Protected Health Information, in any form or medium. Confidential Information may include, but is not limited to, clinical research protocols and other non-public information regarding a drug, device or other product under development, and business plans, strategies and methods of Spectrum Health or any affiliate or contractor of Spectrum Health.

4. HIPAA Compliance. You acknowledge and agree that, while involved in research activities at Spectrum Health, you are functioning as a member of the Spectrum Health "workforce," as that term is defined by the Health Insurance Portability and Accountability Act of 1996 and its implementing regulations ("HIPAA"), as amended from time to time. Accordingly, you agree to comply with all of Spectrum Health's HIPAA policies and procedures and any related policies and procedures regarding the privacy, confidentiality and security of information.

5. Non-Disclosure. You acknowledge and agree that any Confidential Information you see, hear, learn or otherwise receive while conducting research activities at or in connection with Spectrum Health is provided or made available to you solely for the purposes of conducting those activities. You agree that you will not use or disclose to any other person any of the Confidential Information, except for the purpose(s) of performing clinical research activities at or on behalf of Spectrum Health.
6. Access to Spectrum Health Information and Resources. You agree that (a) You will use only Your Spectrum Health email address to create, send and receive Confidential Information related to your research activities at or in connection with Spectrum Health, and (b) except as otherwise approved in advance by [Name of Person Responsible for Research Compliance at Spectrum Health], you will perform all research activities, projects and assignments onsite in the Spectrum Health Research Department at 25 Michigan St. NE, Suite 4300 or at such other Spectrum Health facilities or locations as necessary to perform the research activities to which You are assigned. In addition, You agree that You will not remove from any Spectrum Health-controlled facility, location or space (including any owned or leased laboratory space) any documents, records, data or materials which are the property of Spectrum Health or which contain any Confidential Information.

7. Work Product. You acknowledge and agree that, except as otherwise provided by existing Spectrum Health policies, e.g., Spectrum Health’s Intellectual Property Policy, You do not have any ownership or other rights in any of the work produced by You in the course of performing research-related activities at or on behalf of Spectrum Health.

8. Publications. Depending on Your involvement in clinical research activities at Spectrum Health, You may qualify for authorship in publications resulting from the research study/ies in which You participate. Authorship will be determined by Spectrum Health and the applicable principal investigator(s) in accordance with Spectrum Health policies, generally accepted practices, i.e., the guidelines and standards of the International Committee of Medical Journal Editors (ICMJE) and any contractual obligations of Spectrum Health.

9. Training. You hereby certify that, prior to conducting any research activities at Spectrum Health, You will have completed all necessary training required by Spectrum Health and/or Your school/university (if applicable) regarding the responsible conduct of research, human research subject protections and the privacy and security of health information. You acknowledge and agree that Spectrum Health has the right to confirm that You have completed such training(s); this may include contacting Your school/university (if applicable) for confirmation.

10. Time Commitment. You understand that You are assigned to work on research projects and activities at Spectrum Health, as available and/or as needed by the research project team. You further understand that Your commitment to complete Your assigned research project activities is important to completion of the project objectives. You expect to commit at least \_33.34\_ hours per week/semester to these activities. You agree to inform Your Spectrum Health research mentor/ supervisor as soon as possible if Your educational, personal or other commitments may prevent You from completing Your assigned activities in a timely fashion.

11. Return of Information. You agree that, at the conclusion of Your research activities, You will immediately return to Your Spectrum Health research mentor/ supervisor any and all equipment, documents, Confidential Information (in any form or medium) and other materials provided to You during or in connection with Your research activities.

12. Non-Compliance. You understand that Your compliance with this agreement is a condition of Your participation in research activities at or in connection with Spectrum Health. If You violate this agreement, Your participation in such activities and Your access to any Spectrum Health resources (including, but not limited to, a Spectrum Health email account) may be immediately terminated.

I acknowledge that I have read and understand this Agreement and its contents, and I agree to comply with all terms and conditions of this Agreement. I further acknowledge that this Agreement is in addition to—and does not replace or supersede—any other applicable requirements that I must fulfill in order to participate in research projects and activities through the Spectrum Health Offices of Research Administration including, but not limited to, the requirements of Spectrum Health’s Human Resources department.

Research Intern:

\[\text{Signature}\] Phallon LoveLad [Printed Name] 3.20.2018

Spectrum Health research mentor/supervisor:

\[\text{Signature}\] Maria Andrea Peterson [Printed Name] 3.20.2018
Hierarchy of Evidence

Appendix F

PRISMA Flow Diagram of Systemic Search

Appendix G

Permission to use PRISMA
Table 1. Articles included in review with author, year, purpose, design, inclusion, results, conclusions

<table>
<thead>
<tr>
<th>Author (Year) Purpose</th>
<th>Design (N)</th>
<th>Inclusion Criteria</th>
<th>Intervention vs Comparison</th>
<th>Results</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aziz et al. (2015) To review the current evidence about success factors for implementing diabetes prevention programs in real-world settings using penetration, implementation, participation, and effectiveness (PIPE) Impact Metric.</td>
<td>Level I Systematic Review N = 76</td>
<td>Published studies in the last 15 years reporting evaluation of lifestyle-focused program aimed at individuals with moderate or high risk of diabetes, elevated hemoglobin A1C, high body mass index (BMI)</td>
<td>Diabetes primary prevention programs</td>
<td>Of the 38 studies included in the review 16% (6 studies) reported the program’s effectiveness as having ‘highly’ positive changes and 26% reported having ‘moderately’ positive changes. Of the studies reporting ‘high’ diabetes risk reduction there were 6 studies (16%), but they reported ‘low’ to ‘moderate’ weight loss. All studies included identified program intensity or implementation, measured by frequency of contacts within the first year and throughout the intervention duration.</td>
<td>Findings in this review identify program intensity as an important role in weight loss outcomes. However, even programs with low intensity interventions which may lead to only low or moderate weight loss can still considerably impact lowering the risk of diabetes within a population with high participation rates.</td>
</tr>
<tr>
<td>Study</td>
<td>Evidence Level</td>
<td>Study Design</td>
<td>Participants</td>
<td>ASCVD 10 year risk score</td>
<td>Dietary patterns</td>
</tr>
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<tr>
<td>Kuczmarski et al. (2018) To determine the existence of food group variants in Western dietary patterns associated with lower and upper tertiles of 10-year Atherosclerotic Cardiovascular Disease (ASCVD) risk and to identify dietary patterns associated with lower ASCVD risk.</td>
<td>Level IV evidence</td>
<td>Cross-sectional analysis cohort N = 2140</td>
<td>Participants with ASCVD risks within the Healthy Aging in Neighborhoods of Diversity across the Life Span (HANDLS) study</td>
<td>Ten year ASCVD risk scores can be impacted by variations of the Western diet. The 10-year ASCVD risk for sandwiches/other vegetables dietary practices (DP) were lower than for sandwiches/bakery products and meats/sandwiches DPs. Better adherence to the Dietary Approach to Prevent Hypertension (DASH) plan is associated with lower cardiovascular disease (CVD) risk.</td>
<td>Dietary patterns more consistent with the Healthy Eating Index (HEI) and DASH diet quality indices, were associated with lower ASCVD 10-year risk. Food groups were ranked by t-test p-values based on food group energy variances between high ASCVD risk tertiles and low.</td>
</tr>
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</table>
Loprinzi & Addoh (2016) to evaluate the predictive validity

<table>
<thead>
<tr>
<th>Study Details</th>
<th>Measurement</th>
<th>Analysis</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level IV evidence Cross-sectional cohort study N = 11,171</td>
<td>CVD-free adults aged 40 to 79 years</td>
<td>10-year ASCVD risk</td>
<td>The number of deaths for those with an ASCVD risk score of less than 7.5%, 7.5% to 19.9%, and 20% or higher were 19, 44, and 61.</td>
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<td></td>
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<td></td>
<td>CVD-free US adults between 40 and 79 years of age who had a higher ASCVD risk score at baseline had an increased risk of all-cause and CVD-specific mortality during the follow-up period.</td>
</tr>
<tr>
<td>Rodrigues et al. (2016)</td>
<td>To assess the effectiveness of primary prevention programs targeting cardiovascular disease (CVD) and/or diabetes risk in non-urban adults</td>
<td>Studies were included if literature searches identified ‘rural’, ‘regional’ or ‘remote’ as a respective keyword or if sample population characteristics were concordant with respective national definitions concerning rurality and remoteness set by national statistical offices; including distance from urban health centers, population size and density, geographical size and location.</td>
<td>CVD and type 2 diabetes mellitus (T2DM) primary prevention programs</td>
</tr>
</tbody>
</table>
Yang et al. (2016) To evaluate the effect of intensive lifestyle intervention on patients with isolated impaired fasting glucose.

<table>
<thead>
<tr>
<th>Level I Meta-analysis</th>
<th>N = 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>The studies had to meet four specific inclusion criteria: 1. the participants/patients in each study should have been diagnosed with isolated impaired fasting glucose (isolated IFG) 2. randomized controlled trials (RCTs) in the selected studies must assess the effectiveness of lifestyle intervention between intensive and non-intensive groups of patients with IFG and no matter whether to adopt allocation concealment or blindness; 3. intensive lifestyle interventions in the intervention groups should include dietary and physical activity interventions, incorporate telephone follow-up or face-to-face communication, provide information or knowledge lecture on diabetes and include at least 3 months of follow-up; 4. outcomes of interest should include all the targets of fasting plasma glucose (FPG), haemoglobinA1C (HbA1C), weight, body mass index (BMI), triglyceride, high-density lipoprotein cholesterol and total cholesterol</td>
<td>Lifestyle intervention (primary prevention)</td>
</tr>
</tbody>
</table>
Appendix I

Figure 2. Health Belief Model (1974)

- **INDIVIDUAL PERCEPTIONS**
  - Perceived Susceptibility to Disease "X"
  - Perceived Seriousness (Severity) of Disease "X"

- **MODIFYING FACTORS**
  - **Demographic variables** (age, sex, race, ethnicity, etc.)
  - **Sociopsychological variables** (personality, social class, peer and reference group pressure, etc.)
  - **Structural Variables** (knowledge about the disease, prior contact with the disease, etc.)

- **LIKELIHOOD OF ACTION**
  - Perceived benefits of preventive action minus
  - Perceived barriers to preventive action

- **Perceived Threat of Disease "X"

- **Cues to Action**
  - Mass media campaigns
  - Advice from others
  - Reminder postcard from physician or dentist
  - Illness of family member or friend
  - Newspaper or magazine article

Likelihood of Taking Recommended Preventive Health Action

(Rosenstock, 1974, p. 334)

Used with Permission
Appendix J

Permission to use Health Belief Model
Appendix K

CDC’s Framework for Program Evaluation

(CDC et al., 2011, p. 5)
Appendix L

Actual Timeline of Implementation Steps

**Step 1:** Engage stakeholders through meeting on Aug. 28th. Stakeholder mapping done on Sept. 13 & 25, 2018.

**Step 2:** Describe the program through a logic model presentation on Sept. 13 & 25, 2018.

**Step 3:** Focus the evaluation design through identification of appropriate methods for data analysis starting Aug. 24 - October 30, 2018.

**Step 4:** Suggested recommendations for methods on Sept. 25, 2018.

**Step 5:** Program re-design work began approximately Oct. 1, 2018. No data were drawn from the EHR for evaluation purposes based on administrative decision.

**Step 6:** Tentative meeting with stakeholders to share successes, barriers, challenges, and lessons learned on November 30, 2018. Suggest recommended actions for sustainability and iterative process of program evaluation at meeting.
Appendix M

De-identified Business Case Excerpt

(Translating the Care Model) BUSINESS CASE  PHASE I

Options to Consider
Cardiovascular and Diabetes Prevention Strategies

- Adopt the Evaluation Design as proposed by Phallon LoveLady DNP student incorporating a Care Management model.

Assessments Considerations

- The 2017 clinical guidelines use the ASCVD risk estimator plus (page 40). This includes not only the 10 year risk factor but also the lifetime risk and optimal score for each individual. It focuses on decision making for recommendations around lifestyle modification as well as compounding factors such as comorbidities, family history, and hsCRP. This tool also advises considerations as they relate to race.
- Adopt the new guidelines from the ACC and the American Heart Association (AHA) work that was produced in collaboration with the National Heart, Lung, and Blood Institute and other specialty societies.
- Use the mobile app available on iPhones, iPads.

Management

- Adopt the AHA/ACC Guideline on Lifestyle Management to Reduce Cardiovascular Risk. www.cardiosource.org) and AHA (my.americanheart.org)
- Using the Care Management approach to incorporate healthy lifestyle coaching and goal setting.
- More emphasis on coaching dietary patterns and exercise as they relate to effects on cholesterol and blood pressure.
- Treatment Goals for the participants with both diabetes and hypertension, follow the Cardiovascular Disease and Risk Management: Standards of Medical Care in Diabetes 2018 Diabetes Care 2018;41(suppl. 1):S86-S104 (http://doi.org/10.2337/dc18-S009)
- Change the program to a one year model for biometric screening.

RN Case Management

1. Incorporate healthy coaching inclusive of compounding factors such as but not limited to: diabetes, hypertension, social determinants of health, and other medical conditions that increase their risk for cardiovascular disease and diabetes.
2. Pilot Food Prescriptions as well as Food Vouchers for Nutritional Wellness support pending funding.
3. Once participants are identified as high risk, they are to be managed by the RN.
4. Case Conferencing model to be incorporated to review and adjudicate the cases once a month.
Appendix N

De-identified Logic Models

<table>
<thead>
<tr>
<th>Program: Nutrition and activity education</th>
<th>Logic Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Situation: The goal is to reduce the risk of diabetes disease in the underserved population of Kent County by the reduction and/or elimination of modifiable risk factors. According to the American Diabetes Association, the diagnostic criteria for prediabetes includes an elevated fasting blood glucose level (100mg/dL-125mg/dL) and a glycated hemoglobin (HbA1c) value of 5.7% to 6.4%. Health disparities in the U.S. exist by ethnicity, race, geography, and socioeconomic status.</td>
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</tbody>
</table>

### Inputs

- Screen 500 individuals for prediabetes disease every year.
- Screen 250 individuals for prediabetes disease every year.
- Estimate of 42% will be high risk.
- Low-risk individuals rescreen their biometrics every year.
- High-risk individuals rescreen their biometrics every six months.
- High-risk category includes those with a fasting blood sugar of 100 mg/dL to 125 mg/dL and an HbA1c of 5.7-6.4%.

### Activities

- Screening
- Education
- Referrals
- Nutritional Wellness Education

### Outputs

- Participation
- Short-term
- Medium-term
- Long-term

### Assumptions

- Barriers to health care due to culture, language, and legal status.
- Lack of access to health care due to lack of knowledge of insurance.

### External Factors

- Family history
- Other health/community resources
- Lack of cultural competence by agencies/service providers

---

*Epic (EMR)*

---

*Schools, organizations, and community partners associated with the program.*

*Education teams and associated budgetary resources.*

*Referrals*

*Community partners to support screenings include but not limited to:*

*Community partners for a secure location to hold screenings.*

*Nutritional wellness education Community Partnerships such as:*

*Physical Activity*

*Exercise instructions from the community to provide physical activities.*

---

*Stratified into two categories:*

1. Wellness FBS <100 mg/dL
2. High Risk FBS >100 + High HbA1c

*Schedule 6 month follow up appointments for all prediabetic participants at the biometric screen.*

*Schedule a Know Your Numbers Class within the first three months of their biometric screening.*

*Refer prediabetics to Diabetes Prevention Program within the first month of entering into the program.*

*Create a care plan for physical activity and nutritional wellness within the first three months of their initial screen:* a. May include goal setting and offering access to physical activity resources b. May include goal setting and scheduling a cooking class c. May include working with CHW to identify healthy food options within the community d. May include a food prescription and voucher plan.

*High Risk Graduation is based on the completion of:* a. A minimum of three biometric screens in one year (initial screen, 6 months, and 12 months). b. If the participant remains prediabetic, they are to remain in the program up to three years.

*They will need two consecutive screenings demonstrating progression before discharge.*

*They will need to complete a Know Your Numbers class, a physical activity plan, and a diabetes coaching plan.*

*Over 95% of the clients will establish a medical home.*

*Clients demonstrate positive behavioral change related to identified diabetes risk factors as evidenced by increased in physical, nutritional wellness and health literacy engagement by 10% from baseline.*

*By targeting partnerships to refer higher prediabetic individuals, the program aims to increase the number of higher priority participants by 25%.*

*Increase graduation rate >98%.*

*Increase the number of participants who are referred to Diabetes Prevention Program to be scheduled by >50%.*

*Increase the number of prediabetic participants to attend the first Diabetes Prevention class by >50%.*

*Reduce the wait list of participants entering into a Diabetes Prevention Program to less than 10%.*
EVALUATION OF A PRIMARY PREVENTION PROGRAM

Logic Model

**Program:** Health screenings and associated educational resources.

**Situation:** The goal is to reduce the risk of cardiovascular disease in the underserved population of Kent County by addressing modifiable risk factors.

Cardiovascular disease (CVD) is one of the leading causes of mortality among Hispanics and African Americans residing in the United States. Cardiovascular Disease (CVD) is an umbrella term referring to the cluster of conditions affecting the heart and circulatory system.

**Inputs**

- Education and training for community partners.
- Referrals to community PCPs and specialists.
- Biomarker screenings for community partnerships to support screenings for all.

**Activities**

- Screen 300 individuals for cardiovascular disease every year for.
- Screen 250 individuals for anemia every year for.

**Outputs**

- Estimate of 42% will be high risk.
- Low-risk individuals receive biomarker screenings every six months.
- High-risk individuals receive biomarker screenings every six months.
- High-risk category is those with a CVD risk score of 10% or higher.

**Participation**

- Staff will quantify the risk of CVD through the use of standardized health screening measures.

**Outcomes — Impact**

- Staff will analyze and interpret data to determine the effectiveness of the program.
- Staff will develop strategies to improve the program.

**Long-term Outcomes**

- Graduation is based on the completion of three classes:
  1. Wellness/CVD risk >10%
  2. High-risk CVD risk >10%

- If the CVD risk scores are increased, they will work to reduce the risk.

**Assumptions**

- Barriers to health care due to culture, language, and social status.
- Lack of access to health care due to lack of knowledge of insurance.

**External Factors**

- Family history of heart disease.
- Other health and community resources.
- Lack of cultural competence by agency/service providers.

<table>
<thead>
<tr>
<th>Strata into two categories:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Wellness/CVD risk &gt;10%</td>
</tr>
<tr>
<td>2. High-risk CVD risk &gt;10%</td>
</tr>
</tbody>
</table>

**Schedule**

- 6-month follow-up appointments for all high-risk CVD risk participants at the biometric screening.

- Schedule a Know Your Numbers class within the initial three months of the biometric screening.

- Create a care plan for physical activity and nutritional wellness for all three months of the initial screening.
  - May include goal setting and offering access to physical activity resources.
  - May include goal setting and scheduling a cooling class.
  - May include working with CHW to identify healthy food options within the community.
  - May include a food prescription and voucher plan.

- Over 95% of the clients will establish a medical home.

- Clients demonstrate positive behavioral change related to identified cardiovascular risk factors as evidenced by increased physical, nutritional wellness, and health literacy.

- By targeting partnerships to offer higher acuity CVD risk strategies, the program aims to increase the number of high-priority participants by 25% and increase graduation rate by 10%.
Appendix O

De-identified A3

EVALUATION OF A PRIMARY PREVENTION PROGRAM

A3 Description: Business Case for Engagement

Exec. Sponsor(s): Maria Andrea Peterson/Phallon Lovelady

Site/Location: Grand Rapids

Event #: Revisions:

A3 Owner(s):

PI Facilitator(s):

Maria Andrea Peterson

1. BUSINESS CASE

The program was designed to mirror the New Ulm Project. It was a community-wide CVD prevention project aimed to address gaps in a conversation based strategy. The interventions used a social ecological model. The findings suggested efficacy for the project interventions. The study used the same EHR, laboratories, clinical workflow processes, ensuring a level of uniformity of measurement of key parameters and inclusion criteria. The Site did not have differences in unforeseen extraneous variables related to ISDH/CHS tracked engagement and completion in the program. This business case aims to change the model of delivery of the interventions in order to reduce the CVD risk and diabetes risk for the underserved population of Kent County and identify evaluative factors to increase engagement and completion.

All other participants

2. CURRENT STATE

If we...

Then we expect...

Create Care Management teams to track patients’ progress...

To increase the number of follow ups and graduation rate.

If we create an evaluation plan and share with the team...

To be able to measure the interventions and how everyone’s role plays into supporting the plan.

3. HYPOTHESIS

4. GAP ANALYSIS

1. New Ulm Project the interventional and control groups used the same EMRs, did not following up with endpoints with Hasbro EMR.

2. Populations in the New Ulm study were not similar to the Kent County populations. Unforeseen extraneous variables reflecting ISDH/CHS tracked engagement and completion of the program.

3. Anyone over 2% CVD risk score were returning every 6 months from 2013-2017. Not considered high risk per standards of care.

4. Graduation of the program: follow up visits had no protocol.

5. Lack of standard definitions and standard of care lead to multiple ways to engage and apply interventions such as but not limited to rescheduling and follow ups.

6. Misalignment of resources. Priorities made to the community did not align with the operational budget or staff availability.

7. Misalignment and investing in interventions such as physical activity services which changed role descriptions and workforce development, etc.

8. No evaluation plan that was shared with the team.

5. COMPLETION PLAN

Action Item: Who When Status

1. Redesign the logic model and meet with the data team.

2. Identify Financial Implications of the interventions.

3. Approve and adopt new standards of care for prevention management of CVD and Diabetes.


6. CONFIRMED STATE

BALANCED MEASURES

Future State Metrics Goal VALUE

Average Graduation Rate (R&R and HR stratified) >80% HR & >60% R&R

4. EXPERIMENTS

December of 2017 initiated a Care Management approach to support preventive services. In April 2018 included the use of PI tools to track team goals and identify a MDI tool.

Change the logic model to support tracking clinical impact.

7. COMPLETION PLAN

Action Item: Who When Status

1. Redesign the logic model and meet with the data team.

2. Identification of Financial Implications of the interventions.

3. Approve and adopt new standards of care for prevention management of CVD and Diabetes.


8. LESSONS LEARNED

What went well...

What could be improved...

What did we learn...

What would you do differently...
Table 2. Engaged Stakeholder Workgroup (ESW) Mapping Exercise

<table>
<thead>
<tr>
<th>Priority</th>
<th>Individual/Group</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decreasing CVD and DM risks in participants and the community and program value</td>
<td>Vice President of the department including all programs</td>
<td>Decision making participant (Admin)</td>
</tr>
<tr>
<td>What is the evaluation question? What question do we want the data to answer? Program value</td>
<td>Biostatistician and Data Analysts</td>
<td>Decision making Participant (Admin)</td>
</tr>
<tr>
<td>Program definition, structure, and program value</td>
<td>Manager of Community Programs</td>
<td>Decision making Participant (Admin)</td>
</tr>
<tr>
<td>Financial impact and program value</td>
<td>Manager of Business Operations</td>
<td>Decision making Participant (Admin)</td>
</tr>
<tr>
<td>Program definition, structure, role clarity, and program value</td>
<td>Supervisor of Community Programs</td>
<td>Decision making Participant</td>
</tr>
<tr>
<td>Program definition, structure, role clarity, program value, participant health outcomes</td>
<td>Case Manager for program participants</td>
<td></td>
</tr>
<tr>
<td>Role clarity and program value</td>
<td>Staff for program</td>
<td></td>
</tr>
<tr>
<td>Role clarity and program value</td>
<td>Program Specialist for Community Programs</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Community Health Worker</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Supporting Staff within the Department</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Case managers</td>
<td></td>
</tr>
</tbody>
</table>
Appendix Q

Logic Model Framework

**SITUATION**

See below

**PRIORITIES**

Decrease CVD and diabetes for English speaking citizens of GR with socioeconomic barriers

**INPUTS**

- Healthcare Professionals
- DNP student
- Time
- Money
- Material
- Technology
- Participants

**OUTPUTS**

- Conduct Meetings Educational offerings
- Provide Resources Referrals
- Partner with community Churches Schools Health-care orgs Community Centers

**ACTIVITIES**

- English speaking individuals in the community especially African Americans
- Engage community partners and free resources within the community
- Individuals in the community especially targeting African American males

**PARTICIPATION**

**OUTCOMES - IMPACT**

- Short Term
  - Bring Awareness
  - Empowerment
  - Motivation
  - Encouragement
  - Hope
- Medium Term
  - Evaluation and monitoring using metrics
- Long Term
  - Behavioral changes
  - Increase prevention practices in participants at risk
  - Decrease morbidity and mortality related to CVD and DM

**External Factors**: SDH five key areas: economic stability, education, social and community context, health and health care, neighborhood and built environment (DHHS, 2014).

**Situation**: AA adults in Grand Rapids, MI have been disproportionately affected by CVD and DM over the last seven years (BBC Research & Consulting, 2017). Obesity due to a sedentary lifestyle and unhealthy diet are preventable risk factors that can reduce the rate of morbidity and mortality related to DM and CVD. (AHA, 2017; ASA, n.d.; ADA, 2017; NKF, 2015). In 2017, a community health department within a West Michigan health care system began a program to screen for CVD and DM. This program targets the African American population within Grand Rapids, MI, connecting them to community resources while also providing opportunities to increase their access to fitness and fresh produce (Spectrum Health, n.d.). The program effectiveness will be determined by pre and post biometric data from participants within the program.

**Assumptions**: Modifiable risk factors including diet and physical activity level impact risk for CVD and DM; targeting African Americans will impact morbidity and mortality related to CVD and DM; prevention education will promote healthy behavior changes.
Appendix R

Mixed Methods Survey

Please rate each statement on a scale of 1 to 5, with 1 being “Strongly Disagree” and 5 being “Strongly Agree”

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. This was a high quality presentation.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2. I would recommend this presentation to others.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>3. I received the amount of knowledge and/or skills that I needed from this presentation.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>4. I will use the knowledge and/or skill(s) that I received from this presentation.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>5. The speaker was knowledgeable on this topic.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

For each statement, please rate your knowledge of this subject before today’s training and after today’s training on a scale of 1–5, with 1 being “No Knowledge” and 5 being “Highly Knowledgeable”

<table>
<thead>
<tr>
<th>Class Objectives</th>
<th>BEFORE Today’s Training</th>
<th>AFTER Today’s Training</th>
</tr>
</thead>
<tbody>
<tr>
<td>6. Define heart disease</td>
<td>No Knowledge</td>
<td>Very Limited Knowledge</td>
</tr>
<tr>
<td>7. Discuss causes of heart disease</td>
<td>No Knowledge</td>
<td>Very Limited Knowledge</td>
</tr>
<tr>
<td>8. Understanding of biometric screening numbers</td>
<td>No Knowledge</td>
<td>Very Limited Knowledge</td>
</tr>
<tr>
<td>9. Define diabetes</td>
<td>No Knowledge</td>
<td>Very Limited Knowledge</td>
</tr>
<tr>
<td>10. Discuss causes of diabetes</td>
<td>No Knowledge</td>
<td>Very Limited Knowledge</td>
</tr>
<tr>
<td>11. Understanding of blood pressure results</td>
<td>No Knowledge</td>
<td>Very Limited Knowledge</td>
</tr>
</tbody>
</table>
12. Discuss modifiable risk factors

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
</table>

13. Discuss non-modifiable risk factors

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
</table>

14. What did you like best about the presentation?

____________________________________________________________________________________
____________________________________________________________________________________

15. What would you change or improve about the presentation?

____________________________________________________________________________________
____________________________________________________________________________________

16. What topics/health subjects would you suggest or like to know more about for future presentations?

____________________________________________________________________________________
____________________________________________________________________________________

17. Comments:

____________________________________________________________________________________
____________________________________________________________________________________
____________________________________________________________________________________
____________________________________________________________________________________