A Quality Improvement Program in a Safety Net Clinic Serving Vulnerable Populations

Kaitlin J. Hendriksma

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A Quality Improvement Program in a Safety Net Clinic Serving Vulnerable Populations

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Date of Submission: April 21, 2017
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Abstract

The Patient Protection and Affordable Care Act of 2010 resulted in major changes to healthcare infrastructure in the United States, with two main areas of concentration: healthcare financing and population health management. Quality improvement programs focus on improving healthcare quality for populations with conscious efforts to decrease healthcare-associated expenditures. Quality improvement interventions can include patient-reported outcomes, clinical decision support systems, and clinical dashboards. The purpose of the Doctor of Nursing Practice project was to formally implement a quality improvement program for chronic disease management in a safety net clinic serving vulnerable populations. The Donabedian model served as the conceptual model to frame the formal quality improvement program. The Plan-Do-Study-Act model guided the implementation of the formal quality improvement program. Despite the lack of statistically significant differences between pre- and post-implementation outcome measures, the Doctor of Nursing Practice project established a standard documentation process for several chronic diseases supported by a procedure manual, volunteer education modules, and clinical dashboards. Limitations of the project included the brief evaluation period, the low daily volume of patients with the selected chronic diseases, and the inadequate volunteer survey response rate. Recommendations for sustainability and future iterations involve an investigation into the documentation process of underperforming outcome measures, the identification of an effective process to solicit volunteer feedback on training modules, and the continuation of the clinical dashboard process to generate monthly compliance data to monitor documentation variation over time. The formalization of the quality improvement program in the safety net clinic during this Plan-Do-Study-Act cycle provided a
strong foundation from which to launch the next Plan-Do-Study-Act cycle focusing on improved volunteer involvement.
Executive Summary

The Patient Protection and Affordable Care Act of 2010 resulted in major changes to healthcare infrastructure in the United States, with two main areas of concentration: healthcare financing and population health management. These changes resulted in major upheaval for healthcare organizations, requiring significant changes to documentation systems to allow aggregate reporting of patient outcomes to qualify for value-based reimbursement (Zuckerman, 2014). While traditional healthcare organizations have the financial and personnel resources to weather the tides of changing healthcare policies, such requirements placed a burden on the sparse operating budgets of nontraditional healthcare organizations such as safety net clinics (Hall, 2011).

Safety net clinics are community-based healthcare centers that serve the underinsured and uninsured at a discounted rate (Andrulis & Siddiqui, 2011; Gold et al., 2015). The Doctor of Nursing Practice project took place in a safety net clinic located in an urban setting serving more than 2,000 patients yearly. Safety net clinics will require creative solutions to diversify funding as a result of changing healthcare policy and financing (Hall, 2011). Adoption of electronic health record systems facilitates the creation and implementation of quality improvement programs in safety net clinics, potentially leading to novel sources of funding from foundations, private citizens, and/or government agencies.

Evidence-based quality improvement initiatives for chronic disease management within the context of safety net clinics were researched. Successful quality improvement programs solicit and record data from patients in order to guide adherence to evidence-based standards of care (Gold et al., 2015). Effective quality improvement programs account for unique organization culture while simultaneously utilizing the capabilities of the multidisciplinary
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healthcare team (Gold et al., 2015; Nápoles, Santoyo-Olsson, & Stewart, 2013). The integrated literature review highlighted the following successful quality improvement interventions: patient-reported outcomes, clinical decision support systems, and clinical dashboards. The results of the literature review were further integrated using conceptual and implementation models to guide the implementation and evaluation of a sustainable, evidence-based quality improvement program.

The Donabedian model was used to provide a theoretical framework to explore the various aspects of the phenomenon of interest, offering a comprehensive understanding of the structure of the safety net clinic’s staffing model, the process of volunteer orientation, and the outcome of documentation compliance with recommended outcome measures (Donabedian, 1988). The Plan-Do-Study-Act (PDSA) model was used to guide the implementation of the proposed interventions to address the clinical question (Institute for Healthcare Improvement [IHI], 2016). Typically, the PDSA model is effective for small-scale changes that occur in a short time period and is especially effective in continuous quality improvement efforts.

The safety net clinic has been providing healthcare services to uninsured and underinsured patients for twenty years by means of volunteer healthcare professionals. While the use of volunteer healthcare professionals is cost-effective for the safety net clinic and the patients it serves, the disadvantages include the structure of variable staffing and a potentially inconsistent process of documentation of evidence-based care in the electronic health record. To investigate and ameliorate these potential variations, the administrative leadership secured a commercial grant to support the creation and the implementation of a quality improvement program during the 2016 calendar year. A multidisciplinary team of staff members and volunteers was convened to develop and implement a quality improvement program. Working
collaboratively, the team identified the most prevalent chronic disease diagnoses and designated evidence-based outcome measures as benchmarks for the management of these chronic diseases. The first Plan-Do-Study-Act (PDSA) cycle of the quality improvement program was informally implemented in the safety net clinic in September 2016.

Analysis of the first PDSA cycle by the Doctor of Nursing Practice student revealed opportunities pertaining to quality improvement program structure and process as well as outcomes. The purpose of the Doctor of Nursing Practice project was to address these opportunities through the formalization of the quality improvement program. As part of the Plan phase of this Plan-Do-Study-Act cycle, the components of the formalized quality improvement program were developed collaboratively with the safety net clinic staff. These included a procedure manual, volunteer education modules, and clinical dashboards. The procedure manual established a standard process to document care and management of patients with four chronic diseases. The volunteer education modules were used for two purposes: training and soliciting feedback. The training focused on how to document patient care and chronic disease management in the standard process. Soliciting volunteer feedback involved surveys about the efficacy of the training and potential barriers to documentation compliance. Clinical dashboards were used for initiating a feedback process to disseminate clinical outcomes of documentation compliance to the safety net clinic staff and volunteers. During the Do phase, the procedure manual was published, the volunteer education modules were distributed via email, and the clinical dashboards were posted in the safety net clinic.

Throughout the Study phase, the documentation compliance data as well as the response from the volunteer survey were analyzed. Documentation compliance was compared for two four-week periods: before this Plan-Do-Study-Act cycle and after the implementation of this
Plan-Do-Study-Act cycle. Analysis of the comparison of documentation compliance for each outcomes measure did not generate any statistically significant improvements in documentation compliance. Analysis of the volunteer surveys was limited by the inadequate response rate. In general, the volunteers reported some difficulty in the documentation process and responded favorably to the education. Unfortunately, there was no survey data generated regarding barriers to documentation in the electronic health record.

As part of the Act phase, the lessons learned during this Plan-Do-Study-Act cycle were reviewed and recommendations were made for future Plan-Do-Study-Act cycles within the safety net clinic. The quality improvement program components were integrated into the structure and process of safety net clinic staff to ensure project sustainability beyond this Plan-Do-Study-Act cycle. Recommendations for future iterations include an investigation into the documentation process of underperforming outcome measures, the identification of an effective process to solicit volunteer feedback on training materials, and the continuation of the clinical dashboard process to generate monthly compliance data to monitor documentation variation over time.

The impact of this Plan-Do-Study-Act cycle was the formalization of the quality improvement program in the safety net clinic. The impact was six-fold. First, this PDSA cycle established a standard process to document care and management of patients with chronic diseases. The standard process was integrated into the structure of the safety net clinic through the publication of the procedure manual and the distribution of the volunteer training modules. Second, this PDSA cycle created a process for training volunteers how to document patient care and chronic disease management in the standard process. The training process was incorporated into the structure of the safety net clinic through its distribution to current volunteers as well as
the planned circulation to future volunteers by the Volunteer Coordinator. Third, this PDSA cycle included a data extraction process to export pertinent clinical information from the electronic health record. This reporting process became part of the safety net clinic structure through embedding the reports in the electronic health record report library. Fourth, this PDSA cycle involved the creation of a compliance analysis program process that instantly analyzes clinical information for documentation compliance. Fifth, this PDSA cycle launched a feedback process to disseminate clinical outcomes to the safety net clinic staff and volunteers through the clinical dashboards. This clinical dashboard process was assimilated into the structure of the safety net clinic through the assignation of future analysis to the project and quality manager. The project and quality manager, reporting to the Medical Director, will be responsible for the process of exporting the data from the electronic health record, running the compliance analysis program, and posting the clinical dashboard on a monthly basis. Finally, this PDSA cycle provided recommendations for future PDSA cycles within the safety net clinic. The formalization of the quality improvement program in the safety net clinic during this Plan-Do-Study-Act cycle provides a strong foundation from which to launch the next Plan-Do-Study-Act cycle, focusing on greater volunteer involvement.
**Introduction and Background**

Healthcare in the United States was practically and fiscally unsustainable, with skyrocketing healthcare-associated expenditures and surprisingly poor population health outcomes (Berwick, Nolan, & Whittington, 2008). As a result, national healthcare visionaries collaborated to develop a new paradigm for healthcare policy in the United States: The Triple Aim. The Triple Aim promoted the following tenets: decrease the cost of healthcare, improve the quality of healthcare, and improve patient satisfaction and engagement in the healthcare experience (Berwick et al., 2008). The adoption of the Triple Aim has had far-reaching implications for healthcare policy and practice in the United States.

The call for healthcare policy reform produced the transformative Patient Protection and Affordable Care Act (ACA) of 2010. Applying the principles from the Triple Aim, the ACA resulted in major changes to healthcare infrastructure in the United States, particularly in the realm of healthcare financing. In an effort to move away from traditional fee-for-service payment schedules, policymakers introduced the concept of financial incentives for meeting or exceeding specified quality benchmarks, establishing a system of value-based reimbursement (Korda & Eldridge, 2011). Additionally, the Triple Aim shifted the focus from individual acute problems to the broader issues of population health and chronic disease management (Zuckerman, 2014). These changes resulted in major upheaval for healthcare organizations, needing to significantly enhance documentation systems to allow aggregate reporting of patient outcomes to qualify for value-based reimbursement. While traditional healthcare organizations have the financial and personnel resources to weather the tides of changing healthcare policies, such requirements placed an excessive burden on the sparse operating budgets of nontraditional healthcare organizations such as safety net clinics.
Safety net clinics are community-based healthcare centers that serve the underserved and uninsured at a discounted rate (Andrulis & Siddiqui, 2011; Gold et al., 2015). Safety net clinics are typically frequented by vulnerable populations, from individuals from various cultures with high potential for limited English proficiency to individuals with complex medical and behavioral issues. The Doctor of Nursing Practice project took place in a safety net clinic located in an urban setting serving more than 2,000 patients yearly. The safety net clinic utilizes a unique strategy to provide healthcare services at a significantly reduced cost to patients: the services of more than 130 volunteer healthcare professionals. Despite this resourceful method of cost-reduction, the administration and board members of the safety net clinic recognized the effects of the changing political landscape could have on the healthcare financing for their organization.

The introduction and implementation of the Affordable Care Act impacted the ability of safety net clinics to continue to provide care to these vulnerable populations (Hall, 2011). While the ACA provided an initial boost in funding to safety net clinics for modifications to existing clinic infrastructure, ultimately the ACA mandated a reduction in traditional funding mechanisms such as the Medicaid disproportionate-share hospital program (Andrulis & Siddiqui, 2011). Additionally, the potential supposition that the ACA ensured universal healthcare coverages results in a shift of both governmental and private funding away from supporting uninsured and/or underinsured individuals (Andrulis & Siddiqui, 2011). Therefore, safety net clinics will need to diversify their funding sources to continue to provide care to vulnerable populations.

Safety net clinics will require creative solutions to obtain funding. The utilization of health information technology systems such as electronic health records allow safety net clinics
to capitalize on meaningful use monies offered by Medicaid and Medicare to clinicians participating in electronic health record incentive programs (Andrulis & Siddiqui, 2011; Blumenthal & Tavenner, 2010; Centers for Medicare and Medicaid Services, 2016). However, given the small percentage of insured patients served by the safety net clinic, this strategy may be more effort than it is worth. Adoption of electronic health record systems may facilitate the creation and implementation of quality improvement programs in safety net clinics, potentially leading to novel sources of funding from foundations, private citizens, and/or government agencies. Quality improvement programs offer creative solutions for improving healthcare in the safety net clinics by providing high quality care at decreased cost while simultaneously establishing an external accountability system for healthcare providers (Berwick et al., 2008; Korda & Eldridge, 2011).

**Clinical Question**

Historically, safety net clinics have not concentrated attention on developing quality improvement programs due to a number of factors, including limited time, inadequate number of staff, use of healthcare professional volunteers, and financial constraints (Gold et al., 2015). The limited resources of safety net clinics may impact the scope of prospective quality improvement programs. However, safety net clinics can partner with academic institutions, commercial organizations, and/or community stakeholders to design and implement tailored quality improvement programs (Nápoles et al., 2013). Implementing effective quality improvement programs for safety net clinics first required a thorough organizational assessment to generate the following comprehensive clinical question: How to formally implement and evaluate a sustainable, evidence-based quality improvement program for chronic disease management in a
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safety net clinic serving vulnerable populations? The integrated literature review yielded evidence from research studies supporting selected evidence-based initiatives.

Evidence-Based Initiative

During the development of the literature review, the Doctor of Nursing Practice (DNP) student explored relevant research pertaining to the phenomenon of interest within the safety net clinic as well as evidence-based initiatives to address the phenomenon of interest. The general characteristics of successful quality improvement programs were investigated and summarized. Evidence-based initiatives for chronic disease management within the context of safety net clinics were researched, providing the foundation for the DNP project plan. Successful quality improvement programs may include, but are not limited to, the following types of interventions: patient-reported outcomes, clinical decision support systems, and clinical dashboards.

Quality Improvement Programs

Effective quality improvement programs have a number of distinctive characteristics. Successful quality improvement programs solicit and record pertinent objective and subjective data from patients in order to guide adherence to evidence-based standards of care (Gold et al., 2015). Effective quality improvement programs account for unique organization culture while simultaneously utilizing the capabilities of the multidisciplinary healthcare team (Gold et al., 2015; Nápoles et al., 2013). Furthermore, effective quality improvement programs employ clear policies and procedures with well-defined roles and responsibilities for the members of the multidisciplinary healthcare team (Nápoles et al., 2013). However, these policies and procedures are subject to continuous scrutiny; thus, the quality improvement program facets are frequently updated both to adhere to changing standards of care and in response to ineffective delivery processes (Nápoles et al., 2013). Quality improvement programs employ health information
technology systems to capture available financial incentives offered by third-party payers (Korda & Eldridge, 2011). One example of an effective quality improvement program intervention is the use of patient-reported outcomes in the development of the individualized treatment plan.

**Patient-Reported Outcomes**

Patient-reported outcomes (PROs) represent a collection of objective patient-reported data that can guide the development of patient-centered treatment plans (Landes et al., 2015; Scott & Lewis, 2014). PROs inform the management of chronic disease over time by monitoring the efficacy of therapeutic interventions (Landes et al., 2015; Scott & Lewis, 2014). Typically, incorporation of PROs requires the utilization of health information technology systems for storage, organization, and comparison of data points by the multidisciplinary healthcare team (Landes et al., 2015; Scott & Lewis, 2014). Landes et al. (2015) describe the incorporation of PROs into the treatment plan to potentially produce improvement in clinical outcomes and patient activation in individuals with mental health disorders. The results of the research of Landes et al. (2015) to study the use of PROs in the treatment plan is pending. Further research is needed to evaluate if using PROs in the treatment plan improve clinical outcomes and/or patient activation to participate in the treatment plan.

**Clinical Decision Support Systems**

Clinical decision support systems vary greatly but typically combine electronic health records with health information technology capability to support healthcare providers in the provision of evidence-based care (Gold et al., 2015; Shelley et al., 2011). Clinical decision support systems can provide concise visual organization of designated quality metric discrepancies with individual patient records (Gold et al., 2015). Clinical decision support systems may include alerts for abnormal vital signs or laboratory results (Shelly et al., 2011). By
providing templates for electronic provider order entry embedded with evidence-based
guidelines, the use of clinical decision support systems can improve healthcare clinician
adherence to standard treatment recommendations for type 2 diabetes mellitus and hypertension
(Gold et al., 2015; Shelley et al., 2010).

Evidence from recent research studies supports the use of clinical decision support
systems in the management of chronic diseases such as diabetes and hypertension. Gold et al.
(2015) implemented a quality improvement intervention designed by Kaiser Permanente to
address the quality of type 2 diabetes mellitus care in a safety net clinic serving vulnerable
populations. The Kaiser Permanente intervention was targeted at improving provider adherence
to type 2 diabetes mellitus evidence-based guidelines for the prescription of aspirin, statins, and
angiotensin converting enzyme-inhibitors or angiotensin receptor blockers for patients with type
2 diabetes mellitus. The clinical decision support system component included pre-programmed
orders sets to facilitate prescription of the recommended medications and alerts to providers
showing patients who would qualify for the recommended medication but did not have a current
prescription (Gold et al., 2015). The study design randomly assigned safety net clinics to adopt
the intervention as standard practice in a staggered way, designating early adopters as the
intervention group and late adopters as the control group (Gold et al., 2015). Gold et al. (2015)
reported significant differences ($p<0.001$) between the control and intervention groups in a
regression analysis model, indicating that increased provider compliance with prescription of the
indicated medications for the appropriate patients in the intervention group.

Utilizing a quasi-experimental design, Shelley et al. (2011) investigated the effects of a
clinical decision support system tool in reducing blood pressure measures in vulnerable
populations accessing healthcare services at four safety net clinics in New York. The clinical
decision support system tool had five aspects: provider alerts to indicate uncontrolled hypertension, hypertension-specific patient information templates, medical adherence forms for nursing staff, order sets to promote the use of medication and appropriate laboratory tests, and clinical reminders to ask about tobacco use (Shelley et al., 2011). The authors reported that the use of a multi-component clinical decision support system tool yielded significant improvements ($p<0.001$) in blood pressure control (both systolic blood pressure and diastolic blood pressure) for patients with diabetes.

Clinical Dashboards

Clinical dashboards are visual records of clinical performance related to designated benchmarks (Weiner, Balijepally, & Tanniru, 2014). Clinical dashboards provide meaningful feedback to both healthcare providers and healthcare administrators (Koopman et al., 2011; Weiner et al., 2014). As a result, clinical dashboards improve staff access to performance information, foster discourse about congruence between actual performance and organizational goals, and increase dissemination of performance data between separate healthcare departments (Koopman et al., 2011; Weiner et al., 2014). Additionally, clinical dashboards improve healthcare provider compliance to gold standard benchmarks for disease management (Koopman et al., 2011). Weiner et al. (2015) reported anecdotal evidence supporting the use of clinical dashboards in staff management by prompting early investigation into underperforming metrics, providing external accountability for staff members, and facilitating job performance evaluations.

Evidence from recent research studies supports the use of clinical dashboards in healthcare settings for the management of type 2 diabetes mellitus (Koopman et al., 2011). Koopman et al. (2011) designed a simulation-based observational study comparing physician use
of a clinical dashboard electronic health record to the traditional electronic health record interface. The purpose of the study was to determine if the presence of a clinical dashboard decreased the amount of time required for the participating physicians to locate ten diabetes-related data points (Koopman et al., 2011). Koopman et al. (2011) reported that physicians were able to locate the requisite data points significantly faster ($p<0.001$) when using the clinical dashboard. Additionally, Koopman et al., (2011) compared the number of physician-errors in the data collection process, reporting that the only physician errors occurred while using the traditional electronic health record system, indicating the potential impact of clinical dashboards in improving care.

The implementation of multicomponent quality improvement programs in safety net clinics may result in reducing health disparities for vulnerable populations while simultaneously facilitating clinic participation in electronic health record incentive programs to diversify sources of funding. Effective quality improvement programs that address chronic disease management employ multifaceted strategies to improve healthcare, including the incorporation of evidence-based quality improvement interventions with the utilization of the capabilities of the multidisciplinary healthcare team (Korda & Eldridge, 2011). The integrated literature review highlighted the following successful quality improvement interventions: patient-reported outcomes, clinical decision support systems, and clinical dashboards. The results of the literature review were further integrated using conceptual and implementation models to guide the implementation and evaluation of a sustainable, evidence-based quality improvement program for a safety net clinic serving vulnerable populations.
Conceptual Model: The Donabedian Model

The Donabedian model provided a theoretical framework to explore the various aspects of the phenomenon of interest. In 1988, Dr. Avedis Donabedian proposed a conceptual model designed to evaluate the quality of healthcare using three dimensions: structure, process, and outcomes (see Appendix A). Structure refers to the physical environment in which healthcare is provided to patients. Structure can include the type of equipment utilized, the number and type of healthcare staff members, and the organization of the healthcare system (Donabedian, 1988). Process refers to the actual provision of healthcare. For example, process could include patient education or utilization of a clinical decision support system to guide provider compliance with evidence-based practice guidelines. Outcomes refers to the yield of the healthcare process (Donabedian, 1988). Outcomes could include patient engagement in the healthcare treatment plan or compliance with American Diabetes Association recommendations for type 2 diabetes mellitus care. The Donabedian (1988) model requires that all three dimensions are weighted equally to produce high quality healthcare services.

The Donabedian model was utilized to provide a comprehensive understanding of the implementation and evaluation of chronic disease management quality improvement program, from the structure of the safety net clinic’s staffing model to the process of volunteer orientation, ultimately leading to the outcomes of documented compliance with recommended outcome measures (Donabedian, 1988). The structure of the safety net clinic included the physical infrastructure of the clinic with the design of the nursing station and exam rooms to efficiently deliver care. The structure of the safety net clinic healthcare personnel was comprised of both staff and volunteers. Additionally, the structure included the particular electronic health record system used by the safety net clinic, Athena Health. The processes to consider in the safety net
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A clinic focused primarily on the volunteer orientation process but also included the patient intake process as well as the provider assessment and plan process. For the quality improvement program evaluation, the outcomes for this project included healthcare staff adherence to ordering, documenting, and completing designated evidence-based outcome measures for the safety clinic’s top four chronic disease diagnoses: type 2 diabetes mellitus, hypertension, depression, and anxiety. While the Donabedian model provided a framework for exploration of the phenomenon of interest, there was also a need for a theoretical framework to guide the implementation of the proposed interventions to address the phenomenon of interest.

Implementation Model: The Plan-Do-Study-Act Model

The Institute for Healthcare Improvement (IHI, 2016) promotes the Plan-Do-Study-Act (PDSA) model as implementation model for quality improvement efforts. The PDSA cycle is comprised of four cyclical, repeating phases: Plan, Do, Study, and Act (see Appendix B). Plan refers to effort and background work to propose change (IHI, 2016). Do refers to the implementation of the proposed change (IHI, 2016). Study refers to the process of analyzing and evaluating the outcomes of the proposed change (IHI, 2016). Act refers to the redesigning the initial proposed change to account for the lessons learned during the Do and Study phases (IHI, 2016). Typically, the PDSA model is effective for small-scale changes that occur in a short time period and is especially effective in continuous quality improvement efforts. The PDSA model served a theoretical framework that guided the implementation and evaluation of the chronic disease management QI program in a safety net clinic serving vulnerable populations.

Need and Feasibility Assessment of the Organization

The safety net clinic has been providing healthcare services to uninsured and underinsured patients for twenty years. The organizational structure includes a board of
directors, a limited number of administrative, medical, and dental staff members, and a workforce of primarily volunteer healthcare professionals. The care delivery process of the safety net clinic relies on a volunteer staff of physicians, physician assistants, nurse practitioners, nurses, and medical assistants, to assess, diagnose, treat, and manage acute and chronic health problems. While the use of volunteer healthcare professionals is cost-effective for the safety net clinic and the patients it serves, the disadvantages include the structure of variable staffing and a potentially inconsistent process of documentation of evidence-based care. Given the average of once monthly volunteer shifts at the safety net clinic, volunteer staff may not be familiar with the electronic health record system process for documentation of care. As a result, there could be significant variation in the processes of volunteer healthcare professional documentation. To investigate these potential variations and respond to the significant changes in national healthcare policy, the safety net clinic board of directors needed to take action to prompt meaningful change in organizational structure and process to promote improved outcomes, leading to improved quality of healthcare (Donabedian, 1988).

The safety net clinic’s board of directors set the broad strategic plan with input from the community and staff. The staff are then responsible for creating and implementing policies and procedures to carry out the strategic plan. Recently, the safety net clinic board of directors created a new strategic plan for the next three years of operation that included the goal of creating and implementing a quality improvement program. The administrative leadership applied for and received a commercial grant to support the creation and the implementation of a quality improvement program during the 2016 calendar year. The safety net clinic administration convened a multidisciplinary team of staff members and volunteers to support the creation and implementation of a quality improvement program.
The creation and implementation of the quality improvement program was supported by key organizational stakeholders. The multidisciplinary healthcare team for the quality improvement program included administrative leadership, the medical director, the clinical nurse manager, a volunteer nurse practitioner, and the Doctor of Nursing Practice (DNP) student. Working collaboratively, the team identified the top four most prevalent chronic disease diagnoses at the safety net clinic: type 2 diabetes mellitus, hypertension, anxiety, and depression. Then, the team designated evidence-based outcome measures as benchmarks for the management of the chronic diseases. Finally, the team emailed letters to the volunteer healthcare professionals as notification of the new documentation expectations in addition to providing basic supplemental materials for use in the clinic.

The first Plan-Do-Study-Act (PDSA) cycle of the quality improvement program was informally implemented in the safety net clinic in September 2016. Analysis of the first PDSA cycle by the Doctor of Nursing Practice student revealed deficits pertaining to quality improvement program structure and process as well as outcomes. The quality improvement program structure lacked an official written procedure manual. The quality improvement program process did not include the provision of comprehensive volunteer education program to support improvements in documentation compliance. Most significantly, the quality improvement program process lacked a formal measurement system to assess compliance with designated outcome measures as well as a feedback system to inform healthcare personnel of deficits in documentation. Without these structures and processes in place, it was difficult to achieve the desired outcomes of the quality improvement program. The DNP project focused on addressing these deficits during the next PDSA cycle beginning in October 2016. To fully understand the environment in which the next iteration of the PDSA cycle occurred, an analysis
of the strengths, weaknesses, opportunities, and threats (SWOT) was performed as part of the plan phase.

The SWOT analysis of the implementation of the Doctor of Nursing Practice (DNP) project within the organization provided a comprehensive evaluation of the internal and external environment (See Appendix C). The exploration of the internal environment included strengths and weaknesses of the project implementation in the organization. The strengths of the implementation of the DNP project in the safety net clinic could be categorized as structural elements in the Donabedian model (1988). The structure-related strengths included the dedicated staff and volunteers that are highly motivated to provide quality healthcare services and the safety net clinic’s utilization of an electronic health record system for clinical documentation. An additional strength identified was that the DNP project was aligned with the strategic plan of the organization. The weaknesses of the DNP project in the safety net clinic were described as structural problems. The structure-related weaknesses included the wide range of current and future endeavors that the safety net clinic is undertaking that may overburden the busy medical staff. Another structural weakness stemmed from the use of the volunteer workforce previously inundated with the task of caring for patients with major language barriers while navigating an unfamiliar EHR system. In addition to considering internal environmental factors, the external environment was surveyed for opportunities and threats.

The external environment included the opportunities and threats to the project outside of the organization. The opportunities surrounding the Doctor of Nursing Practice project in the organization were primarily financial. The successful development and implementation of the quality improvement program may improve the likelihood of qualifying for diverse funding sources. The major threats affecting the DNP project in the safety net clinic included the shifting
political climate in the United States, potentially threatening available resources associated with the Affordable Care Act (2010) legislation implementation. Taking into account the positive and negative factors surrounding the implementation of the DNP project in the organization, there was sufficient evidence of the need for structural and process modifications in the quality improvement program. The need for change in addition to the results of the SWOT analysis was considered during the formulation of the implementation plan for the DNP project in the safety net clinic.

**Project Plan**

**Purpose of Project with Objectives**

The purpose of the Doctor of Nursing Practice project was to address the deficits in the quality improvement program that were identified during the first Plan-Do-Study-Act cycle. The clinical question was how to formally implement and evaluate a sustainable, evidence-based quality improvement program for chronic disease management in the safety net clinic? The DNP project comprised the next PDSA cycle, which addressed both organizational structure and processes to improve outcomes related to the QI program. The evidence-based objectives attained by the DNP student during the project work included:

- Improvement of organizational structure by creating and implementing QI program procedure manual on February 6, 2017.
- Addressed the volunteer orientation process by creating, distributing, and evaluating volunteer education modules on February 6, 2017.
- Implemented a measurement system and feedback process for organization staff and volunteers by creating and posting a clinical dashboard on February 6, 2017.
• Measured outcomes by analyzing efficacy of QI program interventions by comparing pre-implementation to post-implementation compliance with designated outcome measures for statistically significant differences on March 12, 2017.

• Evaluated feasibility and sustainability of formal QI program by making written recommendations to the organization and DNP project team for the next PDSA cycle by March 30, 2017.

**Type of Project**

The Doctor of Nursing Practice project was a quality improvement program. Effective QI programs have a number of distinctive characteristics which were incorporated into this project. Successful QI programs solicit and record pertinent objective and subjective data from patients in order to guide adherence to evidence-based standards of care (Gold et al., 2015). Effective QI programs account for unique organization culture while simultaneously utilizing the capabilities of the multidisciplinary healthcare team (Gold et al., 2015; Nápoles et al., 2013). Furthermore, effective QI programs employ clear policies and procedures with well-defined role and responsibilities for the members of the multidisciplinary healthcare team (Nápoles et al., 2013). The DNP project integrated these QI program characteristics by including a procedure manual, education modules for the multidisciplinary healthcare team, and a clinical dashboard to measure and display healthcare professional compliance with recommended documentation standards. Furthermore, the DNP project employed the Plan-Do-Study-Act (PDSA) model, an effective, evidence-based framework frequently used in QI efforts, to provide direction for the structure and process of implementation of the formal QI program (IHI, 2016).

The DNP project utilized the PDSA model for continuous quality improvement to guide the implementation of the QI program (IHI, 2016). The PDSA cycle was used to direct the
planning of the QI program components, the implementation of the QI program in the safety net clinic, the analysis of the effects of the QI program on documentation compliance by healthcare professionals, and the recommendations for action steps for the next PDSA cycle based on the lessons learned during the implementation and study phases. Each phase of PDSA cycle was influenced by the characteristics of the setting of the DNP project as well as identification of the necessary resources for the DNP project.

Setting and Needed Resources

The Doctor of Nursing Practice project took place in a safety net clinic serving uninsured and underinsured individuals in an urban setting. The quality improvement program focused on primary care visits for management of the following chronic diseases: type 2 diabetes mellitus, hypertension, depression, and anxiety. The organizational personnel involved in the quality improvement program included the medical director, the clinical nurse manager, volunteer nurses, volunteer medical assistants, and volunteer providers. The technology needed for the quality improvement program was comprised of the electronic health record system (Athena Health) for data recording and data reporting, and Microsoft Office Excel for data analysis. The time needed for the quality improvement program was categorized as volunteer and staff time. The volunteer time encompassed the following processes: volunteer education, evaluation of volunteer education materials, expanded nursing intake process, and increased provider documentation. The staff time included several processes: running monthly reports from the EHR system, exporting monthly report data into the Microsoft Excel clinical dashboard analysis program, and displaying the monthly compliance rates on a physical clinical dashboard for display in the clinic area. The identification of the setting and requisite resources shaped the design and implementation of the evidence-based quality improvement program components.
Design for the Evidence-Based Initiative

The Plan-Do-Study-Act model served at the implementation framework for the design of the evidence-based initiative. The PDSA model is comprised of the following phases: plan, study, do, and act (IHI, 2016). Each phase of the PDSA model was explored during the design of the evidence-based initiative.

The Plan Phase.

The plan phase included the research and development of the organizational assessment, the literature review and the project proposal. The organizational assessment identified the phenomenon of interest within the safety net clinic as well as the contextual organizational factors which affected project design and implementation. The literature review yielded relevant evidence-based interventions that were used to address the phenomenon of interest within the organization. The proposal of the formal implementation of the quality improvement program included the following interventions: a policy and procedure manual, a volunteer education program, and a clinical dashboard. The procedure manual detailed the roles and responsibilities of each member of the safety net clinic staff and volunteers in addition to the evidence-based recommendations for the outcome measures. The procedure manual also included a diagram of patient flow through an office visit at the safety net clinic taking into account the new documentation processes. To educate volunteers on the details of the procedure manual, education modules were designed to support compliance with documenting the recommended evidence-based guidelines.

Given the unique population of volunteer healthcare personnel, special consideration was needed when developing the education modules. The healthcare volunteers typically have significant work-related responsibilities complicating the feasibility of traditional classroom
educational sessions. Additionally, the chaotic clinic environment was not conducive to onsite, episodic educational efforts. Historically, the clinic communicated changes in policy or process via written communication such as email. Computer-based learning programs provided an effective alternative avenue for education in this unique group of volunteer professionals.

The use of computer-based learning instruction to educate healthcare professionals was supported by the literature. Walker, Harrington, and Cole (2006) studied the effectiveness of instructor-led learning compared to computer-based learning in educating nurses about various orientation topics. The researchers reported that both intervention groups experienced statistically significant improvements in post-test scores compared to pre-test scores, supporting the use of computer-based learning as an effective method of instructing nurses (Walker et al., 2006). Spiva et al. (2012) compared the use of computer-based learning to tradition instructor-led learning to educate nurses about basic electrocardiogram interpretation. The evidence from this study suggests that both computer-based learning techniques and instructor-led learning methods yield similar results in statistically significant changes (p<0.003 and p<0.000, respectively) in nurses’ knowledge of electrocardiogram rhythm interpretation (Spiva et al., 2012). McLeod, Morck, and Curran (2014) studied the use of computer-based learning methods to educate healthcare providers about symptom detection in cancer patients. The authors reported statistically significant (p<0.0001) improvements in perceived ability of healthcare providers to correctly identify cancer-related patient-reported symptoms after participation in computer-based learning program which included self-directed completion of PowerPoint presentations (McLeod et al., 2014). The use of computer-based learning initiatives served as a vehicle to educate the healthcare professionals volunteering at the safety net clinic.
The education modules were divided into two different versions, one for volunteer nurses and one for volunteer providers. The education modules were augmented with screenshots from the electronic health record system to illustrate the recommended documentation processes. Additionally, a hard copy of the procedure manual was available for real-time support in the clinic. Perception of effectiveness of education modules was evaluated by a survey embedded in the education materials that were emailed to the volunteers. In addition to the education modules, the display of the clinical dashboard informed the healthcare volunteers of the current state of compliance with documentation of recommended evidence-based guidelines.

The clinical dashboard was developed using the exported outcome measures data from the electronic health record system and Microsoft Excel to analyze percent documented compliance with the outcome measures by the entire clinic staff and volunteers. The plan was for the clinical dashboard to display documentation compliance for the selected outcome measures. The plan for the clinical dashboard, as well as the policy and procedure manual and volunteer education materials, were subjected to review and revision by the Doctor of Nursing Practice project team and organization.

The proposed quality improvement program was presented to the Doctor of Nursing Practice project team and the organization as part of the plan phase of the Plan-Do-Study-Act cycle. The DNP student submitted a written proposal of the DNP project to the project team followed by an oral presentation of the DNP proposal. Upon approval of the DNP proposal by the project team, the DNP student developed the quality improvement program materials. The quality improvement program materials were submitted to the organization leadership to be reviewed, edited, and approved for distribution. After all materials were approved by organization leadership, the do phase of the PDSA cycle was initiated.
The Do Phase.

The do phase consisted of the implementation of the quality improvement program interventions. The implementation of the quality improvement program included publishing the procedure manual and making it available to the healthcare clinicians in the clinic area. The implementation of the quality improvement program also involved distributing the computer-based education modules and survey to the volunteers via email. Finally, the do phase included displaying the clinical dashboard in a visible area in the clinic. There was four weeks of data collection after the implementation of the three interventions. Once the data collection period was complete, the study phase of the PDSA cycle began with data analysis.

The Study Phase.

The study phase involved analysis of the healthcare personnel compliance with documentation of recommended evidence-based guidelines as well as survey feedback of perceived effectiveness of volunteer education program materials. The primary data analysis focused on percent compliance with designated outcome measures by healthcare personnel at the safety net clinic. Pre-intervention data was compared to post-intervention data to observe for statistically significant differences over a four-week period. A control chart was generated for one outcome measure with both pre- and post-implementation data to illustrate documentation process variation over time. Unfortunately, due to low daily volume of patients with the applicable chronic diseases, daily compliance data was not sufficient to generate robust control charts. For this reason, monthly compliance data was used to generate a control chart. It was not possible to analyze documentation compliance of the social history questions retroactively. Due to internal data storage processes of the EHR, social history data was not archived in a way that could be retrieved over time. Additionally, the perceived effectiveness of the education modules
was evaluated by compiling and analyzing the surveys completed by the volunteer healthcare professionals. After the data analysis was complete, the Doctor of Nursing Practice student studied the results of the analysis to inform the recommended changes proposed during the act phase of the Plan-Do-Study-Act cycle.

**The Act Phase.**

The act phase included evaluation of the process of formally implementing the quality improvement program, concluding with the development of written recommendations based on effective and ineffective processes observed during the do phase. The written recommendations were presented to the organization and the Doctor of Nursing Practice project team for the purpose of guiding the plan phase of the next Plan-Do-Study-Act cycle. In order to successfully develop the quality improvement program interventions, the DNP student needed to carefully identify the unique characteristics of the participants included in the DNP project.

**Participants/Sampling and Recruitment Strategies**

There were a number of participants involved in the formal implementation and evaluation of the quality improvement program for chronic disease management at a safety clinic serving vulnerable populations. The volunteer nurses and providers participated in education modules introducing the formal quality improvement program. The volunteer education modules were tailored to two distinct groups: the volunteer nurses and the volunteer providers. The volunteer nurses were educated on the new social history data questions, the validated behavioral screening tools, and how to appropriately document these data into the electronic health record system. Additionally, the volunteer nurses were informed of when to alert the integrated behavioral health staff at the safety net clinic. The volunteer providers were educated on the recommended intervals for ordering labs and referrals in addition to the recommended
medications for each of the four chronic diseases. The education materials included a PowerPoint presentation distributed via email as well as the procedure manual for use in the clinic area. The effectiveness of the education materials was evaluated by the volunteer nurses and providers using a survey. The volunteer healthcare professionals accessed the survey via a link embedded at the beginning and end of the education materials. In addition to the volunteer healthcare personnel, select members of the organization’s staff participated in the implementation process.

In the future, the clinical nurse manager will run monthly reports from the electronic health record on the specified outcomes measures at the beginning of each month. The clinical nurse manager will export the monthly electronic health record reports into Microsoft Excel and then run the clinical dashboard analysis program. The clinical nurse manager will print and post the monthly compliance data for nursing and provider documentation of designated outcome measures in a visible place in the clinic area. In order to collect the data needed for the clinical dashboard, various methods of measurement were employed.

**Measurement: Sources of Data and Tools**

The Doctor of Nursing Practice project utilized a variety of data, tools, and surveys. The data collection period occurred over a four-week period from February 6, 2017, to March 3, 2017, consistent with a rapid Plan-Do-Study-Act cycle. The electronic health record (Athena Health) was the primary source of clinical patient health information. The type of clinical patient health information data collected from the electronic health record was determined using gold standard chronic disease management standards. The main evaluation method was to observe for statistically significant differences using two sample two-tailed $t$ tests to compare pre- and post-implementation documentation compliance with quality improvement program outcome
measures. Documentation compliance was calculated by using percentages. The numerator was the number of appropriately documented outcome measures; the denominator was the number of possible outcome measures. For example, for patients with type 2 diabetes mellitus, the number of documented interval-appropriate hemoglobin A1c tests was divided by the number of possible interval-appropriate hemoglobin A1c lab tests. Traditional statistical tools are helpful for data analysis in quality improvement projects; the addition of tools from statistical process control can provide a comprehensive picture of process variation over time (Benneyan, Lloyd, & Plsek, 2003).

Statistical process control tools can add an element of chronology to statistical analysis. The control chart, a type of statistical process control tool, provides a visual organization of the documentation compliance over time (Benneyan et al., 2003). A control chart was generated for one outcome measure with both pre- and post-implementation compliance data. The x-axis of the control chart is the time with the unit of sequential months. The y-axis of the control chart is the percent compliance. Analysis of the control chart was attempted using rules from statistical process control to detect special-cause variation. The sources of outcome measure data were categorized as nursing-sensitive measures and provider-sensitive measures.

Nursing-sensitive measures included vital signs, behavioral screening tools, and social history information (See Appendix D). Vital signs, including body mass index, blood pressure, were collected by the nursing staff on every primary care office visit. Fasting blood glucose or random blood glucose were measured by nursing staff on every primary care office visit for patients with a diagnosis of type 2 diabetes mellitus. The nursing staff administered two validated behavioral screening tools (Patient Health Questionnaire and Generalized Anxiety Disorder 7-item scale) to each patient on every primary care office visit, collected the completed
screening tools, and provided the results to the assigned provider. The nursing staff solicited and recorded the following social history topics: smoking status, medication compliance, perceived health status, exercise level, and stress level (See Appendix E).

Provider-sensitive measures included a number of appropriately documented laboratory tests, medication prescriptions, and referrals. The providers ordered laboratory tests at the recommended intervals as specified in Appendix D. The laboratory tests included hemoglobin A1c levels, complete metabolic panels, and lipid panels. The providers prescribed angiotensin-converting enzyme inhibitors (ACEI) or angiotensin II receptor blockers (ARB), statins, and/or aspirin per the evidence-based guidelines specified in Appendix D. The providers’ clinical judgment was required when making prescribing decisions to account for individual patient allergies, kidney function, medication interactions, contraindications, and/or patient refusal. The providers made referrals for dental exams, eye exams, counseling services, and/or spiritual care services according to the recommended time intervals (see Appendix D). The collection of volunteer documentation compliance data was aided by careful design of a project timeline.

**Steps for Implementation of Project, including Timeline**

The implementation of the Doctor of Nursing Practice project occurred in the following sequential steps (see Appendix F):

- Performed organizational assessment and literature review to guide the design of the formal quality improvement program by November 15, 2016.

- Presented DNP project proposal to DNP project team in written and oral form by January 13, 2017.

- Submitted institution review board (IRB) application by January 18, 2017.

- Obtained IRB approval from university human research review committee by January 19, 2017.
• Developed formal quality improvement program components, consisting of (1) a policy and procedure manual, (2) volunteer education materials, and (3) a clinical dashboard by January 23, 2017.

• Presented quality improvement program components to organizational leadership team by January 23, 2017.

• Incorporated organizational feedback into quality improvement program components by February 3, 2017.

• Implemented quality improvement program components in organization by publishing policy and procedure manual, distributing volunteer education materials, and posting clinical dashboard in clinic area by February 6, 2017.

• Began data collection period concurrent with implementation date on February 6, 2017.

• After one month of data collection, exported pre- and post-implementation data report from electronic health record, exported data to Microsoft Excel, and ran clinical dashboard analysis program by March 14, 2017.

• Compared pre- and post-implementation data to observe for statistically significant differences in documented compliance of designated outcome measures for the entire clinic over a period of four weeks by March 14, 2017.

• Generated a control chart for one outcome measure including pre- and post-implementation compliance data by March 14, 2017.

• Evaluated quality improvement program interventions by making written recommendations for the next Plan-Do-Study-Act cycle by March 30, 2017.

• Disseminated findings via oral defense presentation by April 13, 2017.
Submitted final DNP project to Scholarworks and university graduate studies office by April 21, 2017.

**Project Evaluation Plan**

The project evaluation plan included meeting the project objectives and producing the deliverables. The quality improvement program policy and procedure manual were submitted to the organizational leadership for review and approval. The volunteer education materials were submitted to the organizational leadership for review and approval. Additionally, the education materials were evaluated by the healthcare volunteers via emailed survey. The clinical dashboard was posted in a visible location in the clinical area. The Doctor of Nursing Practice student was responsible for designing the clinical dashboard analysis program using Microsoft Excel in conjunction with applications engineer expert. After the project completion, the project and quality manager will responsible for running monthly outcome measures data from the electronic health record, exporting the data into Microsoft Excel, running the clinical dashboard analysis program, and sending the results to the staff nurse. The project and quality manager (or delegate of his/her choice) will be responsible for posting the monthly clinical dashboard results in a visible place in the clinic area.

The Doctor of Nursing Practice student was responsible for comparing pre- and post-implementation compliance, observing for a statistically significant difference between compliance values. Initially, the project evaluation plan included control charts for each outcome measure including pre- and post-implementation compliance data. However, given the low volume of daily patient visits that qualified for inclusion in this project, it was impossible to produce robust control charts that could detect special cause variation (Benneyan et al., 2003). Alternately, the DNP student considered generating control charts using monthly compliance
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data for the outcome measures. Given the small number of observations, both the mean and the standard deviation were not robust to common cause variation (Benneyan et al., 2003). More monthly data will be required to generate control charts for each measure. In addition, the education materials were evaluated using the surveyed responses of the healthcare volunteers.

The feasibility and sustainability of the formalized quality improvement program was evaluated using the presence (or absence) of statistically significant improvement in compliance rates as well informal and formal (education material survey responses) feedback from staff, volunteers and leadership at the safety net clinic. The compliance data was evaluated using two sample two-tailed t tests to compare pre- and post-implementation documentation compliance with quality improvement program outcome measures for statistically significant improvement in compliance. The Doctor of Nursing Practice student then made written recommendations for the next Plan-Do-Study-Act cycle as part of the DNP project written defense. The DNP project written defense was submitted to the DNP project team for evaluation and approval. In addition to designing, implementing, evaluating, and disseminating the results of the DNP project, there needed to be careful consideration of the financial aspects of the implementation of the quality improvement program in the safety net clinic.

Budget

The budget for the Doctor of Nursing Practice project was an essential topic for deliberation. The primary expenditure for this DNP project was volunteer, DNP student, applications engineer, and staff time. The volunteer education program required approximately one hour for comprehension and completion (See Appendix G). Considering the average wages of office nurses, certified nurse assistants, licensed practical nurses, primary care physicians, nurse practitioners, and physician assistants, the cost to train the current primary care volunteer
staff was approximately 1,550 dollars (Laff, 2015; Pasquini, 2015; Pay Scale, Inc, 2016a; Pay Scale, Inc, 2016c; Pay Scale, Inc, 2016d; Pay Scale, Inc, 2016e). In the future, the cost of training new healthcare volunteers will depend on the number and type of healthcare professionals (see Appendix G for average hourly wages of various healthcare professionals).

The DNP student time included the time to develop the quality improvement program components, the time to implement the program in the organization, and the time to analyze the data generated during implementation. Using a national average for a quality improvement coordinator, the overall expenditures from the DNP student time was approximately 2,480 dollars (Pay Scale, Inc, 2017b). The DNP student collaborated with an applications engineer to create the compliance analysis computer program. Given the average hourly wage of an applications engineer, the total cost associated with the applications engineer’s time was approximately 249 dollars (Pay Scale, Inc, 2017a).

The staff time included the time to run the monthly electronic health record data reports, export the report to Microsoft Excel, run the clinical dashboard analysis program and post the results of the data analysis on the clinical dashboard in the clinic area. The time for these tasks was two hours per month. When considering the national average hourly wages of a clinical nurse manager, the projected yearly budget to continue the clinical dashboard intervention was approximately 916 dollars per year (Pay Scale, Inc, 2016b). The cost of the DNP student time was 2480 dollars. The cost of the application engineer time was 249 dollars. The total projected cost for the clinical dashboard and the volunteer education program was 4,946 dollars for the first year. The cost of the volunteer time as well as the DNP student and the applications engineer was considered an in-kind donation to the safety net. The cost of the staff time was absorbed by the safety net clinic and/or included in future grant applications for funding.
Ethics and Human Subjects Protection

As with any scholarly project in the healthcare arena, ethics and human subjects protection were addressed. Although the formal implementation of the quality improvement program did not involve direct interaction or intervention with patients, it did require the use of protected health information (PHI). Therefore, after the approval of the Doctor of Nursing Practice project proposal by the project team members, the DNP student submitted an institutional review board (IRB) application to the university human research review committee (HRRC). The university HRRC determined that the DNP project was not research (See Appendix H). The safety net organization does not have an internal institutional review board. Therefore, the organization administrative leadership accepted the university HRRC determination, but retained the ability to approve, edit, or reject the QI program. Per university policy, the PHI data was stored on an encrypted flash drive (provided by the DNP student). When the DNP student was not using the PHI data, the encrypted jump drive was secured in a locked container in the DNP student’s home. When the DNP project was completed, the encrypted jump drive was surrendered to the DNP project team advisor to be placed in a locked file drawer for seven years and then destroyed. Careful consideration of the project plan, including ethics and human subjects rights, facilitated the realization of the project outcomes.

Project Outcomes

The project outcomes were determined during the plan phase of the Plan-Do-Study-Act cycle, specifically during the project proposal to the organization and to the Doctor of Nursing Practice project team. The following outcomes were realized during the DNP project:

- Improvement of organizational structure by creating and implementing quality improvement program procedure manual on February 6, 2017.
Outcome measure: Working collaboratively with the organizational leadership, the quality improvement program procedure manual (See Appendix I) was created using screenshots from the electronic health record. The procedure manual was printed and made available for use by staff and volunteers on February 6, 2017.

- Addressed the volunteer orientation process by creating, distributing, and evaluating volunteer education modules on February 6, 2017.

Outcome measure: In collaboration with the volunteer coordinator at the safety net clinic, the volunteer education materials (see Appendix J) were distributed via email to 22 nursing volunteers and to 12 provider volunteers with evaluation of the materials ascertained with a pre- and post-test evaluation tool (See Appendix K). The volunteers were sent a reminder email on February 27, 2017, requesting that they complete the pre- and post-test surveys on or before March 3, 2017. Due to decreased response rate of 14.7% of all volunteers, the survey data collection period was extended until March 10, 2017, and paper copies of the surveys were made available in the clinic area from March 1, 2017, until March 10, 2017. Unfortunately, no paper copies of the volunteer surveys were completed by the end of the extended data collection period. Of the nursing volunteers, 13.6% responded to the survey; there was a 16.7% survey response rate among the provider volunteers (See Appendix L). Overall, the response rate of the volunteers was 14.7%. In general, the volunteers who responded to the pre-test survey reported that they tended to document care in the electronic health record consistently and that they experienced some difficulty in looking up and documenting patient care in the electronic health record (See Appendix L). Only one provider volunteer responded to the post-test survey; this individual overall reported that the education modules were
applicable, helpful, and likely to improve his/her documentation process in the electronic health record at the safety net clinic. Unfortunately, there was no survey data generated regarding barriers to documentation in the electronic health record. Due to the inadequate response rate, it was difficult to determine with any certainty if the majority of the healthcare volunteers reviewed the education modules. It was also difficult to ascertain the general perception of the current documentation process at the safety net clinic or the volunteers’ perception of the efficacy of the education materials in supporting the standardized documentation process.

- Implemented a measurement system and feedback process for organization staff and volunteers by creating and posting a clinical dashboard on February 6, 2017. Outcome measure: Two clinical dashboards, one for nursing volunteers and one for provider volunteers, were posted in the clinic area on February 6, 2017 (See Appendix M). These dashboards were updated on March 1, 2017, and April 3, 2017, with data from the previous months.

- Measured outcomes by analyzing efficacy of quality improvement program interventions by comparing pre-implementation to post-implementation compliance with designated outcome measures for statistically significant differences on March 12, 2017. Outcome measure: Two types of statistical testing were performed on the documentation compliance data: two sample t tests and control charts.
  - Two sample t tests were used to compare two four-week periods of data collection, pre- and post-implementation. Analysis of each of the outcomes measure did not generate any statistically significant improvements in documentation (see Appendix N). Indeed, there was statistically significant
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decrease in documentation compliance of lipid panels ordered for patients with type 2 diabetes mellitus (see Appendix N). There was insufficient data to determine if there was a significant difference between pre- and post-implementation compliance for the measure of Spiritual Care referral for patients with depression (see Appendix N).

- During the plan phase of the Plan-Do-Study-Act cycle, the DNP student proposed to generate control charts displaying daily documentation compliance data. Unfortunately, given the low volume of daily patient visits that qualified for inclusion in this project, it was impossible to produce robust control charts that could detect special cause variation (Benneyan et al., 2003). Alternately, the DNP student considered generating control charts using monthly compliance data for the outcome measures. A control chart was created for the measure of diabetes mellitus body mass index (DM BMI) in Appendix O. Given the small number of observations, both the mean and the standard deviation were not robust to common cause variation (Benneyan et al., 2003). More monthly data will be required to generate control charts for each measure.

- Evaluated feasibility and sustainability of formal quality improvement program by making written recommendations to the organization and DNP project team for the next Plan-Do-Study-Act cycle by March 30, 2017.

Outcome measure: Written recommendations were provided to the organization and the DNP project team on March 30, 2017, after careful consideration of project successes and strengths, weaknesses and difficulties, and limitations.
Implications for Practice

The formal implementation of the quality improvement program had implications for the selected patient population, the organization, and the discipline of nursing. The use of the Donabedian model as a framework for the quality improvement program design resulted in a comprehensive approach to chronic disease management in vulnerable populations by assessing healthcare personnel’s compliance to evidence-based practice guidelines. The organization benefitted from the ability to measure and assess documentation compliance by healthcare professionals. The discipline of nursing was impacted by the presentation and publication of the results of the formal quality improvement program implementation. In addition to these implications, the strengths and successes of the Doctor of Nursing Practice project, weaknesses and difficulties of the DNP project, project sustainability, and project limitations were evaluated.

Strengths and Successes of Project

There were a number of successes and strengths associated with the Doctor of Nursing Practice project. The successes of the project included standardization of the documentation process and the volunteer education as well as the creation of a procedure manual and the clinical dashboards. The DNP project established a standard documentation process for chronic disease management. The standard documentation process was supported by the volunteer education materials and the procedure manual. An outcome of the DNP project was that the clinical dashboards were created, fostering information sharing between staff and volunteers regarding documentation performance. The use of clinical dashboards also provided an assessment of current practice as well as identified underperforming metrics that require increased resources and energy. The initiation of these processes was a strength of the DNP project given that such initiatives may be infrequent given the limited resources in a safety net clinic setting. Another
strength of the project included the collaborative spirit experienced by the members of the multidisciplinary team at the safety net clinic during the development and implementation of the project. Despite the number of successes and strengths of the project, there were also several weaknesses and difficulties encountered during the DNP project experience.

**Weaknesses and Difficulties of Project**

There were a number of difficulties associated with the Doctor of Nursing Practice project. The primary difficulty was related to the electronic health record (EHR). Due to internal storage processes, it was impossible to export the social history information from the electronic health record retroactively after new data was stored. There was also difficulty in accessing office visit blood glucose data. Prior to the implementation of the Streamline Athena Health update, it was easily possible to export blood glucose data from office visits. After several fruitless sessions with Athena Health support staff, the DNP student determined that the blood glucose measure would not be included in this Plan-Do-Study-Act cycle. The DNP student submitted a case to the Athena Health electronic health record technical support team to request further information about how to export blood glucose data from office visits. Resolution of the case was still pending at the time of writing this report; follow-up of this matter will be assigned to the project and quality manager of the safety net clinic.

There were a number of weaknesses connected to project design. The inadequate survey response from the volunteer participants precluded any meaningful revision of the volunteer education materials. Additionally, in retrospect, the scope of the project was perhaps too broad given the limited evaluation period and the previously overwhelmed volunteers and staff at the safety net clinic. Another weakness was the omission of the volunteer scribes in the volunteer
training cohort. The difficulties and weaknesses of the DNP project were related to the limitations of the project.

**Limitations of Project**

There were several limitations to the Doctor of Nursing Practice project in the safety net clinic. The project’s data analysis was limited by the short, four-week evaluation period. The low daily volume of patients with chronic disease (particularly anxiety and depression) prevented the generation of daily control charts to monitor daily documentation variation. The most significant limitation was perhaps the staffing model of the safety net clinic with the use of volunteer health care professionals. On a daily, weekly, and monthly basis, there was a lack of consistent volunteers, making it difficult to affect meaningful change. Additionally, there was a lack of accountability to ensure that the volunteers reviewed the education modules, completed the pre- and post-test surveys, and/or documented patient care in the standard process.

Reviewing the strengths, weaknesses and limitations of this Plan-Do-Study-Act cycle provided helpful information to the safety net clinic staff to inform upcoming PDSA cycles, safeguarding the sustainability of the quality improvement program in the future.

**Project Sustainability**

After the completion of this Plan-Do-Study-Act cycle, it was necessary to identify a sustainability plan to maintain the processes established during the project. The quality improvement program components were integrated into the structure and process of safety net clinic staff to ensure the continuation of project processes. The procedure manual and volunteer education modules will be distributed to new volunteers by the volunteer coordinator. The volunteer coordinator could require new volunteers to review the education modules onsite during an orientation to the clinic. The volunteer coordinator could keep an on-going log of
volunteers, requiring new volunteers to sign and date the log after reviewing the education modules. The clinical dashboard will be updated monthly by the project and quality manager. The project and quality manager could delegate this process to volunteers if necessary. To support future iterations of the Plan-Do-Study-Act cycle, the volunteer coordinator could consider diversifying the type of volunteer healthcare professionals utilized by the safety net clinic, recruiting volunteers with quality improvement background to lend their expertise and service to improve the current quality improvement program at the safety net clinic. The following recommendations were suggested by the Doctor of Nursing Practice student to address project weaknesses and limitations in order to promote project sustainability:

- Explore current documentation processes for underperforming measures such as screening tests, spiritual care referrals, and counseling referrals.
- Establish a collaborative process for setting goal thresholds for each measure to allocate resources and energy effectively to improve documentation compliance.
- Identify a more effective process of soliciting feedback from volunteers as well as a more penetrating process of providing volunteer education.
- Consider including volunteer scribes in the volunteer training process to improve documentation compliance.
- Continue using compliance analysis program process to calculate monthly documentation compliance data to generate robust control charts for the use of monitoring documentation compliance variation over time for meaningful patterns.
- Review clinical dashboards over time to identify underperforming outcome measures and develop targeted training processes accordingly.
The impact of this Plan-Do-Study-Act cycle was the formalization of the quality improvement program in the safety net clinic. The impact was six-fold. First, this PDSA cycle established a standard process to document care and management of patients with chronic diseases. The standard process was integrated into the structure of the safety net clinic through the publication of the procedure manual and the distribution of the volunteer training modules. Second, this PDSA cycle created a process for training volunteers how to document patient care and chronic disease management in the standard process. The training process was incorporated into the structure of the safety net clinic through its distribution to current volunteers as well as the planned circulation to future volunteers by the Volunteer Coordinator. Third, this PDSA cycle included a data extraction process to export pertinent clinical information from the electronic health record. This reporting process became part of the safety net clinic structure through embedding the reports in the electronic health record report library. Fourth, this PDSA cycle involved the creation of a compliance analysis program process that instantly analyzes clinical information for documentation compliance. Fifth, this PDSA cycle launched a feedback process to disseminate clinical outcomes to the safety net clinic staff and volunteers through the clinical dashboards. This clinical dashboard process was assimilated into the structure of the safety net clinic through the assignment of future analysis to the project and quality manager. The project and quality manager, reporting to the Medical Director, will be responsible for the process of exporting the data from the electronic health record, running the compliance analysis program, and posting the clinical dashboard on a monthly basis. Finally, this PDSA cycle provided recommendations for future PDSA cycles within the safety net clinic.

Future Plan-Do-Study-Act cycles can be defined and structured based on what was learned during this PDSA cycle. During the Plan phase, the focus of the organizational
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assessment and literature review should be on the volunteer healthcare professional workforce employed by the safety net clinic. Evidence-based information about the volunteer healthcare professionals will inform and enhance the design of the next PDSA cycle. The Plan phase should also involve a conference with the Volunteer Coordinator as well as focus groups of volunteers to determine the best process for soliciting feedback from volunteers. The Plan phase should also include a process of adapting the volunteer training materials to include content for volunteer scribes. The Plan phase should engage a meeting with the Outcomes committee as well as volunteers to identify compliance goals for each outcome measure. The Do phase should allow for a longer data collection period to provide robust data to facilitate meaningful data analysis. Additionally, the Do phase should include incentives for volunteers to participate in a feedback process regarding the interventions determined during the Plan phase. During the Study phase, control charts should be generated to examine documentation compliance for special cause variation for each outcome measure. The Act phase should prepare recommendations for the next PDSA cycle based on what was learned. Evaluation of the past PDSA cycle and preparation for the next PDSA cycle was an essential part of the Doctor of Nursing Practice project educational experience, allowing the DNP student to enact many of the Essential of DNP education.

**Essentials of Doctor of Nursing Practice Education**

The Doctor of Nursing Practice project was the culmination of the doctoral nursing education experience. The design and execution of the DNP project manifested aspects of the DNP Essential competencies as defined by the American Association of Colleges of Nursing (AACN) in 2006. Each essential will be explored with the purpose of highlighting evidence of enactment by the DNP student during the DNP project trajectory.
Essential I: Scientific Underpinning for Practice.

The first DNP Essential competency requires the ability to analyze and evaluate knowledge and information from multiple sources and disciplines to improve the provision of health care to patients and populations (AACN, 2006). The DNP student manifested skill in this Essential through the development of the elements of the DNP project portfolio: prospectus, literature review, proposal and defense. The literature review, in particular, fulfilled this Essential through the analysis and evaluation of relevant, up-to-date evidence-based practice to guide the design of the DNP project interventions.

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

The second DNP Essential competency necessitates the skills of navigating complex organizations and/or systems to carry out meaningful change at a large scale (AACN, 2006). The DNP student exhibited skill in this Essential through the development of the organizational assessment document with sensitive assessment and evaluation of the unique care delivery approach of the safety net clinic. The DNP student also demonstrated skill in this Essential through the development of the project proposal and with the design of the project budget.

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

The third DNP Essential competency highlights the capability to translate relevant research into evidence-based practice with an emphasis on evaluation, reliability, safety, and quality (AACN, 2006). The DNP student exhibited skill in this Essential through the research and development of the literature review of evidence-based practice to guide the project design. The DNP student fulfilled this Essential competency through the adoption of quality
improvement methodologies to guide the project as well as the inclusion of an evaluation component. Additionally, the DNP student project also utilized information technology to capture EHR data to analyze and evaluate the outcomes of the DNP project.

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

The fourth DNP Essential competency demands an aptitude for the utilization of information technology to enhance and support the provision of healthcare to patients and populations (AACN, 2006). The DNP student demonstrated skill in this Essential by designing reports to extract data from the electronic health record to evaluate the efficacy of the project interventions. Furthermore, the DNP student evidenced skill in this Essential by navigating the electronic health record reporting system, investigating the support features of the electronic health record and identifying weaknesses of the electronic health record. The DNP student also manifested skill in this Essential through the protection of patient privacy and human rights by using an encrypted hard drive for data storage and by applying for and receiving the institutional review board determination.

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

The sixth DNP Essential competency requires the ability to foster interprofessional collaboration within the healthcare team to promote quality healthcare for patients and populations (AACN, 2006). The DNP student displayed ability in this skill by participating in interprofessional collaboration with the safety net clinic leadership and staff in the project design, implementation and dissemination of project results. The DNP student worked
collaboratively with health care professionals from the disciplines of medicine, healthcare administration, social work, and nursing to promote practice change in the safety net clinic.

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

The seventh DNP Essential competency involves the capability to approach the provision of health care with an attitude of disease prevention and health promotion for populations (AACN, 2006). The DNP student demonstrated this capability by providing a population lens of the burden of chronic disease at the safety net clinic through the clinical dashboard. The DNP student also addressed this Essential by designing the intervention of volunteer education to address gaps in documentation at the safety net clinic. This Essential was also evidenced in the creation and implementation of system-level interventions which initiated practice changes focused on improving healthcare quality for vulnerable populations served by the safety net clinic. Finally, the DNP student evidenced skill in this Essential by assessing the care delivery model of the safety clinic as well as evaluating the project-related practice change from an aggregate perspective.

**Essential VIII: Advanced Nursing Practice.**

The eighth DNP Essential competency includes the execution of advanced nursing practice in the particular specialty area (AACN, 2006). The DNP student displayed skill in this Essential through the assessment of the burden of chronic disease in the safety net clinic. Additionally, the DNP student manifested this Essential through the design of a system-level practice change to address the gaps in documentation as well as the provision of a feedback system to evaluate the efficacy of the practice change. Additionally, the DNP student
disseminated the results of the DNP project to the organization, the university and the scholarly community to satisfy the DNP Essential of Clinical Scholarship.

**Dissemination of Outcomes**

An essential part of the Doctor of Nursing Practice project is the dissemination of the project outcomes (including the follow-up plan) to the organization and the community of scholars. There are a number of ways that the project results can be shared with interested parties. First, the DNP student presented an oral defense of the DNP project to the project team members and the university scholarly community. Additionally, the DNP student presented project outcomes and recommendations to the organizational stakeholders. The DNP student submitted the final project to Scholarworks and the university for doctoral project publication. The DNP student may also seek further opportunities to disseminate project outcomes by presenting the project at appropriate conferences and/or submitting the written project summary to applicable journals for publication. The dissemination of the quality improvement program outcomes to the organization and the scholarly community fulfilled the purpose of the DNP project.

**Conclusion**

The purpose of the Doctor of Nursing Practice project was to formally implement and evaluate a quality improvement program for chronic disease management in a safety net clinic serving vulnerable populations. The deliverable outcomes of the DNP project included a policy and procedure manual, a volunteer education program, and a clinical dashboard. The effectiveness of the DNP project was evaluated by collecting designated outcome measures data from the electronic health record for four weeks, comparing pre-implementation to post-implementation healthcare provider compliance with documentation of the designated outcome
measures data. Although there were no statistically significant improvements in documentation compliance, the DNP project did effect change in the safety net clinic through the creation and implementation of the procedure manual, the volunteer education materials, and the clinical dashboards. The procedure manual and volunteer education materials established a standard process for the documentation of care and management of patients with chronic disease. The clinical dashboards launched a feedback system to disseminate clinical outcomes to the safety net clinic staff and volunteers. Written recommendations for the next Plan-Do-Study-Act cycle were disseminated to the organization and to the university. The formalization of the quality improvement program in the safety net clinic during this Plan-Do-Study-Act cycle provided a strong foundation from which to launch the next Plan-Do-Study-Act cycle, focusing on greater volunteer involvement.
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http://www.payscale.com/research/US/Job=Quality_Improvement_Coordinator_(RN)/Salary

doi:10.1016/j.cbpra.2014.01.010

Shelley, D., Tseng, T. Y., Matthews, A. G., Wu, D., Ferrari, P., Cohen, A., ... & Kopal,


Appendices

Appendix A: The Donabedian Model

Figure A: The Donabedian Model. Adapted from “The quality of care: How can it be assessed?” by A. Donabedian, 1988, JAMA, 260(12), p. 1743-1748. Copyright 1988 by John Wiley & Sons Ltd. Reprinted with permission.
Appendix B: The Plan-Do-Study-Act Model


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## Appendix C: SWOT Analysis of DNP Project in Safety Net Clinic

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Opportunities</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Dedicated staff and volunteers highly motivated to provide quality care</td>
<td>• Successful creation and implementation of quality improvement program may improve clinic’s ability to qualify for diverse funding sources in two ways:</td>
</tr>
<tr>
<td>• Electronic health record functionality facilitates reporting of quality improvement outcome measures</td>
<td>(1) Novel foundational, government, or commercial grants</td>
</tr>
<tr>
<td>• Creation and implementation of quality improvement program aligned with strategic plan of organization.</td>
<td>(2) Improved Medicaid reimbursement rates</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Weaknesses</th>
<th>Threats</th>
</tr>
</thead>
<tbody>
<tr>
<td>• May be overwhelming volunteers with seemingly superfluous information in the face of on-going significant language barriers, novel electronic health record system</td>
<td>• Results of recent national election potentially threatens available resources associated with Affordable Care Act (2010) implementation and incentive programs</td>
</tr>
<tr>
<td>• Wide range of current/future endeavors may overburden medical staff</td>
<td></td>
</tr>
</tbody>
</table>
### Appendix D: Outcome Measures Table

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Diabetes</th>
<th>Hypertension</th>
<th>Depression</th>
<th>Anxiety</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>FBS/RBS (q \text{ visit})</td>
<td>Blood pressure (q \text{ visit})</td>
<td>PHQ-9 (q \text{ month})</td>
<td>GAD-7 (q \text{ month})</td>
</tr>
<tr>
<td></td>
<td>BMI (q \text{ visit})</td>
<td>BMI (q \text{ visit})</td>
<td>Counseling referral (Once)</td>
<td>Counseling referral (Once)</td>
</tr>
<tr>
<td>Medical Measures</td>
<td>HgbA1c (\text{Biannual})</td>
<td>CMP (\text{Annual/Biannual})</td>
<td>Spiritual care referral (Once)</td>
<td>Spiritual care referral (Once)</td>
</tr>
<tr>
<td></td>
<td>CMP (\text{Annual/Biannual})</td>
<td>ASA Rx</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lipid panel (\text{Annual/Biannual})</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Statin RX</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>ACE or ARB RX</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dental exam (\text{Annually})</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Eye exam (\text{Annually})</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Functional Measures</td>
<td>Smoking status (q \text{ visit})</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Medication compliance (q \text{ visit})</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Perceived Health (q \text{ visit})</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Exercise level (q \text{ visit})</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Stress level (q \text{ visit})</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Key to Terms**

- FBS/RBS = Fasting blood sugar/Random Blood sugar
- BMI = Body mass index
- HgbA1c = Hemoglobin A1c
- CMP = Complete metabolic panel
- ACE or ARB = Angiotensin-converting enzyme inhibitor or Angiotensin receptor blockers
Appendix E: Social History Questions

Routine Social History Questions

Patient Name __________________________ Date of Birth / / 

Date of Service: ______ / ___ / ______.

Please circle and/or fill out the following questions to the best of your ability:

1.) In general, would you say your health is:
   Excellent     Very Good     Fair     Poor

2.) What is your general stress level:
   Low     Medium     High

3.) What is your exercise level on average?
   None     Moderate = 60 min, 3-5 days/wk
   Occasional = 30 min, 3-5 days/wk     Heavy = 90 min, 3-5 days/wk

4.) Do you have a consistent supply of your medications?   YES     NO

5.) When was the last time you took your medications?
   Today   Within last 2 days   Within last week   Within last month

6.) Do you ever go without taking your medications?   YES     NO

7.) Do you use tobacco products?   YES     NO
   If yes, what type of tobacco products?__________________________.
   If yes, how many times per week and how much?______________________.
   If yes, when did you start using tobacco products ________________.

PHQ-9 Score___________     GAD-7 Score__________.
Appendix F: DNP Project Timeline

1/13 Project proposal
1/18 IRB application to HRRC
1/23 Distributed QI program components to organization
2/3 Revised QI program components using organization feedback
2/6 Implemented QI program; began data collection
3/3 Ended data collection; extended volunteer survey data collection period
3/10 Ended data collection period for volunteer survey data
4/13 Final project defense
Appendix G: Doctor of Nursing Practice Project Budget

**Table G1: Projected Yearly Staff Expenditures for Clinical Dashboard**

<table>
<thead>
<tr>
<th>Title</th>
<th>Number of staff</th>
<th>Average Hourly Wage</th>
<th>Number of Hours</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinical nurse manager</td>
<td>1</td>
<td>$38.18</td>
<td>24</td>
<td>$916.32</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td></td>
<td></td>
<td><strong>$916.32</strong></td>
</tr>
</tbody>
</table>

**Table G2: Volunteer Staff Expenditures for Volunteer Education Program**

<table>
<thead>
<tr>
<th>Title</th>
<th>Number of volunteers</th>
<th>Average Hourly Wage</th>
<th>Number of Hours</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary care physician</td>
<td>11</td>
<td>$93.75</td>
<td>1</td>
<td>$1,031.25</td>
</tr>
<tr>
<td>Physician assistant</td>
<td>1</td>
<td>$44.96</td>
<td>1</td>
<td>$44.96</td>
</tr>
<tr>
<td>Nurse practitioner</td>
<td>2</td>
<td>$43.35</td>
<td>1</td>
<td>$86.70</td>
</tr>
<tr>
<td>Office nurse</td>
<td>16</td>
<td>$21.00</td>
<td>1</td>
<td>$336.00</td>
</tr>
<tr>
<td>Licensed practical nurse</td>
<td>1</td>
<td>$18.00</td>
<td>1</td>
<td>$18.00</td>
</tr>
<tr>
<td>Certified nurse assistant</td>
<td>3</td>
<td>$11.00</td>
<td>1</td>
<td>$33.00</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td></td>
<td></td>
<td><strong>$1,549.91</strong></td>
</tr>
</tbody>
</table>

**Table G3: DNP Student Expenditures for Quality Improvement Program**

<table>
<thead>
<tr>
<th>Activity Type</th>
<th>Number of DNP students</th>
<th>Average Hourly Wage</th>
<th>Number of Hours</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Program Development</td>
<td>1</td>
<td>$31.00</td>
<td>50</td>
<td>$1,550.00</td>
</tr>
<tr>
<td>Program Implementation</td>
<td>1</td>
<td>$31.00</td>
<td>10</td>
<td>$310.00</td>
</tr>
<tr>
<td>Program Analysis</td>
<td>1</td>
<td>$31.00</td>
<td>20</td>
<td>$620.00</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td></td>
<td></td>
<td><strong>$2,480.00</strong></td>
</tr>
</tbody>
</table>
## Table G4: Applications Engineer Expenditures for Compliance Analysis Program

<table>
<thead>
<tr>
<th>Activity Type</th>
<th>Number of Application Engineers</th>
<th>Average Hourly Wage</th>
<th>Number of Hours</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Program creation</td>
<td>1</td>
<td>$24.89</td>
<td>6</td>
<td>$149.34</td>
</tr>
<tr>
<td>Consultation with DNP Student</td>
<td>1</td>
<td>$24.89</td>
<td>4</td>
<td>$99.56</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>TOTAL=</td>
</tr>
</tbody>
</table>

## Table G5: Overall Budget Expenditures

<table>
<thead>
<tr>
<th>Expenditure Type</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Staff Expenditures</td>
<td>($916.32)</td>
</tr>
<tr>
<td>Volunteer Expenditures</td>
<td>($1,549.91)</td>
</tr>
<tr>
<td>DNP Student Expenditures</td>
<td>($2,480.00)</td>
</tr>
<tr>
<td>Application Engineer Expenditures</td>
<td>($248.90)</td>
</tr>
<tr>
<td>TOTAL=</td>
<td>($4,946)</td>
</tr>
</tbody>
</table>
DATE: January 19, 2017
TO: Kaitlin Hendriksma
FROM: Grand Valley State University Human Research Review Committee
STUDY TITLE: [1013526-1] A Quality Improvement Program at a Safety Net Clinic Serving Vulnerable Populations
REFERENCE #: 17-119-H
SUBMISSION TYPE: New project

ACTION: NOT RESEARCH
EFFECTIVE DATE: January 19, 2017
REVIEW TYPE: Administrative Review

Thank you for your submission of materials for your planned research study. It has been determined that this project:

Does not meet the definition of covered human subjects research* according to current federal regulations. The project, therefore, does not require further review and approval by the HRRC.

Any research-related problem or event resulting in a fatality or hospitalization requires immediate notification to the Human Research Review Committee Chair, Dr. Steve Glass, (616)331-8563 AND Human Research Protections Administrator, Dr. Jeffrey Potteiger, Office of Graduate Studies (616)331-7207. See HRRC policy 1020, Unanticipated problems and adverse events.

Exempt research studies are eligible for audits.

If you have any questions, please contact the Office of Research Integrity and Compliance at (616) 331-3197 or rci@gvsu.edu. The office observes all university holidays, and does not process applications during exam week or between academic terms. Please include your study title and reference number in all correspondence with our office.
*Research is a systematic investigation, including research development, testing and evaluation, designed to develop or contribute to generalizable knowledge (45 CFR 46.102 (d)).

Human subject means a living individual about whom an investigator (whether professional or student) conducting research obtains: data through intervention or interaction with the individual, or identifiable private information (45 CFR 46.102 (f)).

Scholarly activities that are not covered under the Code of Federal Regulations should not be described or referred to as research in materials to participants, sponsors or in dissemination of findings.

Research Protections Program | 1 Campus Drive | 049 James H Zumberge Hall | Allendale, MI 49401 Ph 616.331.3197 | rpp@gvsu.edu | www.gvsu.edu/rpp
Appendix I: Procedure Manual

Documentation

Procedure

Manual

Initiated February 6, 2017
1. Introduction

1.1 Thank You!

Thank you for your participation in the safety net clinic quality improvement program and for your volunteer service!

1.2 Purpose of the Procedure Manual

The purpose of this procedure manual to establish a standardized documentation process for use by healthcare professionals at the clinic. The electronic health record can be difficult to navigate in a busy clinic setting as a volunteer where there isn’t a previously established documentation format, resulting in variable documentation.

Standardizing the documentation process makes it easier to export valuable information from the electronic health record which can be used to:

— Track patient outcomes over time,
— Identify underperforming areas to target future interventions, and/or
— Demonstrate the quality of care provided at the safety net clinic for third-party payer reimbursement.

This manual is to support staff and volunteers in documenting patient care in a newly established standard way. Additionally, this manual will detail the measurement and feedback process designed to inform volunteers and staff of current documentation performance.

2. Volunteer Education

2.1 Existing Volunteers

As part of the quality improvement program, existing healthcare volunteers will be provided education modules via email to support standardized documentation practices. The modules will be sent out to all nursing volunteers and to the primary care provider volunteers.

2.2 Nursing Volunteers
For the purposes of this manual, nursing volunteers will include those volunteers that conduct the intake portion of the office visit; the nursing roles comprise registered nurses (RN), licensed practical nurses (LPN), medical assistants (MA), and certified nursing assistants (CNA).

2.3 Provider Volunteers

The primary care providers will be those volunteers that conduct the exam and assessment/plan sections of the office visit; the provider roles include physicians, nurse practitioners (NP), and physician assistants (PA).

2.4 New Volunteers

New volunteers will be provided the appropriate module by the Volunteer Coordinator as part of the volunteer orientation process. Any questions regarding documentation can be directed to the Project & Quality Manager.

3. Intake Measures

3.1 Intake Measures

The intake measures will focus on vital signs, social history information, and screening tools as shown in Table 3.1.

Table 3.1: Intake Measures

<table>
<thead>
<tr>
<th>Vital Signs</th>
<th>Social History Information</th>
<th>Screening Tools</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body mass index</td>
<td>Smoking status</td>
<td>PHQ-9</td>
</tr>
<tr>
<td>Blood pressure</td>
<td>Medication compliance</td>
<td>GAD-7</td>
</tr>
<tr>
<td>Fasting/Random blood glucose</td>
<td>Perceived Health</td>
<td></td>
</tr>
</tbody>
</table>
3.2 Nursing Volunteers

The intake process will be completed by the nursing volunteer roles, which comprise registered nurses (RN), licensed practical nurses (LPN), medical assistants (MA), and certified nursing assistants (CNA). For the purposes of this manual, these roles will hereafter be referred to as nursing volunteers.

3.3 Vital Signs

Vital signs are documented during the Intake process of the office visit in the electronic health record. The vital signs include body mass index, blood pressure, and fasting/random blood glucose. Body mass index is automatically calculated by the electronic health record when a patient’s weight is entered. The patient’s height will automatically populate from previous visits. However, the patient height will need to be re-entered into the electronic health record once a year.

<table>
<thead>
<tr>
<th>Exercise level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stress level</td>
</tr>
</tbody>
</table>

Blood pressure is measured and recorded for every office visit. Please document which arm the blood pressure was measured on, the position that patient was in, and the size of the blood pressure cuff.
Fasting/random blood glucose is measured and recorded in the electronic health record for all patients with diabetes mellitus presenting for office visits. To access the correct place to record the blood glucose reading, scroll to the bottom of the Vitals screen. There will be a place to record blood glucose under the heading “Measurements.”

3.4 Social History Information

Social history information will include questions regarding Perceived Health, Stress level, Exercise level, Smoking status, and Medication compliance. The responses to these questions will be recorded in the Social History section of the Intake process. The Social History section is the 7th listed on the left-hand pane of the Intake window. See the screen shot below:
3.5 Guide to Social History Question Responses

Here is some information about how to record the responses to the Social History Questions in the electronic health record:

- Perceived Health is self-reported by the patient. Response choices include excellent, very good, fair, and poor.
- General stress level is also self-reported by the patient. Response options include low, medium, and high.
- Exercise level responses include none, occasional, moderate, and heavy. Please use the definition for exercise levels as provided in Table 3.4 below.

Table 3.5 Patient-Reported Exercise Level

<table>
<thead>
<tr>
<th>Reported Exercise Level</th>
<th>Exercise Category to Record in Electronic Health Record</th>
</tr>
</thead>
<tbody>
<tr>
<td>No exercise</td>
<td>None</td>
</tr>
<tr>
<td>30 minutes, 3-5 days/week</td>
<td>Occasional</td>
</tr>
<tr>
<td>60 minutes, 3-5 days/week</td>
<td>Moderate</td>
</tr>
<tr>
<td>90 minutes, 3-5 days/week</td>
<td>Heavy</td>
</tr>
</tbody>
</table>

- Smoking status questions include recording the patient’s current smoking status, how many packs per day, and number of years of tobacco use. Please use the drop-down boxes to record the patient’s responses to the questions.
- Medication compliance will include questions on having a consistent supply of medications, the last time medications were taken, and whether the patient ever goes without taking medication. Please use the drop-down boxes to record the patient’s responses to the questions.

3.6 Screening Tools

The PHQ-2/PHQ-9 and GAD-7 will be given to patients at every office visit. The PHQ-2/PHQ-9 screens for depression and the GAD-7 screens for anxiety. These screening tools can be scored in the electronic health record or using paper copies.
To access the Screening section, you will need to scroll down in the left-hand pane of the Intake window. Click on the Screening line and the right-hand pane will populate with this screen:

Click on the + sign to access the screening tool menu as shown below:

Select the PHQ-2/PHQ-9 boxes. The PHQ-2 will populate first. This is the short version of the screening tool, as seen below:

**PHQ-2/PHQ-9**

*Administer PHQ-9 (Note: Once you switch versions, you will need to score this questionnaire again.)*

Over the last two weeks, how often have you been bothered by any of the following problems?

<table>
<thead>
<tr>
<th>1. Little interest or pleasure in doing things</th>
<th>Not at all</th>
<th>Several days</th>
<th>More than half the days</th>
<th>Nearly every day</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Feeling down, depressed, or hopeless</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Score

0/4
Record the patient’s responses and press the score button. If the patient’s score is between 0 and 2, you may continue on to the GAD-7. If the patient’s score is 3 or greater, then continue on to the PHQ-9 as seen below:

<table>
<thead>
<tr>
<th></th>
<th>Not at all</th>
<th>Several days</th>
<th>More than half the days</th>
<th>Nearly every day</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Little interest or pleasure in doing things</td>
<td></td>
<td></td>
<td>○</td>
</tr>
<tr>
<td>2.</td>
<td>Feeling down, depressed, or hopeless</td>
<td></td>
<td></td>
<td>○</td>
</tr>
<tr>
<td>3.</td>
<td>Trouble falling or staying asleep, or sleeping too much</td>
<td></td>
<td></td>
<td>○</td>
</tr>
<tr>
<td>4.</td>
<td>Feeling tired or having little energy</td>
<td></td>
<td></td>
<td>○</td>
</tr>
<tr>
<td>5.</td>
<td>Poor appetite or overeating</td>
<td></td>
<td></td>
<td>○</td>
</tr>
<tr>
<td>6.</td>
<td>Feeling bad about yourself - or that you are a failure or have let yourself or your family down</td>
<td></td>
<td></td>
<td>○</td>
</tr>
<tr>
<td>7.</td>
<td>Trouble concentrating on things, such as reading the newspaper or watching television</td>
<td></td>
<td></td>
<td>○</td>
</tr>
<tr>
<td>8.</td>
<td>Moving or speaking so slowly that other people could have noticed? Or the opposite - being so fidgety or restless that you have been moving around a lot more than usual</td>
<td></td>
<td></td>
<td>○</td>
</tr>
<tr>
<td>9.</td>
<td>Thoughts that you would be better off dead or of hurting yourself in some way</td>
<td></td>
<td></td>
<td>○</td>
</tr>
</tbody>
</table>

After recording all the patient responses in the electronic health record, make sure to press the “Score Again” button:

The electronic health record will automatically calculate the score for the PHQ-9 questionnaire.
Continue on to the GAD-7 questionnaire.

**GAD-7**
Over the last two weeks, how often have you been bothered by the following problems?

<table>
<thead>
<tr>
<th></th>
<th>Not at all</th>
<th>Several days</th>
<th>More than half the days</th>
<th>Nearly every day</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Feeling nervous, anxious or on edge</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>2. Not being able to stop or control worrying</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>3. Worrying too much about different things</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>4. Trouble relaxing</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>5. Being so restless that it is hard to sit still</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>6. Becoming easily annoyed or irritable</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>7. Feeling afraid as if something awful might happen</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

After recording the patient responses, press the score button to calculate the GAD-7 score:

![Score](image)

Be sure to save the questionnaire responses and scores by clicking on the green Save button in the upper right hand corner of the screening window:

![Save](image)

If the patient has completed a paper copy of the PHQ-2/PHQ-9 and GAD-7, make sure the paper copy contains two patient identifiers. Also, you will need to review the completed paper copies for positive scores to notify the provider and to enter the questionnaire scores into the electronic health record. For the purposes of data extraction, all PHQ-2/9 and GAD-7 scores need to be recorded in a separate location at the bottom of the Social History section.
3.7 Positive Scores on Screening Tools

Positive scores on screening tools must be reported to the provider. Additionally, positive scores can be reported to the integrated Behavioral Health staff to arrange clinical support, community resources, and appropriate follow-up.

<table>
<thead>
<tr>
<th>Screening Tool</th>
<th>Positive Score</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHQ-9</td>
<td>≥10</td>
<td>Kroenke, Spitzer, &amp; Williams, 2001</td>
</tr>
<tr>
<td>GAD-7</td>
<td>≥10</td>
<td>Spitzer, Kroenke, Williams, &amp; Löwe, 2006</td>
</tr>
</tbody>
</table>

3.8 Patient Flow

The addition of the PHQ-2/PHQ-9 and GAD-7 questionnaires as well as the increased number of social history questions may affect patient flow. Incomplete questionnaires should not prevent the provider from seeing the patient. However, it is critical that patients complete the questionnaires before exiting the clinic and that the final scores are reviewed for positive scores.

4. Provider Measures

4.1 The documentation for orders will focus on evidence-based guidelines for chronic disease management of diabetes mellitus type 2, hypertension, anxiety, and depression. Table 4.1 provides a summary of the orders being tracked for documentation compliance.

Table 4.1: Provider Measures & Recommended Frequency

<table>
<thead>
<tr>
<th>Diabetes</th>
<th>Hypertension</th>
<th>Anxiety</th>
<th>Depression</th>
</tr>
</thead>
<tbody>
<tr>
<td>HgA1C</td>
<td>CMP</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Q 6 months</td>
<td>Q 6-12 months</td>
<td></td>
</tr>
<tr>
<td>--------------------</td>
<td>------------</td>
<td>---------------</td>
<td></td>
</tr>
<tr>
<td>CMP</td>
<td>Q 6-12 months</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lipid Panel</td>
<td>Q 6-12 months</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACEI/ARB Rx</td>
<td>Aspirin Rx</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Statin Rx</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dental Exam</td>
<td></td>
<td>Counseling Referral</td>
<td></td>
</tr>
<tr>
<td>Eye Exam</td>
<td></td>
<td>Counseling Referral</td>
<td></td>
</tr>
</tbody>
</table>

4.2 The orders will be placed by primary care provider roles, including physicians, nurse practitioners (NP), and physician assistants (PA). Hereafter, these roles will be referred to as providers.

4.3 Historical Data

Historical patient data will need to be reviewed to determine when laboratory tests, medications, and referrals need to be ordered. Historical data can be accessed from the electronic health record in a variety of ways. The left-hand tool vertical tool bar is one way to access historical data.

To determine if your patient has a chronic disease, click on “Problems” tab to review the patient’s documented problem list. Use the necessary.
Historical lab information can be accessed under the “Results” tab. The lab result as well as the date associated with the result will appear. Historical medication information can be accessed through the “Meds” tab.

Historical referral information can be accessed by clicking on the “Find” tab. Click on “Order” and scroll through the results to search for referrals. The order date associated with the referral will be listed on the right-hand side.
4.4 Order Sets

Order sets have been created in the electronic health record to support standardized documentation by providers. These order sets have pre-selected laboratory tests, medications, and referrals that facilitate the data extraction process. In the Assessment/Plan section of the office visit, click on the + at the top of the screen:

When you click on the +, a search box will populate. Type in the chronic disease (diabetes mellitus type 2, hypertension, anxiety, and/or depression). The order set with the standard labs, medications, and/or referrals will be entitled Diabetes (Outcomes), Hypertension (Outcomes), Anxiety (Outcomes), or Depression (Outcomes):
Select the appropriate order set based on the patient. Once you have selected the order set, you may need to edit the ICD-10 code by clicking on the orange text and selecting the appropriate ICD-10 code.
Based on what you learned when you reviewed the historical data, you may need to delete certain orders. You can delete orders by hovering over them and clicking on the blue “X” on the far right-hand side:

5. Data Extraction

5.1 Data Extraction Reports

There are five data extraction reports in the Athena Health Report Library. Here is a brief summary of the report names and which outcome measures are within each report:
<table>
<thead>
<tr>
<th>Athena Health Report Name</th>
<th>Outcome Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>KH NSG Dashboard Report</td>
<td>Body mass index (BMI)</td>
</tr>
<tr>
<td></td>
<td>Blood pressure (BP)</td>
</tr>
<tr>
<td></td>
<td>Random blood glucose/Fasting blood glucose (RBG/FBG)</td>
</tr>
<tr>
<td></td>
<td>Patient Health Questionnaire (PHQ-9)</td>
</tr>
<tr>
<td></td>
<td>Generalized Anxiety Disorder 7-Scale (GAD-7)</td>
</tr>
<tr>
<td></td>
<td>Social history questions</td>
</tr>
<tr>
<td>KH PRV Labs</td>
<td>Complete metabolic panel (CMP)</td>
</tr>
<tr>
<td></td>
<td>Hemoglobin A1c (HgbA1C)</td>
</tr>
<tr>
<td></td>
<td>Lipid panel</td>
</tr>
<tr>
<td>KH PRV Master List</td>
<td>Master list of appointments for patients with qualifying diagnoses</td>
</tr>
<tr>
<td>KH PRV Referrals</td>
<td>Spiritual Care consult</td>
</tr>
<tr>
<td></td>
<td>Counseling consult</td>
</tr>
<tr>
<td></td>
<td>Eye Exam referral</td>
</tr>
<tr>
<td></td>
<td>Dental Screening referral</td>
</tr>
<tr>
<td>KH PRV Medications</td>
<td>Angiotensin Converting Enzyme Inhibitors (ACEI)</td>
</tr>
<tr>
<td></td>
<td>Angiotensin Receptor Blockers (ARB)</td>
</tr>
<tr>
<td></td>
<td>Statins</td>
</tr>
<tr>
<td></td>
<td>Aspirin</td>
</tr>
</tbody>
</table>

5.2 Accessing the Data Extraction Reports in Athena Health

The five data extraction reports are stored in the Athena Health Report Library. You can access these reports by clicking on the Reports tab on the upper banner after you log into Athena Health. Then click on “Reports Library”: 
Click on the “Clinicals” tab.

Scroll down to “Practice Reports”. Continue scrolling until you locate the reports titled as below:

- KH NSG Dashboard Report
- KH PRV Labs
- KH PRV Master List
- KH PRV Medications
- KH PRV Referrals

5.2 Report Columns

For the compliance analysis program to work, it is essential that the columns of each report are not altered. However, if you do desire to make changes to the reports, you can add additional columns beyond the columns that are already in place.

5.3 Report Filters

<table>
<thead>
<tr>
<th>Display Column</th>
<th>Filter Criteria</th>
<th>Filter Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient ID</td>
<td>Patient Status: <em>Active</em></td>
<td>To remove test patients from inclusion in reports</td>
</tr>
<tr>
<td>Clinical Encounter Date</td>
<td>Relative Date Range: <em>Previous Month</em></td>
<td>To obtain all clinical encounters from previous month.</td>
</tr>
<tr>
<td>Appointment Type</td>
<td>This filter can be easily modified if you want to capture data from a specific time period</td>
<td></td>
</tr>
<tr>
<td>------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>DIABETIC EDUCATION (60 min)</td>
<td>To obtain only patient visits that qualify as one of these appointment types</td>
<td></td>
</tr>
<tr>
<td>Established Brief (20 min)</td>
<td>To exclude urgent care, women’s health, and/or specialty appointments</td>
<td></td>
</tr>
<tr>
<td>Established Complex (40 min)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Established Extended (30 min)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Follow-up Established (20 min)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Follow-up No Charge (10 min)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NEW ESTABLISHED COMPLEX (40 min)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical Female (40 min)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical Male (30 min)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Refugee Initial Visit (80 min)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ICD-10 Clinical Order Diagnosis Code</th>
<th>This filter can be easily modified if you want to capture data from a specific time period</th>
</tr>
</thead>
<tbody>
<tr>
<td>I10</td>
<td>To obtain only patient visits with these ICD-10 diagnoses codes</td>
</tr>
<tr>
<td>E11*</td>
<td>The use of the asterisk includes all diagnoses codes within the selected diagnosis stem</td>
</tr>
<tr>
<td>F41*</td>
<td>For example, E11* includes all type 2 diabetes mellitus ICD-10 codes</td>
</tr>
<tr>
<td>F32*</td>
<td></td>
</tr>
<tr>
<td>F33*</td>
<td></td>
</tr>
</tbody>
</table>

5.4 Scheduled Reports

Each report is scheduled to be run on the first day of the month on a monthly basis and delivered into the Report Inbox of the Project & Quality Manager. The report will provide the data from appointments scheduled during the previous calendar month. To access the reports from the Report Inbox, first click on the Reports tab on the home screen menu bar:
The Report Inbox will populate on the left-hand pane of the window as below:

Click on the correct category (depending on when you are accessing the reports). Then, find the reports you will need for the compliance analysis program. Make sure to download the files using the down-facing arrow on the right-hand side as seen below:
5.4 Exporting “.csv” files into Compliance Analysis Program

Locate the report that you want to run. Click on the “run” link.

A new window will populate. Make sure that the Report Format “Comma Delimited Text (CSV)” is selected.
The report will be downloaded into the Downloads file of your computer; the name of the file will be “printcsvreport(#).csv”. The # will depend on how many reports you have downloaded since you cleared your downloads in your internet browser.

Open the file. Select the diamond in the upper left hand corner to select all the fields; copy the selected fields.

Open the compliance analysis program. At the bottom of the screen, you will see several tabs as pictured below:
The data extraction report data should be pasted into the appropriate tabs in compliance analysis program as follows:

<table>
<thead>
<tr>
<th>Report Name</th>
<th>Tab in Compliance Analysis Program</th>
</tr>
</thead>
<tbody>
<tr>
<td>KH NSG Dashboard Report</td>
<td>Nursing Data</td>
</tr>
<tr>
<td>KH PRV Labs</td>
<td>Provider Labs</td>
</tr>
<tr>
<td>KH PRV Master List</td>
<td>Provider Master List</td>
</tr>
<tr>
<td>KH PRV Referrals</td>
<td>Provider Referrals</td>
</tr>
<tr>
<td>KH PRV- Medications</td>
<td>Provider Medications</td>
</tr>
</tbody>
</table>

Take the selected copied data from the “.csv” file and paste into the appropriate tab. Make sure to maintain the correct format by selecting the diamond in the upper left hand corner of the selected tab in the compliance analysis program file.

You can briefly review the data to make sure the report populated correctly.

Now that you have successfully exported the “.csv” files into the compliance analysis program you can continue on to the Section 6: The Compliance Analysis Program.

5.5 Social History Questions and Screening Test Scores

During the creation of the data extraction reports, it became clear that the way that both the social history questions and the screening test scores are scored in the electronic health record makes it impossible to retrieve past data once new data is recorded. For example, if you were looking for the social history questions data from a clinical encounter during the month of September 2016, and the patient has had a clinical appointment after September 2016, you will only be able to access the most recently recorded data. For this reason, it will be imperative to capture the monthly data at the end of each month to have the most accurate picture of documentation compliance.
5.6 Blood Glucose Outcome Measure

During the creation of the data extraction reports, there was difficulty in extracting the outcome measure Type 2 diabetes mellitus: Random blood glucose/Fasting blood glucose (DM: RBG/FBG). Per the outcome measures standard process, DM: RBG/FBG records the number of RBG/FBG measurements that are taken during office visits for patients with type 2 diabetes mellitus. The Athena Health technical support staff were contacted to determine why the blood glucose measurement was not able to be extracted after the Athena Health Streamline update was implemented. For this reason, the DM: RBG/FBG outcome measure will not be included in the clinical dashboard documentation compliance analysis at this time.

Therefore, a case was created by the Athena Health technical support staff to further investigate if there is a bug in the Streamline update that prevented the extraction of the blood glucose measurement data. The case was created on 3/14/17. The case number is 7243048. Here is the email sent from Athena Health:

A Support Agent made a new comment on your case. You can review the comment below or go to the case. If you do not have access to the Manage Support Cases page, contact the Client Support Center.

**Issue**
[8589] Report Not Pulling Encounter Blood Glucose - REPLICATED

**New Comment**

a. Practice ID: 8589  
b. Username: khendricksma  
c. Department: Main Office  
d. Example: Patient 12766a8589  
e. Our client is trying to run a report to find Blood Glucose levels that are being entered during the encounter, however nothing is populating in the Encounter Blood Glucose fields in the report. Patient 12766a8589 had the BG Level added to the encounter on 2/7/17, but it did not populate in the report.  
f. OS: OSX 10.6.8  
g. Browser: Chrome 56  
h. Since report is saved to ‘My Reports’, I have attached a copy of the report. She saved the report as ‘KH NSG Dashboard Report’.  
i. Kaitlin would like to either have the correct information pull into her report or confirm that the information is no longer reportable.
6. Compliance Analysis Program

6.1 Saving the Compliance Analysis Program

The compliance analysis program is saved as “KT Dashboard – r5.xlsm”. I recommend that you leave one blank copy of the program. Each month when you add new data, consider using the “Save As” function to save a new copy of the file, using the month as the file name. For example, the data from April 2017 would be saved under the file name “April 2017 Dashboard.xlsm”. The benefit of saving the file this way allows for preserving the monthly data from the electronic health record. It also reserves an original, working copy of the compliance analysis program in case some of the essential functions are accidently disrupted by unintended clicking.

6.2 Using the Compliance Analysis Program

Open the compliance analysis program entitled “KT Dashboard - r5.xlsm”. There will be a yellow border entitled “Security Warning: Macros have been disabled.” You will need to click on the “Enable Content” button in order to use the compliance analysis program.

Once you have pasted all the data from the electronic health record into the appropriate tabs in the compliance program file, go to the Dashboards tab:
Here is a screenshot of the Dashboard tab showing the both dashboards:

![Dashboard Screenshot]

Locate the Start Date and End Date in the upper left hand corner:

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Start Date: 08/01/16</td>
</tr>
<tr>
<td>7</td>
<td>End Date: 08/31/16</td>
</tr>
<tr>
<td>8</td>
<td></td>
</tr>
</tbody>
</table>
In cell B6, enter the start date of the data that you want to analyze for documentation compliance. In cell B7, enter the end date of the data that you want to analyze for documentation compliance. The purpose of this functionality is to allow the user to isolate selected date ranges within the data embedded in the compliance analysis program.

Now press the “Update Nursing DB” button above the Volunteer Nurse Dashboard:

The data will populate in the “Latest Run” column. Select the column and paste it into the appropriate month column.

For the purposes of this demonstration, the data has been pasted into the January column:
Now that you have populated the clinical dashboard with the appropriate documentation compliance data, continue to Section 7: Clinical Dashboards, for instructions on how to print the Clinical Dashboards.

An additional column was added to the Dashboards entitled “Blank” (see below).

The purpose of this column was to allow for additional columns to be inserted into the spreadsheet while maintaining the formulas for the control chart data. When you insert columns, make sure to insert by selecting the blank column, and inserting within the table to maintain the formulas that generate the control charts.

6.3 Additional Tabs within the Compliance Analysis Programs

There are two tabs within the compliance analysis programs that have not been covered yet in this procedure manual. The “commands” tab contains a basic summary of how the compliance analysis program looks through the tabs to calculate documentation compliance.
The “Rosetta Stone” tab contains a translation of computer code (from Athena Health) into basic clinical terms. It also includes the valid ranges that the computer program will use for certain outcome measures (ex. blood glucose).

### 6.4 Troubleshooting the Compliance Analysis Program

If you encounter the screen pictured below, there may be something wrong with the compliance analysis program:

Do not choose the Debug option unless you know how to use Visual Basic in Microsoft Excel. Please choose the End button.

Here are some troubleshooting tips:

- Make sure that the dates in the “Start Date” and “End Date” cells are correct and correspond with the dates of the data within the tabs (Nursing Data, Provider Master List, Provider Medications, Provider Referrals, Provider Labs).
- Make sure that the data extraction reports have been copied and pasted into the correct tabs (See Section 5.4 for which reports go into which tabs). Also make sure that the data are in the correct columns and rows. The report name should be in Cell A1, with Row 2 containing the labels for the data. The clinical data should start in Row 3.
- Double check the year in the dates of the data tabs. If the year is suddenly four years ahead or behind what it ought to be, you may have encountered the 1904 issue (See Section 6.4 for how to correct this).

### 6.5 The “1904” Data Issue
The compliance analysis program was created using Microsoft Excel 2010. If the data extraction reports are saved using an older/newer version of Microsoft Excel, you may encounter a problem with the “1904” Data issue. Likely, you will not notice anything is wrong until there is an error message when you try to calculate the compliance analysis for either the Nursing or Provider Dashboards. There will be two clues that may indicate that you have a 1904 issue. First, the years in the dashboard row will change from “Jan-17” to “Jan-21” as seen below:

The other clue will be within the data tabs. All the dates within these tabs will have changed by four years. For example, the date 1/19/17 will show up at 1/19/21. Fortunately, there is an easy fix for this problem. First, go to File, then Choose “Options” at the bottom of the menu as shown below:

The following window will populate as shown below:
Click on “Advanced” on the left-hand side of the window. Scroll down until you reach the section entitled “When calculating this workbook…” Look for “Use 1904 data option.” If the box is checked, uncheck this box. If it is not checked, then check it. This should resolve the issue.
7. Clinical Dashboard

7.1 What is the Clinical Dashboard?

The Clinical Dashboard serves as a visual organization of the documentation compliance data. The documentation compliance for each measure is calculated using patient care documentation recorded in the electronic health record during one calendar month.

7.2 There are two Clinical Dashboards: one for nursing volunteer and one for provider volunteer performance. See Table 7.1 and Table 7.2 below.

Table 7.1 Nursing Staff Clinical Dashboard

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Outcome Measure</th>
<th>Jan-17</th>
<th>Feb-17</th>
<th>Mar-17</th>
<th>Apr-17</th>
<th>May-17</th>
<th>Jun-17</th>
<th>Jul-17</th>
<th>Aug-17</th>
<th>Sep-17</th>
<th>Oct-17</th>
<th>Nov-17</th>
<th>Dec-17</th>
</tr>
</thead>
<tbody>
<tr>
<td>T2DM</td>
<td>BMI</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hypertension</td>
<td>Blood pressure</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>BMI</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depression</td>
<td>PHQ-9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anxiety</td>
<td>GAD-7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All patients</td>
<td>Smoking status</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Medication compliance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Perceived Health</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Exercise Level</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td>Stress level</td>
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<td>Number of qualifying patient visits</td>
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</tbody>
</table>
7.3 The Clinical Dashboards are posted in a visible place in the clinic area to provide feedback to the staff and volunteers regarding documentation performance. On the first business day of each new month, the Project & Quality Manager (or delegate of his/her choice) will print out and post the Clinical Dashboards.

7.4 Printing the Clinical Dashboards from the Compliance Analysis Program

First, you will need to hide Columns F, G, and T so that these columns don’t print. Click on Column F and G, then use the right click option on your mouse to populate the following menu:
Select Hide. Do the same thing with Column T (After you have printed the dashboards, you can “Unhide” these columns by selecting Columns E and H, then using the right click option on your mouse to populate the same menu. This time, select Unhide instead of Hide.) Select the entire dashboard that you want to print:

Go to Page Layout tab, and click on Print Area. Then click on Set Print Area.
Now, go to the File tab, and select Print. Ensure that the correct dashboard is shown in the preview area. Also check that Landscape Orientation is selected under Settings. Click on Print.

8. Control Charts

8.1 What are Control Charts?

Statistical process control tools can add an element of chronology to statistical analysis. The control chart, a type of statistical process control tool, provides a visual organization of the documentation compliance over time (Benneyan, Lloyd, & Plsek, 2003). Control charts are frequently used in quality improvement work.

- The x-axis of the control chart is the time with the unit of sequential months.
- The y-axis of the control chart is the percent compliance.
Control charts contain three horizontal lines: the mean, the lower control limit, and the upper control limit (Benneyan et al., 2003).

- The mean is simply an average of all the percent compliance data over the given time period.
- The value of the lower control limit is calculated by the following formula: Mean – 3*(standard deviation).
- The value of the upper control limit is calculated using the following formula: Mean + 3*(standard deviation).

These three horizontal lines are used to analyze the control charts for special cause variation versus common cause variation.

8.2 Analyzing Control Charts

The point of control charts is to look for variation. There are two kinds of variation: common cause and special cause variation:

- Common cause variation means “the natural variation inherent in a process on a regular basis” (Benneyan et al., 2003, p. 459).
- Special cause variation means “unnatural variation due to events, changes, or circumstances that have not previously been typical or inherent in the regular process” (Benneyan et al., 2003, p. 459).

Basically, if you think about traditional statistical tests used in research, the concept of special cause variation is similar to a p value less than 0.05, or a statistically significant event. Special cause variation is what we are after in quality improvement efforts. There are a number of rules for analyzing special cause versus common cause variation. “A common set of tests for special cause variation is:

- One point outside the upper or lower control limits;
- Two out of three successive points more than [two standard deviations] from the mean on the same side of the centre line;
- Four out of five successive points more than [one standard deviation] from the mean on the same side of the centre line;
- Eight successive points on the same side of the centre line;
- Six successive points increasing or decreasing (a trend); or
- Obvious cyclic behavior (Benneyan et al., 2003, p. 461).”

8.3 Using the Compliance Analysis Program to Generate Control Charts for Outcome Measures
On the right-hand side of the dashboards, you may notice a table of data entitled “Control Chart Data.”

The table will automatically update with the mean, standard deviation, upper control limit, and lower control limit of the data within the dashboards. These tables are used to populate the control charts.

Go to the spreadsheet tab entitled “Control Charts.”

There is a control chart for each outcome measure within this spreadsheet. You may need to scroll around to locate all the control charts.
The elements (data points, mean, upper control limit, and lower control limit) will automatically populate when you update each dashboard with new data. You can resize the charts as needed. You can also print individual charts as needed—see Section 7.4 Printing the Clinical Dashboards from the Compliance Analysis Program.

8.4 Troubleshooting the Control Charts

Here are some common problems that you may encounter while using the control charts:

- Why aren’t the Upper Control Limit (UCL) or Lower Control Limit (LCL) lines showing up?
  - If the LCL is less than 0, then the LCL line will not show up on the control chart given the way the y-axis units are configured.
  - If the UCL is greater than 100, then the UCL line will not show up on the control chart given the way the y-axis units are configured.
  - Here is an example of a control chart that doesn’t have a visible UCL:
How can I make the UCL or LCL show up?
   - You will need to change the minimum or maximum units on the y-axis.
   - To do this, click on the numbers listed on the y-axis. A box surrounding these numbers will show up.

   - Now double-click on the box. The menu shown below will populate. You can change the minimum or maximum limits to include the upper or lower control limits. I recommend changing the minimum to -0.5 (you must include the “-“) and the maximum to 1.5.
• Why does “#DIV” show up in one of the cells within the Control Chart Data table?
  o Basically this means that there is not enough information to calculate the standard deviation, upper control limit, and/or lower control limit. You will need to wait until you have collected more compliance data to generate a control chart.
  o Here is a screenshot of this problem:
Appendix J: Volunteer Education Modules

Improving Documentation of Quality Care
Volunteer Nurses Module
Initiated February 6, 2017

Introduction to Project

- Thank you for your participation in this module and for your volunteer service at the safety net clinic.
- The purpose of this project is to assess and standardize documentation in the electronic health record by healthcare professionals at the safety net clinic.
- The electronic health record can be difficult to navigate in a busy clinic setting as a volunteer where there isn’t a previously established standard documentation format, resulting in variable documentation.
- Standardizing the documentation process makes it easier to export valuable information from the electronic health record, which can be used to:
  - Track patient outcomes over time,
  - Identify opportunities for future interventions, and/or
  - Demonstrate the quality of care provided for third-party payer reimbursement.
Purpose of Module

- The purpose of this module is to support volunteers to document the quality care they provide in a standard way.
- There are NO significant changes to the Intake process that was started in September 2016.
- The pre- and post-test survey questions will be used to refine and improve the modules to better serve the volunteers.
- Beginning in February 2017, you will see a Clinical Dashboard in the clinic area to provide feedback on how patient care is being documented in the electronic health record.

Pre-Test Survey

Please cut and paste this address into your internet browser:

https://www.surveymonkey.com/r/SS5LK3Z
Vital Signs

Body Mass Index
Blood Pressure
Random/Fasting Blood Glucose

Vital Signs: Body Mass Index

- Body mass index (BMI) is automatically calculated by the electronic health record
- Record the patient’s weight at each visit
- Height
  - Populates from previous visits
  - Needs to be re-entered once a year

<table>
<thead>
<tr>
<th>Ht</th>
<th>5 ft 5 in (165.1 cm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wt</td>
<td>155 lbs (70.31 kg)</td>
</tr>
<tr>
<td></td>
<td>Refused</td>
</tr>
<tr>
<td></td>
<td>Out of Range</td>
</tr>
<tr>
<td>BMI</td>
<td>25.8</td>
</tr>
</tbody>
</table>
Vital Signs: Blood Pressure

- Blood pressure is measured and recorded for every office visit.
- Document which arm used to measure blood pressure, patient’s position, and size of blood pressure cuff.

Vital Signs: Random/Fasting Blood Glucose

- Fasting/random blood glucose is measured and recorded for all patients with diabetes mellitus presenting for office visits.
- Document blood glucose in Vitals section
  - Scroll to the bottom of the section to “Measurements”
### Social History Information

<table>
<thead>
<tr>
<th>Category</th>
<th>Type</th>
<th>Possible Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perceived Health</td>
<td>Self-reported</td>
<td>Excellent, very good, fair, or poor</td>
</tr>
<tr>
<td>General stress level</td>
<td>Self-reported</td>
<td>Low, medium, high</td>
</tr>
<tr>
<td>Exercise level</td>
<td>Self-reported</td>
<td>None (0 minutes per week) Occasional (30 minutes, 3-5 times/week) Moderate (60 minutes, 3-5 times/week) Heavy (90 minutes, 3-5 times/week)</td>
</tr>
<tr>
<td>Smoking status</td>
<td>Current status # packs/day Years of use</td>
<td>Current use, current someday use, past use</td>
</tr>
<tr>
<td>Medication compliance</td>
<td>Consistent supply Last time taken Go without taking meds</td>
<td>Yes/No Today, Within last 2 days, last week, last month Yes/No</td>
</tr>
</tbody>
</table>
Social History Information: Screenshot

**Social History**

- **In general, how would you rate your health?**
  - Fair

- **General stress level**
  - Low
  - Medium
  - High

- **Exercise level**
  - Occasional
  - Walks to store once a week

- **Smoking status**
  - Current every day smoker

- **Smoking - how much**
  - 3+ FPD

- **Tobacco-years of use**
  - 20
  - 8 ppd x 10 yrs

- **Do you have a consistent supply of your medications?**
  - Yes

- **When is the last time you took your medications?**
  - Today

- **If you miss doses of your medication what is the most common reason?**
  - Forgot

### Screening Tools

- PHQ-2/PHQ-9
- GAD-7
Accessing Screening Tools

- Scroll down in the left hand pane of the Intake window
- Click on Screening line and the right hand pane will populate with Screening +
- Click on the + sign to access the screening tool menu (next slide)

Accessing Screening Tools

- Select the PHQ-2/PHQ-9 and GAD-7 boxes

- The PHQ-2 version will populate first

**PHQ-2/PHQ-9**

Adolesces PHQ-9 (Note: Once you switch versions, you will need to score this questionnaire again.)

Over the last two weeks, how often have you been bothered by any of the following problems?

<table>
<thead>
<tr>
<th>Question</th>
<th>Not at all</th>
<th>Several days</th>
<th>More than half the days</th>
<th>Nearly every day</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Little interest or pleasure in doing things</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Feeling down, depressed, or hopeless</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Score

May 2023
Screening Tools: PHQ-2/PHQ-9

- Screens for depression
- May use paper copy or the electronic health record
- If PHQ-2 score is positive, complete the PHQ-9
- If PHQ-9 score is positive, notify provider and Integrated Behavioral Health staff

<table>
<thead>
<tr>
<th>Tool</th>
<th>Positive Score</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHQ-2</td>
<td>≥3</td>
<td>Kroenke, Spitzer, &amp; Williams, 2001</td>
</tr>
<tr>
<td>PHQ-9</td>
<td>≥10</td>
<td></td>
</tr>
</tbody>
</table>

Screening Tools: PHQ-2/PHQ-9

- Record the patient’s responses and press the score button
- If score is between 0 and 2, continue on to the GAD-7
- If the patient’s score is 3 or greater, then continue on to PHQ-9:

1. Little interest or pleasure in doing things
2. Feeling down, depressed, or hopeless
3. Trouble falling or staying asleep, or sleeping too much
4. Feeling tired or having little energy
5. Poor appetite or overeating
6. Feeling bad about yourself - or that you are a failure or have let yourself or your family down
7. Trouble concentrating on things, such as reading the newspaper or watching television
8. Moving or speaking so slowly that other people could have noticed - or the opposite - being so fidgety or restless that you have been moving around a lot more than usual
9. Thoughts that you would be better off dead or of hurting yourself in some way
Screening Tools: PHQ-9

- After recording the patient responses, make sure to press “Score Again” button:

  ![PHQ-9 Score Screen](image)

  - The electronic health record will automatically calculate the score for the PHQ-9 questionnaire

Screening Tools: GAD-7

- Screens for anxiety
- Positive score ≥10 (Spitzer, Kroenke, Williams, & Löwe, 2006)

![GAD-7 Questionnaire](image)
Screening Tools: GAD-7

- After recording patient responses, press the score button to calculate the GAD-7 score:

![Score](Image)

- As always, be sure to save questionnaire responses and scores by clicking the green Save button in the upper right hand corner of the screening window:

![Save](Image)

Documenting Screening Tool Scores

- For the purposes of data extraction, ALL PHQ-2/PHQ-9 and GAD-7 scores need to be recorded in a separate location at the bottom of the Social History section:

<table>
<thead>
<tr>
<th>Score</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>15</td>
</tr>
<tr>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>

- Even if you recorded and scored the screening tools in the electronic health record, you need to re-record the scores in the Social History Section.
Clinical Dashboard

- The Clinical Dashboard is a visual organization of the documentation performance data.
- The documentation performance for each measure will be calculated using patient care documentation recorded in the electronic health record during one calendar month.
- The Clinical Dashboard will be posted in a visible place in the clinic area to provide feedback about our progress on standardizing documentation.
- See a preview of the Clinical Dashboard for Nursing Staff on the next slide.
Clinical Dashboard Preview

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Outcome Measure</th>
<th>Jan-17</th>
<th>Feb-17</th>
<th>Mar-17</th>
<th>Apr-17</th>
<th>May-17</th>
<th>Jun-17</th>
<th>Jul-17</th>
<th>Aug-17</th>
<th>Sep-17</th>
<th>Oct-17</th>
<th>Nov-17</th>
<th>Dec-17</th>
</tr>
</thead>
<tbody>
<tr>
<td>T2DM</td>
<td>BMI</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>Hypertension</td>
<td>Blood pressure</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>Depression</td>
<td>PHQ-9</td>
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<tr>
<td>Anxiety</td>
<td>GAD-7</td>
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<tr>
<td>All patients</td>
<td>Smoking status</td>
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<td>Health</td>
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<td>Exercise</td>
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<td>Stress level</td>
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</tbody>
</table>

Nursing Dashboard

Post-Test Survey

Please cut and paste this address into your internet browser:

https://www.surveymonkey.com/r/SRFN59X
Thank You!

For your time and effort to complete this module and for your dedication to providing quality health care services to vulnerable populations at the safety net clinic.

References

Introduction to Project

- Thank you for your participation in this module and for your volunteer service at the safety net clinic.
- The purpose of this project is to assess and standardize documentation in the electronic health record by healthcare professionals at the safety net clinic.
- The electronic health record can be difficult to navigate in a busy clinic setting as a volunteer where there isn’t a previously established standard documentation format, resulting in variable documentation.
- Standardizing the documentation process makes it easier to export valuable information from the electronic health record, which can be used to:
  - Track patient outcomes over time,
  - Identify opportunities for future interventions, and/or
  - Demonstrate the quality of care provided for third-party payer reimbursement.
Purpose of Module

- The purpose of this module is to support volunteers to document the quality care they provide in a standard way.
- There are NO significant changes to the order sets that were designed in October 2016.
- The pre- and post-test survey questions will be used to refine and improve the modules to better serve the volunteers.
- Beginning in February 2017, you will see a Clinical Dashboard in the clinic area to provide feedback on how patient care is being documented in the electronic health record.

Pre-Test Survey

Please cut and paste this address into your internet browser:

https://www.surveymonkey.com/r/SS5LK3Z
## Provider Measures with Recommended Frequency

<table>
<thead>
<tr>
<th>Diabetes</th>
<th>Hypertension</th>
<th>Anxiety</th>
<th>Depression</th>
</tr>
</thead>
<tbody>
<tr>
<td>HgbA1C</td>
<td>CMP</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q 6 months</td>
<td>Q 6-12 months</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CMP</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q 6-12 months</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lipid Panel</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q 6-12 months</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACEI/ARB Rx</td>
<td>Aspirin Rx</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Statin Rx</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dental Exam</td>
<td>Counseling Referral</td>
<td></td>
<td>Counseling Referral Once</td>
</tr>
<tr>
<td>Annually</td>
<td>Once</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eye Exam</td>
<td>Spiritual Care Referral</td>
<td></td>
<td>Spiritual Care Referral Once</td>
</tr>
<tr>
<td>Annually</td>
<td>Once</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Historical Data

- Historical data will need to be reviewed to determine when laboratory tests, medications, and referrals need to be ordered
- Historical data can be accessed from the electronic health record in a number of ways
- One of the easiest ways is to use the vertical tool bar on the left hand side of the patient window
Problem List

- To determine if your patient has a chronic disease, click on “Problems” tab to review the patient’s documented problem list
- Use the scroll bar on the right as necessary

---

Historical Data: Labs

- Access via vertical tool bar on left hand side under “Results” tab
- Lab result as well as associated date of result will appear
Historical Data: Medications

- Access via vertical tool bar on left hand side under “Meds” tab

![Medications Screen](image)

Historical Data: Referrals

- Click on “Find” tab on vertical tool bar on left side of patient window
- Click on “Order” and scroll through to search for referrals. The order data associated with the referral will be listed on the right hand side.
- Note: You can also find information about labs and medications using the “Find” tab

![Referrals Screen](image)
Order Sets: Selection

- Order sets have been created in the electronic health record to support standardized documentation by providers
- These order sets have pre-selected laboratory tests, medications, and referrals that the data extraction process.
- In the Assessment & Plan section of the office visit, click on the + sign at the top of the window:

  ![Assessment & Plan](image)

- When you click the + sign, a text box will populate. Type in the chronic disease and choose the appropriate order set: Diabetes (Outcomes), Hypertension (Outcomes), Anxiety (Outcomes), and/or Depression (Outcomes). See the following slides for examples
Order Sets: Diabetes

**DIAGNOSES & ORDERS**

- type 2 diabetes mellitus
  - ICD-10 code
  - Assessment
    - diabetic eye exam
      - Send on 01-22-2017
    - comp metabolic panel
      - Send on 01-22-2017 | Spectrum Health
    - lipid panel, serum
      - Send on 01-22-2017 | Spectrum Health
    - dental screening
      - Send on 01-22-2017
    - HGB A1C
      - Send on 01-22-2017 | Spectrum Health

Orders from Spectrum Pick Up

Order Sets (3)

- Diabetes (Outcomes) (6)

Order Sets: Hypertension

**DIAGNOSES & ORDERS**

- hypertensive disorder
  - Assessment

Orders from Spectrum Pick Up

Order Sets (1)

- Hypertension (Outcomes) (2)
Order Sets: Anxiety

**Diagnoses & Orders**
- **F41.9 Anxiety disorder, unspecified**
- **Assessment**
- **spiritual consult referral**
  Send on 01-22-2017
- **counseling referral**
  Send on 01-22-2017

Order Sets:
- Order Sets for anxiety (1)
- Anxiety (Outcomes) (3)

Order Sets: Depression

**Diagnoses & Orders**
- **ICD-10 code**
- **Assessment**
- **counseling referral**
  Send on 01-22-2017
- **spiritual consult referral**
  Send on 01-22-2017

Order Sets:
- Order Sets (1)
- Depression (Outcomes) (3)
Order Sets: Editing

- You will need to choose a more specific ICD-10 code based on patient presentation; these can be edited by clicking on the ICD-10 code text
- Based on what you learned when you reviewed the historical data, you may need to delete certain orders. You can delete orders by hovering over them and clicking on the blue “X”:

Clinical Dashboard
Clinical Dashboard

- The Clinical Dashboard is a visual organization of the documentation performance data.
- The documentation performance for each measure will be calculated using patient care documentation recorded in the electronic health record during one calendar month.
- The Clinical Dashboard will be posted in a visible place in the clinic area to provide feedback about our progress on standardizing documentation.
- See a preview of the Clinical Dashboard for Provider Staff on the next slide.

### Clinical Dashboard Preview

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Outcome Measures</th>
<th>Jan-17</th>
<th>Feb-17</th>
<th>Mar-17</th>
<th>Apr-17</th>
<th>May-17</th>
<th>Jun-17</th>
<th>Jul-17</th>
<th>Aug-17</th>
<th>Sep-17</th>
<th>Oct-17</th>
<th>Nov-17</th>
<th>Dec-17</th>
</tr>
</thead>
<tbody>
<tr>
<td>T2DM</td>
<td>HbA1C</td>
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</table>
Post-Test Survey

Please cut and paste this address into your internet browser:

https://www.surveymonkey.com/r/SRFN59X

Thank You!

For your time and effort to complete this module and for your dedication to providing quality health care services to vulnerable populations at the safety net clinic.
Appendix K: Volunteer Education Surveys

Volunteer Education Pre-Test Survey

1. Please select the role that best describes your practice:
   - Nursing staff: RN, LPN, MA, CNA, other
   - Provider staff: MD, DO, PA, NP

2. Before reviewing the education materials, I feel I was documenting patient care consistently in the electronic health record about:
   - 10% of the time
   - 20% of the time
   - 30% of the time
   - 40% of the time
   - 50% of the time
   - 60% of the time
   - 70% of the time
   - 80% of the time
   - 90% of the time
   - 100% of the time

3. In the past, I have experienced difficulty in looking up patient information in the electronic health record while volunteering at the clinic about:
   - 10% of the time
   - 20% of the time
   - 30% of the time
   - 40% of the time
   - 50% of the time
   - 60% of the time
   - 70% of the time
   - 80% of the time
   - 90% of the time
   - 100% of the time

4. In the past, I have experienced difficulty in documenting patient care in the electronic health record while volunteering at the clinic about:
   - 10% of the time
   - 20% of the time
   - 30% of the time
   - 40% of the time
   - 50% of the time
   - 60% of the time
   - 70% of the time
   - 80% of the time
   - 90% of the time
   - 100% of the time
Volunteer Education Post-Test Survey

1. Please select the role that best describes your practice:
   - Nursing staff: RN, LPN, MA, CNA, other
   - Provider staff: MD, DO, PA, NP

For each of the statements below, circle the response that best characterizes how you feel about the statement: 1 = Strongly disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly agree.

<table>
<thead>
<tr>
<th>Question</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. The education materials were applicable to the tasks I complete when I volunteer at the clinic.</td>
<td>1  2  3  4  5</td>
</tr>
<tr>
<td>3. The education materials provided helpful information on how to look up patient information in the electronic health record.</td>
<td>1  2  3  4  5</td>
</tr>
<tr>
<td>4. The education materials provided helpful information on how to document patient care in the electronic health record.</td>
<td>1  2  3  4  5</td>
</tr>
<tr>
<td>5. After reviewing the education materials, I will be more likely to correctly document patient care in the electronic health record.</td>
<td>1  2  3  4  5</td>
</tr>
</tbody>
</table>

Please list any barriers you have experienced to correctly documenting the care that you provide at the clinic:  
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
Appendix L: Volunteer Survey Results

Table L1: Volunteer Survey Response Rates

<table>
<thead>
<tr>
<th>Volunteer Survey Response</th>
<th>Nursing Volunteers</th>
<th>Provider Volunteers</th>
<th>Total</th>
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<tr>
<td>Response</td>
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<tr>
<td></td>
<td>3</td>
<td>2</td>
<td>5</td>
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<tr>
<td></td>
<td>13.6%</td>
<td>16.7%</td>
<td>14.7%</td>
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<tr>
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<td>19</td>
<td>10</td>
<td>29</td>
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<tr>
<td></td>
<td>86.4%</td>
<td>83.3%</td>
<td>85.3%</td>
</tr>
</tbody>
</table>
Figure L2: Volunteer Pre-Test Survey Results

Figure L2 Legend

<table>
<thead>
<tr>
<th>Question</th>
<th>Text from Survey</th>
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</thead>
<tbody>
<tr>
<td>2</td>
<td>Before reviewing the education materials, I feel I was documenting patient care consistently in the electronic health record about</td>
</tr>
<tr>
<td>3</td>
<td>In the past, I have experienced difficulty in looking up patient information in the electronic health record while volunteering at the clinic about</td>
</tr>
<tr>
<td>4</td>
<td>In the past, I have experienced difficulty in documenting patient care in the electronic health record while volunteering at the clinic about</td>
</tr>
</tbody>
</table>
Figure L3: Volunteer Post-Test Survey Results

### Figure L3 Legend

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<th>Text from Survey</th>
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<td>2</td>
<td>The education materials were applicable to the tasks I complete when I volunteer at the clinic.</td>
</tr>
<tr>
<td>3</td>
<td>The education materials provided helpful information on how to look up patient information in the electronic health record.</td>
</tr>
<tr>
<td>4</td>
<td>The education materials provided helpful information on how to document patient care in the electronic health record.</td>
</tr>
<tr>
<td>5</td>
<td>After reviewing the education materials, I will be more likely to document patient care in the electronic health record using the standard way.</td>
</tr>
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Appendix M: Clinical Dashboards

Figure M1: Nursing Volunteers Clinical Dashboard

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<th>Feb-17</th>
<th>Mar-17</th>
<th>Apr-17</th>
<th>May-17</th>
<th>Jun-17</th>
<th>Jul-17</th>
<th>Aug-17</th>
<th>Sep-17</th>
<th>Oct-17</th>
<th>Nov-17</th>
<th>Dec-17</th>
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# A QUALITY IMPROVEMENT PROGRAM

Figure M2: Provider Volunteers Clinical Dashboard

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# of qualifying patient visits
### Appendix N: Statistical Data from Pre- and Post-Implementation Comparison

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<th>T statistic</th>
<th>p value</th>
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<td>0.31</td>
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<tr>
<td>A Spiritual</td>
<td>0.67</td>
<td>0.539</td>
<td>Not Significant</td>
</tr>
<tr>
<td>A Counseling</td>
<td>0.107</td>
<td>0.918</td>
<td>Not Significant</td>
</tr>
<tr>
<td>D Spiritual</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>D Counseling</td>
<td>-0.236</td>
<td>0.821</td>
<td>Not Significant</td>
</tr>
</tbody>
</table>
Appendix O: Control Chart for Measure: DM BMI

Control Chart Legend

UCL = Upper control limit

LCL = Lower control limit

DM BMI = Type 2 diabetes mellitus body mass index documentation compliance data