Summer 8-9-2019

Implementing Foot Care Program in a Rural Clinic

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July 2019

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Recommended Citation:
Bakhshi, M. (2019). *Implementing Foot Care Program in a Rural Clinic*. University of San Francisco, San Francisco, Ca, United States of America.

Table of Contents

Abstract

The prevalence of type 2 diabetes mellitus and its complications have increased in the United States (U.S.) in recent years. Patients with diabetes have a higher risk of foot ulcers due to diabetic peripheral arterial disease accelerated by the direct damage to the nerve and blood vessels in lower extremities by high blood sugar. Foot amputations, and frequent hospital admissions due to these and other diabetes complications are also increasing. Healthcare providers' have a unique opportunity to prevent these complications and hospital admissions, and to promote patient wellness and physical well-being through the provision of timely education and direct screening of patients' feet.

Salud Para La Gente (SPLG) Clinic is one of the main clinics in the Watsonville area that provides care to 27,000 patients with chronic diseases annually. The SPLG Clinic education for patients with diabetes focuses on diet and pharmacotherapy but lacks foot screening and foot care education to patients.

The literature review (Woodbury et al., Sibbald, Ostrow, Persaud, & Lowe, 2015; McCulloch, 2018; Singh, 2015) clarifies that foot screening is an inexpensive preventative measurement and educating providers on the importance and use of the Simplified 60-Second Foot Screening Tool (shown in appendix 8) during a patient's visit reduces the rate of foot ulcers, re-ulcerations, and foot amputations. The evidence shows that when clinicians take a short period of time to assess patients' feet and educate patients on foot care during a visit, foot ulcers can be treated early or prevented entirely, and patients' motivations to engage in their self-care increases (Sharoni, Rahman, Minhat, Ghazali, & Ong, 2017).

This DNP student-led quality improvement project involved an educational intervention for primary care providers. A pre-survey was done before giving the education on foot screening

and care to measure the clinicians' level of knowledge. The survey also assessed the clinicians' performance of foot screening according to guidelines, strategies for helping diabetic patients on self-foot care, and barriers to foot screening. An educational presentation was given, and a post-survey was obtained. Increased level for knowledge, the difficulty of the education for providers and patients, likelihood of educating patients and passing on the brochure to a patient, the appropriateness of length, presentation quality, content level, and overall workshop quality were assessed in the post-survey.

The result showed providers were eager to use the evidence-based screening tool, and clinicians' knowledge of foot care increased dramatically. They were excited to educate patients on foot care and foot log which is a diabetes self-management log and help patients to keep track of their foot care daily. Appropriate educational approaches for patients with type 2 diabetes on foot care and providers on the Simplified 60-Second Diabetic Foot Screening Tool improve patients' outcomes, promote patients' quality of life in mental and physical aspects, and increase patients' diabetes-management ability.

Keywords: Diabetic foot, screening tool, foot care, ulcer, primary care, patient education

Implementing an Evidence-Based Foot Screening Tool and a Foot Care Education for Patients at Salud Para La Gente Clinic

Section II: Introduction

Background Knowledge

Type 2 diabetes is a major health problem all over the world. In the U.S., the number of people over 18 years old with type 2 diabetes has increased from 5.5 million to 21.9 million from 1980 to 2014. In 2017, the cost of care for patients with type 2 diabetes was $327 billion, including $237 billion in direct medical care and $90 billion spent for diminished productivity (American Diabetes Association [ADA], 2018). Forty-two billion dollars of that estimate was related to physician visits and nursing and residential facility stays (ADA, 2016).

Around the globe, one of the most common problematic issues for diabetic patients is diabetic foot ulcers, resulting in a financial and emotional burden on patients, families, and societies; however, the value of disruption of families' routines and the restriction of social activities is beyond dollar amounts (Raghav, 2018). Providers' poor knowledge about foot care assessment and lack of screening tools in practice contribute to 108,000 lower-extremity amputations annually (Centers for Disease Control and Prevention [CDC], 2018). In addition, annually, 20% of hospital admissions in people with diabetes is due to foot ulcers, and 85% of major amputations are caused initially by a foot ulcer (Brownrigg, Apelqvist, Bakker, Schaper, & Hinchliffe, 2013; CDC, 2018; Snyder, & Hanft, 2009).

Local Problem

The principal objective of this quality improvement project was to improve care to patients with diabetes by changing clinical practice at SPLG Clinic to include the use of the Simplified 60-Second Diabetic Foot Screening Tool (Lowe et al., 2015) and evidence-based

patient education on foot care as a routine component of the patient visit. Providers typically have an average of 15 minutes to see a patient for a follow-up visit and 30 minutes to establish care for a new patient at the SPLG Clinic. This short period of time does not allow providers to address every aspect of diabetic care. For the project, this DNP candidate will educate providers and clinicians on the importance of foot exams and the key points on foot care. Diabetic patients spend time with other clinicians, such as Medical Assistants (MA), diabetic nurse educators, and registered nurses. For this DNP quality improvement project which was an interprofessional educational intervention, providers were educated on the Simplified 60-Second Diabetic Foot Screening Tool (Lowe et al., 2015) and provided materials to give to their patients to educate them on foot care in a couple of minutes. MAs, nurses, and diabetes educators provided assistance to providers and educated patients on the foot care.

Environment: Gap Identified

The SPLG Clinic is located in the city of Watsonville and has five branches in Santa Cruz County and six school-based health centers. The SPLG Clinic provides affordable health care to nearly 27,000 patients, mostly Spanish-speaking. The clinics provide family health, women's health, pediatric, dental, vision, wellness and behavioral counseling, lactation, and telehealth services. This project was implemented in a family-based clinic in Watsonville where more than 1,700 diabetic patients are seen by providers. A provider is assigned two rooms and usually see 15 to 18 patients in an 8-hour period. An MA is assigned to a provider. The MA helps with interpretation, gives screening tools to patients, and administers vaccines. A diabetic nurse educator and a registered nurse provide patient education and support for diet modification and insulin administration during visits. Educational material regarding diet and blood glucose monitoring as well as logs for blood pressure and blood glucose are given to patients. The

patients do not receive education regarding foot care nor any material to help them understand the importance of foot care and how to assess and care for their feet. Providers perform foot screening on a yearly basis; however, the screening may not have been done due to the shortage of time or patients' refusal.

This DNP candidate noticed that patients ask providers about their feet only when there is an ulcer or skin related problem on their lower extremities, well after the injury is under way. Patients may not realize that proper footwear can help prevent foot injuries. Providers are able to order diabetic shoes, and most insurance programs will pay for a pair of custom-molded shoes if severe diabetic foot disease is present. Footwear coverage qualification included neuropathy with evidence of callus, previous or current ulcer, previous or current pre-ulcerative callus, previous amputation, foot deformities, or poor circulation (Brunner, 2015). Lack of patients' knowledge about their diabetes, its complications, their benefit coverage, and the requirement for a severe foot disease results in expensive treatment course and patients' poor health outcomes.

This DNP project was designed to address the patient knowledge gap in diabetic footcare and provide tools and resources for providers to pass on to their patients along with appropriate and timely screening during regular patient visits with providers at the SPLG Clinic.

Available Knowledge

Narrative of evidence

Patients with diabetes suffer from many complications and require regular screening of their feet for evidence of foot ulceration, deformity, fungal infection, and vascular diseases. In the U.S., diabetes contributes to approximately 80% of the 120,000 non-traumatic amputations performed yearly (Formosa, Alfred Gatt, & Chockalingam, 2016). Some studies reported that every 20 seconds a limb is amputated somewhere in the world, and others highlighted that the

implementation of a structured diabetes foot screening program could achieve a 75% reduction in amputation rates (Weck et al., 2013). Serious diabetic foot complications can be delayed and even prevented with appropriate, careful, and reliable screening tools, and management programs (Formosa, Gatt, & Chockalingam, 2016; Li et al., 2014). Foot ulcers probably are the easiest to detect of all the long-term complications of diabetes, and foot screening should start irrespective of disease duration and frequently in primary care offices (Lavery, Wunderlich, & Tredwell, 2005). Diabetic patients are at high risk of developing foot ulceration, and detection of high-risk foot is essential for the prevention of foot ulceration (Doupis, 2016; McInnes et al., 2011). Proper assessment of the diabetic foot ulceration and appropriate management ensure better prognosis, and high priority should be given to foot care in planning their management ((Doupis, 2016; Wukich, 2013). The literature review clarifies that diabetic foot management programs provide an inexpensive preventative measurement in communities and educating providers to use a user-friendly foot screening tool reduces the rate of foot ulcers, re-ulcerations, and foot amputations (Persaud et al., 2018).

Taking a few minutes during a primary care visit to assess a diabetic patient's feet and educating patients on foot care decreases hospital admissions and length of stay in acute care hospitals and skilled nursing facilities (Allen, Van der Does, & Gunst, 2016). Patient education about the relationship of foot ulcers and diabetes increases patients' motivation and engages patients in self-care that can result in patients' behavioral changes and significant improvement in health outcomes (Allen et al., 2016; Ren et al., 2014; Mohamed et al., 2017; McInnes et al., 2011). (See Appendix 7 for the summary of evidence.)

Effective educational strategies and integrating evidence-based researches for foot care practices on diabetic patients are markers of healthcare quality (Varaei, Salsali, Cheraghi,

Tehrani, & Heshmat, 2013). Dugdall and Watson's study (2009) and Varaei et al. (2013) stated that clinicians who attend workshops and continuing education demonstrate higher knowledge and a better attitude toward evidence-based practice. Implementing interdisciplinary intervention results in increased practice awareness and improvement of the quality of life of patients by teaching them evidence-based self-care (Varaei et al., 2013, Delmas, 2006).

The Simplified 60-Second Diabetic Foot Screening Tool

The majority of diabetic foot amputations are caused by an ulcer on the skin of the foot, and early identification of such a condition in a diabetic patient is crucial to prevent lower-limb amputations (Woodbury et al, 2015). Routine screening is a necessary step for preventative care and an effective way to utilize resources. The Simplified 60-Second Diabetic Foot Screening Tool has been shown to identify high-risk diabetic patients. It was developed from the InLow 60-Second Screening tool (Sibbald et al., 2012). The InLow screening has a complex scoring measurement and usually requires 7 minutes on average to complete, with a range of 2–21 minutes (Woodbury et al., 2015). The Simplified 60-Second Diabetic Foot Screening Tool uses a 10-g Semmes-Weinstein monofilament for monofilament testing. The Simplified 60-Second Diabetic Foot Screening Tool was refined to maximize time efficiency in routine clinical practice and was designed to detect high-risk diabetic feet in a short period of time and determine the necessity of referral for patients needing treatment in a timely manner (Woodbury et al., 2015). Implementation of the Simplified 60-Second Diabetic Foot Screening Tool has the potential to improve foot care with a reduction in major amputations and diabetes-related disability and mortality (Lowe et al., 2015). The Simplified 60-Second Diabetic Foot Screening Tool is easy to use in a short period of time, takes approximately 60 seconds to complete, and if

any one item is positive, a referral is made to a diabetic foot center or podiatrist (Lowe et al., 2015; Woodbury et al., 2015).

The diabetic foot exam that is used at the SPLG Clinic by providers on a yearly basis is a tool of unknown origin that examines foot appearance, current ulcers on the foot, and other deformities, assesses pedal pulses and also utilizes monofilament testing. The SPLG tool does not address patients' history of foot diseases or any history of ulcers. Implementing the Simplified 60-Second Diabetic Foot Screening Tool addresses the history, physical exam, foot lesions, and neuropathy. This tool introduces the best practice methods to evaluate for the high-risk of foot ulcers in people with diabetes and achieve sustained improvements in the evaluation and care of foot ulcers (Lowe et al., 2015).

Monofilament

The monofilament test is one of the most frequently used screening tools for detecting neuropathy in feet, and many studies have confirmed that loss of pressure sensation using the 10-g monofilament is highly predictive of subsequent ulceration (Singh, Armstrong, & Lipsky, 2005; Mayfield & Sugarman, 2002; McCulloch, 2018). Screening with the monofilament test takes approximately one minute to complete and is easy to perform (Al-Geffari, 2012; Feng, Schlosser, & Sumplio, 2009). In addition, its cost is very low (Feng et al., 2009). However, one limitation of the monofilament tool is the need for standardization of the method by which it is applied. Many healthcare practitioners do not follow a standardized pattern of applying the monofilament test. The lack of replication of the test might cause a misdiagnosis in patients (Al-Geffari, 2012; Crawford et al., 2011; Dros et al., 2009; Feng et al., 2009; Singh et al., 2005).

Baraz, Zarea, Hajie Bibi, and Latifi (2014) disclosed that sensitivity was measured from 38% to 51%, and specificity was measured ranging from 73% to 84% for four points of testing;

however, an increasing number of testing points to ten points on a patient's feet did not increase the sensitivity or specificity. The systematic review by Feng et al. (2009) indicated that the monofilament test sensitivity fluctuated between 57% to 93%, and specificity ranging from 75% to 100%. The authors indicated this fluctuation might occur due to the wide range in which the test was applied. Singh et al. (2005) identified another possible reason for the variation in specificity and sensitivity: "Certain brands of monofilaments are more accurate than others and they should not be used on more than 10 patients without a recovery period of 24 hours" (p. 218). This might have also contributed to the variations in specificity and sensitivity.

Boulton et al. (2008) mentioned that areas of callus should always be avoided when testing for pressure perception, and Dros, Wewerinke, Bindels, and van Weert (2009) stated that the sole use of a monofilament test to diagnose peripheral diseases is not recommended. All the studies (Boulton et al., 2008; Dros, 2009; Singh et al., 2005) regarding the use of monofilament emphasized that the diagnosis of peripheral neuropathy can be made only after a careful clinical examination with more than 1 test, as recommended by the American Diabetes Association (ADA, 2008).

Theoretical Framework

This DNP quality improvement project involved a change of practice for providers and staff at SPLG Clinic. Lippitt, Watson, and Westley created the seven-step theory in 1958 that focused on the role of the change agent and included diagnosing the problem, assessing the motivation, assessing capacity for change phase, selecting progressive change objective, choosing appropriate role of the change agent, maintaining the change, and terminating the helping relationship (Mitchell, 2013). At SPLG Clinic, the practice gap of not adequately screening and educating patients in risks and care for patients' feet

led to the development of the project. Clinicians and staff indicated a readiness for change in this area. Patients have been affected by the problem in the delivery of health care, and clinicians and administration of the SPLG Clinic were willing to support the quality improvement project to provide better care to patients. The change agent, foot screening and educating patients has been assessed for its ability to bring the right outcome. The project plan included detailed steps for change with educational materials, timetables, assigned responsibilities, and deadlines. The improvement project was monitored for progress, and the DNP candidate implemented the project and provided reinforcements to prevent the re-emergence of previous practice. In the last step, the help from the DNP student terminated when the providers felt comfortable on foot assessment skills, using the foot screen tool, and educating patients on foot care. The brochures were printed, and ongoing training was planned for continuous education for patients by providers, MAs, and nurse educators.

AIM statement

The improvement with this Doctor of Nursing Practice (DNP) evidence-based change in practice project provided an educational workshop during the staff meeting on April 18th. This project was designed to implement an evidence-based foot screening tool, educate providers on performing the tool, improve foot screening practices, provide patients with foot-care material, and educate them on self-foot care. The expectation was to increase providers knowledge on the importance of foot screening and foot care by 50%. The clinicians' knowledge attainment on proper foot care teaching was assessed by pre- and post-surveys. Clinicians were expected to educate at least 60% of patients on

foot care during their visits by auditing patients' charts for completed patients' education during the visit.

Proposed Interventions

A 15-minute PowerPoint presentation was made on the importance of foot screening and educating patients on foot care (Appendix 16). The original plan was to educate the providers including MDs, NPs, and PAs; however, scheduling for educating every provider on foot care was impossible due to the limited time. In addition, MAs spend time with the patients while performing the intake process, translating for providers, and discharging the patients. As a result, this DNP candidate and the Director of Family Practice (DFP) at SPLG Clinic decided to involve MAs in the process, and educating them on diabetes, its complication, and foot care. The education method by clinicians, including medical doctors (MD), nurse practitioners (NP), Physicians Assistants (PA), nurses, and MAs, was to be face to face with patients, and included teaching patients the necessity of checking water temperature before washing their feet, washing their feet daily, drying between toes, using moisturizers, cutting their toenails properly, and inspecting the insides of their shoes (Kafaie, Noorbala, Soheilikhah, & Rashidi, 2012). In addition, the providers were educated on the Simplified 60-Second Diabetic Foot Screening Tool, and a brochure and foot log were created to be given to patients during their visit. The educational material was printed for patients and will be stocked in each room. Providers educated patients on the key points and referred the patients to nurse educators for extra instruction. MAs used the time before and after patients being seen by providers and gave education of foot care as well. A pre- and post-

survey was taken to assess clinicians' knowledge and attitude toward foot screening before and after the educational session.

Section III: Methods

Stakeholders

Providers delivered the care, offered health services, and documented health information in the electronic health records (EHR). Providers also coordinated care between the health care team and referred patients if necessary. Providers were notified by the MAs for the annual foot screening before seeing the patient. Patients paid for the services and benefited from care and education; however, patients' low level of education contributed to their poor knowledge about diabetes and its complication, poor foot care practices, and late reports of changes in the condition of their feet. The secretaries made a call to patients for arranging patients' appointments, and a registration staff performed the billing and registration process. The administrative staff had no awareness of the need for a change of practice. Patients were not notified if they had foot screening at their visit when making appointments. The MAs screened patients before being seen by the clinicians and gave the patient a screening tool, a brochure, or a checklist to fill out before seeing the provider. The MA was the one who got the notification from the SPLG-EHR system to inform physicians to perform screening; however, they were not aware of the importance of this screening. Administration provided the budget for resources, such as printing educational materials and monofilaments. Providers and administration were supportive of the project. The management team was eager to hold meetings and educational sessions for clinicians to be trained on the importance of foot screening in diabetic patients.

Awareness and Openness to Change

There was no awareness of the need for an evidence-based screening tool at the SPLG Clinic and part of the challenge for this project was the creation of the sense of need for change. The foot screening tool that has been used by providers has no known origin and is not based on evidence practice. Providers performed the foot screening once a year; however, the evidence did not show that they document the findings on the patient's chart. There was no patient education on foot care, and the clinicians were aware of lack of such an educational program and were interested to learn about educating patients on self-care. Most patients were examined by monofilament and were referred to a podiatrist if there was a sign of infection. Majority of patients are Spanish speaking, and this element influenced the progress of the project and brought the need for translating educational material in the Spanish language. Majority of MAs speak Spanish language and helped providers with interpretation when needed. In addition, MAs played a big role in the clinic and taking care of patients. During the project and meeting with DFP at SPLG Clinic, it was decided to involve MAs in the meeting since they spend a good amount of time with patients. MAs are able to teach patients during intake when checking vital signs and giving patients the screening tool and when discharging the patient from providers' care and give them brochures and foot log. The clinicians were interested and open to adding to their knowledge, using an evidence-based tool, and educating and involving patients in their self-foot care.

Description of the Intervention

PowerPoint slides were used, and a presentation was created to educate clinicians on the importance of foot screening, the Simplified 60-Second Diabetic Foot Screening Tool, and

educating patients on foot care. The evidence for using the Simplified 60-Second Diabetic Foot Screening Tool and performing the screen were explained. A brochure on foot care and a foot log were designed in English and translated to the Spanish language. Providers, nursing staff, and MAs were educated on explaining the foot care brochure and foot log to patients.

The most effective approach to teaching clinicians the knowledge and skills required for evidence-based practice is to incorporate research evidence into their clinical decision-making (Konstantinos et al., 2016). The use of technology to promote educational interventions through teaching strategies such as training with presentations on a computer-based program is appropriate and, a pre- and post-test can evaluate the information-seeking behaviors of the clinicians (Kyriakoulis et al., 2016; Lai, 2010). Planning the intervention involved doing research on various diabetic disease related websites. The DNP student found some good examples from Johns Hopkins Diabetic center, Stanford diabetic clinic, American Diabetes Association, American College of Foot and Ankle Surgeons, UpToDate, and Center for Disease Control and Prevention, and designed a PowerPoint presentation, the brochure, and the foot log from mentioned resources.

Purpose, Processes, and Activities of Entity

The family practice department at SPLG Clinic that participated in the educational sessions were from the MDs, NPs, Pas, MAs, and nurses. The project was discussed with the chairperson, Dr. Loomis, and permission granted by the preceptor, the DFP at SPLG Clinic. The PowerPoint presentation was displayed. The handout, a print of the Simplified 60-Second Diabetic Foot Screening Tool, the foot care brochure, and the foot log were given to participants during the meeting. The diabetic foot log and foot care brochures were designed in both English and Spanish (shown in Appendix 12, 13, and 14). A pre-survey was done before

starting the educational session. The presentation took about 15 minutes and questions were answered after the session. Participants answered the post-survey after the educational session.

The foot log is essentially a diabetes self-management log. It contained dates and comments for the patient to keep track of foot care daily. The brochures displayed how to check the feet, what to wear, and how to cut the nails. This DNP student was the project manager, educated the clinicians on teaching patient on foot care. It was anticipated that when the patient came in for his appointment, the patient would bring his/her foot log as well and reviewing the log with the provider to track patient's compliance to his/her foot check and answer the patient's questions.

Gap Analysis

The SPLG clinicians care for a large percentage of the monolingual Hispanic community and have a high volume of diabetic patients. Adherence to therapy is low in diabetic patients due to a low level of income and education (Kassahun, Gashe, Mulisa, & Rike,2016). Lack of resources to provide healthy food and medication is another obstacle. Low education and income are associated with higher rates of nonadherence (Kassahun et al., 2016), and patients need ongoing education and self-care training to manage and maintain their optimal health (Funnell & Anderson, 2004). In addition, teaching evidence-based practice can change a clinical practice which results in the utilization of positive attitude toward patient's care, advances health care profession, and promotes patients' health outcome (Varaei et al., 2013).

The only diabetes program at SPLG Clinic was held monthly and was a two-hour session with a focus on diet and insulin administration. No extra information regarding foot care was provided during this session, and no educational material on foot care was given to patients. Patients' foot self-care performance and knowledge are were poor, and the diabetic nurse

educator taught patients only about their daily blood glucose check with a glucometer, and how to administer insulin. The status of foot care knowledge and attitude are influenced by education, periodic inspection, and education about diabetic compilations (Li et al., 2014). The SPLG providers used the foot screening tool on the electronic health record (EHR) system annually or if a patient complained of foot issues. The foot screening tool on the SPLG-EHR system is a general tool with an unknown origin.

Lack of foot care education and foot screening have been observed at the SPLG Clinic. Clinicians were not aware of the importance of foot screening and foot care education for patients. Diabetic patients received a "glucose log" for writing their blood sugar. There was no “foot log” and foot care educational material available to patients. The high volume of patients that every provider saw each day contributed to a lack of regularity in screening for diabetic foot ulcers. There was a need to educate providers and teach patients to better self-manage their diabetes and foot care. See Appendix 1 for gap analysis chart.

GANTT

Literature review for this project began in August 2016. This DNP candidate created a PowerPoint presentation, a pre- and post-survey, foot care brochures, and a foot log in February-March 2019. In addition, this candidate educated providers and performed a pre-survey in March 2019 with a post-survey on April 18th, 2019. The DNP candidate followed up with providers and nurse educators about the educational program through the end of May 2019. See Appendix 5 for the Gant chart.

SWOT Analysis

A SWOT analysis that affects this project positively and negatively is explained and shown in Appendix 2.

Strength. There was an existing weekly diabetes meeting for Spanish-speaking patients in the clinic that opened the opportunity for adding foot screening and educating the patient on foot care. The patient population was mostly Spanish-speaking, and most providers were able to speak the Spanish language. The majority of MAs spoke Spanish as well, and patients felt a supportive culture and trusted the providers' decisions. Multidisciplinary team participation was strong, the management team was supportive of the Hispanic population, and diabetic materials were provided in Spanish and English.

Weaknesses. Patients did not receive any education or material on foot care during their visit. Also, monthly diabetic educational material did not contain any extra education regarding foot care. There was no diabetic group meeting for English-speaking patients. No brochure or pamphlet was provided neither in the Spanish nor in the English language to patients regarding foot care. The patient population was low-income, had a low level of education, and many patients did not have insurance.

Opportunities. Learning about foot care helped patients to have a better understanding of diabetes and improved patients' self-management skills, and consequently improved patients' health outcomes. Diabetic foot screening potentially decreased emergency room visits and hospitalizations. Adding foot care education could be a great ongoing opportunity for the clinic to attract more diabetic patients and increase the clinic patient population.

Threats. Providers' willingness to change their practice and attitudes toward foot screening was a challenge. Providers were scheduled a limited time for each patient, and foot screening and educating patients to take time. In addition, patients had a hesitancy to have their feet screened due to hygiene issues.

Work Breakdown Structure

The implementation of the project was divided into many steps to be executed by the team to accomplish the project outcome. The deliverables include meeting with the administration and clinical team at the SPLG Clinic, educating clinicians on the importance of implementing an evidence-based foot screening tool, meeting with the informational technology team, designing training material for patients, and obtaining surveys from clinicians before and after the educational session. Scheduling with providers for the educational session was another element of the project. The work breakdown structure is as follow and is shown in Appendix 3.

- Review diabetes literature: guidelines and screening measures
- Identify a validated diabetes foot screening
- Perform gap analysis
- Pre- and post-survey from providers
- Educating providers on the Simplified 60-Second Diabetic Foot Screening Tool
- Designing material for educating providers in a PowerPoint format and brochures in Word format for patients
- Schedules for a meeting with clinicians

Proposed Budget

The DNP candidate educated the clinicians on April 18th, 2019 for 15 minutes for almost 20 providers, MAs, and administrative staff. The total cost of time is as follow.

- 20 x 50$ (average for providers and MAs): 1000 for 15 min
- DNP student preparing material: 20-hour x70= $1400 which is volunteered hours so no cost to the clinic

- DNP student educating clinicians: 2.5-hour x 70: $175- volunteered hours by DNP student
- Microfilament: 25 per pack: $64.
- Buying 100 pack for a year: 100 pack x $64: 6,400 yearly.

See Appendix 6 for the proposed budget.

Return on investment

Return on investment (ROI) was difficult to measure and determined initially upon pilot completion for this QI project, but over time, there would be the potential for more measurable outcomes. Educating patients on foot care increased patients' self-management, improved patients' outcome, and decreased the financial burden on families and communities. Direct cost estimates (in 2010-adjusted US dollars) range from to US$3,096 for a Wagner grade 1 lesion (superficial ulcer of the skin or subcutaneous tissue) to US$107,900 for an ulcer resulting in amputation (Hunt, Liu, Lavery, 2011). Therefore, decreasing common complications of diabetes and cost is possible by reducing the burden of disease through screening and educating patients.

An assumption was that the success of implementing the evidence-based screening tool, foot log, and foot care education, would increase patients' involvement and satisfaction. Another measure was that if there is one less emergency room visit or hospitalization for a foot ulcer, there will be cost savings to both the individual, insurance companies, and communities. Finally, this QI project will be expanded to other branches of SPLG Clinic and other clinics in the area and will then be known as a system-wide innovative model. It is hoped that other clinics will use this evidence-based tool and educational program and seek out this DNP student to facilitate building a successful foot education program in the clinics.

Communication Matrix

This DNP student was the project leader, and the University of San Francisco advisory leader was Dr. Jo Loomis. The member of the DNP committee was Dr. Alexa Curtis. Reports were done directly to Dr. Loomis, and feedbacks from Dr. Curtis and Dr. Loomis were evaluated and implemented regarding this project. The on-site advisory member was the Director of Family Practice at SPLG Clinic. The meeting was arranged by the DFP. The participants were DFP's team on family practice site, and the administration team at the SPLG Clinic. See Appendix 4 for communication matrix.

Study of Intervention

Many of the clients at SPLG Clinic have chronic health conditions, including type 2 diabetes. No self-foot care education and foot log were practiced in the practice at SPLG. This project provided an opportunity for a pilot quality improvement project to help the patients with type 2 diabetes at SPLG to better manage their chronic disease with the aid of self-care brochures and foot log. With the DFP's help, this DNP student began the project by understanding the process of foot screening, looking at foot screening tool at the SPLG health record system, and observing the existing educational programs. The chart review on foot screening revealed concerning gaps in the clinic's ability to use an evidence-based tool and educating patients on foot care. This DNP student presented a review of the evidence-based foot screening tool and educational material for patients. Following on-site assessment, a SWOT analysis was done and identified that opportunities for improvement outweighed the identified threats and weaknesses. Planning the intervention involved doing research on various diabetic foot care and foot logs mentioned above resources.

SPLG Clinic DFP believed that the brochures and foot log fitted the clinic needs best and would allow improvement in patients' care and their health outcomes. After receiving approval to implement this project from the DFP, a meeting was arranged, and clinicians, including NPs, PAs, MDs, nurses, and MAs were scheduled to participate in the meeting. This DNP candidate focused on teaching the Simplified 60-Second Diabetic Foot Screening Tool, foot log, and patients' teaching of foot care. The project goals were evaluated by a post-survey to assess the retention of education and increased knowledge of clinicians. In the post-survey questionnaire, multiple questions were created to evaluate the percentage of clinicians' increased knowledge. Clinicians evaluated the pace, content, level of difficulty, and overall presentation of the workshop. In addition, the likelihood of educating patients and passing on brochures and foot log as a result of being educated on foot care were assessed.

Implementation

This DNP student met with the DFP and present the gap analysis. Implementation of the project started with teaching the material to staff. Translating the brochure was came up during the implementation of the project as many clinicians concerned for language barrier for monolingual Spanish patient. The theoretical framework for this project was elicited from Lippitt, Watson, and Westley seven-step theory. This theory helped with the implementation phase of the project. Lippitt's et al.'s theory facilitated and explained the changes which are essential for adaption of new interventions and behavior in a professional organization. The problem and motivation for change were assessed and change was provided according to issues in the system. The help was delivered to the healthcare organization and terminated when it was not essential for maintaining the change.

As the project manager, this DNP student served as the point person for answering questions and concerns. To ensure the translation was correct, an online translator, as well as having two native Spanish speakers proofread the brochure and make corrections. The DFP assured himself to be available to this DNP student, helped to direct staff at the meetings, and supported clear communication before and during the project.

The goals for this project were to educate healthcare providers on how to use the Simplified 60-Second Diabetic Foot Screening Tool, teaching patients on foot care and use of foot log, and to enable clinicians to make appropriate and timely referrals to podiatrists. The implementation phase recommended:

- To use of an evidence-based screening tool by providers
- To utilize of the Simplified 60-Second Diabetic Foot Screening Tool
- To use of monofilaments along taking history and visual assessment of feet and shoe wear
- To educate patients on the items of the brochure, cutting nails, and foot log
- To appropriately document the finding on the chart
- To refer patient to podiatrist according to the scoring of the Simplified 60-Second Diabetic Foot Screening Tool

Measures

This DNP candidate had 5 meetings with the DFP regarding the workflow of the clinic and the care provided to diabetic patients. The information on the electronic health system and tools were obtained from the DFP. Workflow on a diabetic patient visit was viewed during the clinical hours that this DNP candidate had at SPLG Clinic with the DFP. The screening tool and

charting on foot assessment were reviewed by this candidate to make sure of the accuracy of data and information that were collected. The DFP's positive attitude toward change and improving the patient care helped the success of the project; however, the cost for changing the existing screening tool to an evidence-based tool was an expensive measure, and it was postponed to a later time. Providers were eager to learn about the tool and screen patients on the items that is not included in the existing tool. Clinicians agreed that the Simplified 60-Second Diabetic Foot Screening Tool is an evidence-based comprehensive tool and while waiting for the electronic health record system to be updated, they were screening patients using the Simplified 60-Second Diabetic Foot Screening Tool. The education of the tool, foot care brochures, and foot logs were successful proposals. The clinicians expressed the change of their perspective toward foot care and educating patients. Providers expressed their eagerness to perform the items that do not exist on the current tool on the SPLG electronic health records and using the brochure for patients' education.

A post-survey was done after the implementation of the project. The clinicians including MDs, NPs, PAs, and MAs participated in the educational session. The post-survey questions were obtained from different surveys in studies. The result showed the increased clinicians' knowledge and positive attitude toward using the tool and employing brochures to educate patients.

The reliability and credibility of using the Simplified 60-Second Diabetic Foot Screening Tool for diabetic foot risk was reviewed by a systematic review in the study of Parasuraman, Giridharan, and Vijayalakshmi, 2017. In addition, Woodbury et al (2015), revealed excellent inter-rater reliability of the components in the Simplified 60-Second

Diabetic Foot Screening Tool and stated that this tool can be used as a reliable tool for the identification of diabetic skin ulceration in any income setting.

The question for pre-survey and post-survey were chosen from Gleason Library, Education department surveys, PsychTESTS info surveys, and survey tools on People Pulse. The surveys were validated by the organization's research department and have been used in different projects (Konitsney, Pole, Zagorski, 2013). A pre-survey was done before the workshop in paper format, and post-survey was done after the teaching. Most questions were on assessed on a five-point scale that ranges from strongly agree to strongly disagree. The return rate was 17/20: 85% for pre-survey and 16/20: 80% for post-survey.

The pre-survey questions assessed participants' knowledge, performing foot screen according to guidelines, strategies for helping diabetic patients on self-foot care, and barriers to foot screening.

On post-survey, there was two questions for the length of presentation which was described as too short, right length, and too long. One question was on the assessment of the content of the survey and the choices were introductory, intermediate, an advanced level. In addition, the post-survey questionnaire included the applicability and pace of the workshop, stimulating activity, difficulty of the education for providers and patients, likelihood of educating patients and passing on the brochure to a patient, percentage of increased knowledge, the appropriateness of length, presentation quality, content level, and overall workshop quality.

Methods of Evaluation

Evaluating the outcome can be done by six areas per Davidson (2010). Davidson (2010) first area of question is "how well was the project designed and implemented?" the project was well designed and implemented. The educational PowerPoint, brochures, and log were designed

and approved by the DFP. The timing of the meeting and printing of material was done properly, and no issue was noticed during implementation. The second question is “how well did the project meet the overall need?” and “how valuable are the outcomes to the participants?” the gap analysis was done prior to starting the project, and a need for an evidence-based screening tool and foot care education was observed. The foot care education was a valuable part of a patient’s care and improving patients’ health outcome. The questions of the third area are “what was learned from this process? What worked and what did not?, and Were there any unintended consequences?” and the fourth area of evaluation involves cost and time, such as “was the project cost-effective?” “Could it have been done in a different way?” As mentioned before, the implementation of evidence-based tool was postponed for the time when updating the electronic health record system due to its financial burden on the clinic. The brochures were an effective way of educating patients and printing the material was not an issue for SPLG Clinic. The fifth area of evaluation questions are related to “replication of the project elsewhere and if the clinic needs continuing support”. The project can be replicated at different clinics, and it can be shared at different branches of SPLG. As times passes by, the clinicians may go back to the old way of patient care and do not perform foot care education anymore, so the clinicians may need some support to continue educating patients and passing on the brochures and logs. And the sixth area is determining “whether the project has a theory of change, and whether the project informs the initial question”. The project had the theory of change as mentioned in the previous section and answered the PICOT question. This candidate evaluated the impact of the intervention with feedback surveys from the MDs, NPs, MAs, and nurses. Post-implementation survey was the instrument of choice to gather the data to assess and evaluate if the educational session was effective.

Proposed Outcome Measures

The outcomes were chosen by this DNP candidate as it was shown that providers were not compliant to perform annual the foot screening exam due to the mentioned barriers as well as patients' refusal due to low education and not understanding the importance of the foot exam. Proposed outcome measures were as followed:

- On April 18th, provide educational materials during staff meeting designed to improve screening and patients teaching on self-foot care.
- Increase providers knowledge on the importance of foot screening and foot care by 50%.
- Clinicians' knowledge attainment on proper foot care teaching were assessed by pre- and post-survey.
- Educating at least 60% of patients on foot care during their visits by auditing patients' charts for completed patient's education during the visit.

Measurable:

- Pre- and post-surveys from the clinicians before and after education
- The objectives are achievable in a 3-month period.

Realistic

- Clinicians and administration were supportive of the implementation of the project
- Clinicians were enthusiastic to participate in the educational session

The time to achieve the aim? Timely?

- Post-survey before the educational session
- A 15-minute session for educating clinicians
- Post-survey after the educational session

Which system will be improved?

- Improved clinicians' adherence to performing foot screening
- Implementing an evidence-based foot screening tool
- Improvement of patients' self-management and health outcomes through education on foot care

Specific Numerical Goals:

- Increase providers knowledge on the importance of foot screening by 50%
- 60% compliance on the annual foot screen on patients
- Educating at least 60% of patients on foot care

Guidance and strategies for the effort and limitations?

- A collaboration of medical doctors, NPs, Pas, nurses, and MAs
- A collaboration with the diabetic department and administration team for meetings and schedules

Limitation:

- Limited time to train clinicians
- Time limitation during patients' visit
- Limited resources for providing instruments such as monofilament and print of educational materials
- Financial limitation on implementing the Simplified 60-Second Diabetic Foot Screening Tool in the SPLG electronic health record system

Analysis

Proposed data collection tool. Pre- and post-surveys were chosen on ranking options and were closed-ended questions. Providers were able to choose multiple answers to evaluate

their knowledge and attitudes. Post-survey questions were chosen to evaluate knowledge gained by clinicians and inquiry of the likelihood of providers performing and educating patients for future services. This 5-column table survey was based on a 5-point Likert scale, with responses ranging from 0 for strongly disagree to 5 for strongly agree. The lowest a provider could score was 0, with the highest score being 5. These surveys were administered before and upon completion of foot care education. Data collected from the surveys were transferred to an excel sheet and statistics were run on the pre- and post-survey data.

Appendix 7 shows the surveys. Word Document was used to make educational materials, such as brochures and flyers, and pre- and post-surveys. PowerPoint software was used for making the educational presentation.

Ethical considerations. Before starting the project, a DNP project approval form, including a Statement of Determination, was completed by the candidate and was approved by the DNP chair and committee as an evidence-based change in a practice project. According to the USF website, the purpose of an Institutional Review Board (IRB) is to "safeguard the physical, social, and emotional well-being of individuals" who are participants in a research project (University of San Francisco [USF], 2015). The DNP project was verified as a quality improvement project. Therefore, approval by the USF Institutional Review Board for the Protection of Human Subjects (IRBPHS) was not required since the project did not meet the criteria for human subjects' research under state and federal regulations. The patients were not involved in this project directly. Providers were given a presentation, educated on the Simplified 60-Second Diabetic Foot Screening Tool and foot care, and filled out a pre- and post-survey. The brochure on foot care was delivered to patients by clinicians during a patient's visit.

USF as a Jesuit Catholic college encourages taking action against social injustices toward the underserved and poor. One of the USF values is to commit, engage, and improve community health. This project addressed USF Jesuit value by approaching social justice, and to advance the health of an unprivileged and disadvantaged community in the city of Watsonville.

According to the American Nurses Association's Code of Ethics for Nurses with Interpretive Statements-provision three, the nurse promotes, advocates for, and protects the rights, health, and safety of the patient. This provision exemplifies nursing professionals' pledge to advocate for quality care for all patients and communities. Similarly, this DNP project focused on how to provide better care to patients and to improve patients' health outcomes through educating providers on foot care.

Section IV: Results

Program Evaluation and Outcomes

This DNP candidate completed evidence-based practice, leadership and financial management, and project management courses prior to the start of the project. This knowledge helped with the process of literature review, SWAT analysis, communication and responsibility matrix, and Gantt chart.

In some areas, the project did not go as planned. For instance, the teaching process which was planned to be individualized to each clinician changed to be provided in a group meeting. This candidate and the DFP decided to make the education available to whole family practice during a meeting. This obstacle brought a challenge for the implementation phase of this project, as this DNP candidate has to create a comprehensive presentation for providers, MAs, and nurses who have different levels of education. Medical assistants act as a liaison between patients and providers have an influential standpoint and to reduce barriers to screening through practice

improvements and committed action per American Association of Medical Assistants, 2019. Teaching the subject to MAs brought an opportunity to continue their growth professionally. In addition, providers recognized the importance of medical assistants in the delivery of seamless quality patient care.

Contextual Elements Interacted and Accounted for Outcomes

Two objectives were persuaded for this practice improvement evaluation: implementing the Simplified 60-Second Diabetic Foot Screening Tool and educating clinicians on training patients on foot care. For these reasons, a PowerPoint presentation was designed on teaching the clinicians on the importance of foot assessment and educating patients on foot care; Providers were educated on the Simplified 60-Second Diabetic Foot Screening Tool, and a foot log and foot brochures were designed for patients. The material was translated in the Spanish language.

Evolved Plan

The pre-survey was done by 13 MAs and 4 providers, and post-survey was filled by 9 MAs, 5 providers, and 2 administrators. While providers acknowledged that they have a "moderate" to a "great deal of knowledge" on diabetic foot care screening, the MAs noticed that their knowledge is "a little" to "moderate knowledge". This shows that education is necessary on diabetic related complication and is important especially for MAs. The post-survey showed that all 80% of MAs and 50% of providers agreed that their knowledge increased 50% and higher. 85% of clinicians believed that the workshop was intermediate in content and 15% believed that the workshop was Advanced. The result demonstrated that 80% of clinicians acknowledged that foot care education to patients should be in patient's language, and material should be short and simple, and 20% believed that education should be through community outreach. 80% of clinicians graded the brochure was "very good" and 20% as "excellent" for teaching patients.

12.5% of clinicians voted that the overall workshop was “excellent”, 81% as “very good”, and 6.5% voted the workshop was “good”. 100% of clinicians and providers agreed that as a result of attending this workshop they will more likely to educate patients on foot care and give the foot care brochure and the foot log to patients. The result displayed successful education on the importance of foot screening and educating patients on foot care. (See Appendix 17 for the review of result from pre- and post-survey).

The initial plan for the project was to teach providers individually; however, arranging a meeting with individual providers was unsuccessful. Providers were in the clinic a limited amount of time and had patients consecutively, which made it impossible to make an appointment with each one for the teaching opportunity. A meeting was arranged by the DFP, and the teaching was done to all staff including NPs, Pas, MDs, and Mas. This was an unexpected opportunity which caused to involved other clinicians who are taking care of patients and providing care. This meeting; however, had an extra cost for the clinic for paying MAs and administrative staff for the extra 30 minutes spent in the meeting.

Another initial improvement was to implement the Simplified 60-Second Diabetic Foot Screening Tool. However, the providers were educated on the evidence-based screening tool, changing the screening tool was costly and clinic administration were eager to change the tool in the next electronic health record system update. The educational session opened an opportunity for providers to learn about the Simplified 60-Second Diabetic Foot Screening Tool, consider the items that are not in the existing tool on the SPLG system, and improve their practice.

Professional Outcome and Improvements

The providers and clinicians reported that “the quality of care improves with teaching patients on foot care”, and “the foot care subject never been discussed before at the SPLG clinic care!”. Majority of MAs wrote that their knowledge increased with the teaching provided. There was a question from a provider for requesting to show the cost of care for a foot ulcers and amputation. This question was answered through email to the provider, and this DNP candidate added the cost of care for foot ulcers to this paper. A short period of time was reserved for the presentation and length of the presentation was managed with the time assigned. Clinicians also reported a change in their practice and increased knowledge on the importance of foot care. Healthcare workers learned methods to teach patients on foot care and spent time on educating patients on foot care. MAs reported that they communicated more effectively with diabetic patients about foot care. The clinicians believed that the project impacted clinic as follow:

- Increased clinicians’ knowledge on foot care
- Increased Staff confidence to teach patients and answer their question
- Increased interdisciplinary communication between providers, nurses, and MAs
- Recognition of MAs and nurses as key players in the delivery of quality care
- Professional growth of clinicians
- Preventing foot ulcers and foot complications
- Improved patients’ education on self-care and foot-care
- Improve patient’s quality of life and family involvement in patients care
- Decrease cost of care and the burden of care on patients, their families, and the communities.

The providers have seen the necessity of an evidence-based screening tool and foot care education for a patient; however, limited visit time prevented them from taking enough time to educate patients. Involving MAs, nurses, and diabetic educators were ideal and improved providers' time management. The communication between providers and MAs and nurses improved as they had to communicate about a patient's care and continuity of care during a visit. The clinicians believed that the project was a great start for initial teaching to patients and potentially will attract more patients.

Medical assistants were interested to teach patients and pass on the brochures. A couple of MAs mentioned that they may need the support of providers and educators until they get comfortable with the process. One of the benefits of this project was that MAs felt being involved in the process, influencing patients' care, and improving patient's outcome. In addition, many MAs live in the community and felt that they are improving patients' health and consequently promoting the community health.

The DFP was out of office for a period of time, and the assessment on the sustainability of the project after couple months was impossible. However, the administrative staff and providers were excited to start a foot care program. The material on foot care and foot log were printed for each provider and the mass print for patients was supposed to be discussed in the mid-year meeting in August.

Section V: Discussion

Summary

Educating providers on the importance of foot screening, a diabetic educational program for patients, and an evidence-based screening tool have the potential to prevent complicated foot problem in diabetic patients. The education on performing the Simplified 60-Second Diabetic

Foot Screening Tool can contribute to improved patients' health through the prevention of foot ulcers and complications. When health workers are educated and are equipped with standard protocol, they can influence patients' care and ensure that patients receive foot exam, brochures, and logs regularly and consistently. A standardized foot screening protocol is important and can prevents costly complications and debilitating and life-threatening conditions.

Aims of the project were to implement the Simplified 60-Second Diabetic Foot Screening Tool and providing the clinicians an educational brochure and foot log to educate patient on self-foot care. One of the strengths of the project was to involve medical assistants in the process of patients' teaching. They spend time with patients before and after the provider sees a patient and the time can be effectively be used for patient teaching.

Aim Achievement

The aim of the project was achieved; however, the implementation of the Simplified 60-Second Diabetic Foot Screening Tool was postponed to the time of electronic health record system update. Although, the providers were eager to know more about the Simplified 60-Second Diabetic Foot Screening Tool and to perform it while waiting for electronic health record system update. The clinicians acknowledged that existing tool is not an evidence-based tool and lacks assessment on the range of motion, sensation exam, footwear, and skin and nail.

Lesson Learned

In the future, the schedule of providers and supporting staff should be considered more in detail, and the group meeting should be discussed early on during the project timeline, so a perfect educational session for all group of staff with different level of education would be created. In addition, the financial strength of the clinic should be assessed; however, administrative usually are private about the finances of their company, and they do not enclose

this information. As a result, during the implementation phase, the clinic enclosed that there is no possibility to change the screening tool on the electronic health record system due to its financial burden. Considering alternative plans is helpful and being flexible and adaptable are important when implementing a project in real life. It was quite shocking to know that list of diabetic patients could not be generated from the electronic health system, and the DFP assigned one of the MAs to make a list of patients with their demographics on an excel sheet for future projects. Moving forward, the clinic may consider sending the brochures to the patients through the mail, so patients would come to the clinic with their questions and concerns.

Key Findings

Educating staff on the complication of diabetes, the reason for performing foot screening, and educating patients on the importance of foot care defined clinician's role in the process. Increased Healthcare workers' confidence and improved patients' confidence were reported when supporting staff conducted pre-visit planning and discharge education (Chapman, & Blash, 2016; Allinson, & Chaar, 2016). Medical assistants felt excited to be more engaged in the process of patient care, have more responsibility, and perform patients' education. Most MAs were interested to go back to school and being involved in this workshop, they expressed their interest to continue their education as nurses and being an educator

The major lesson learned was that teamwork is a very important part of implementing a project, and SPLG clinicians' team work on improving patient' care made the obstacles easier to overcome. For instance, providers' busy schedule and providing care to a patient with complex health issues with low reimbursement result in omitting screening and education patients during a visit. Involving MAs and their willingness to engage in care resulted in greater communication, effective use of previously wasted time, and improved patients' care.

The DFP at SPLG Clinic has a monthly program for diabetic patients, and staff has acknowledged his passion on managing and educating diabetic patients and were eager to add to care and educate patients on foot care which lack in the DFP's program.

Contribution to the Successful Changes

Translating educational material for Spanish speaking patients was a successful evolvement during the implementation of the project. In addition, explaining the Simplified 60-Second Diabetic Foot Screening Tool was successful and absorbed providers attention to implementing the evidence-based practice in the future. An educational team approach and involving MAs' increased clinicians' confidence and providers' satisfaction. The DFP passion to improve patient care and make a comprehensive diabetic program contributed to the success of the project tremendously.

Dissemination Plan

The providers and MAs remained engaged in the process; and the DFP at SPLG Clinic was eager to engage other departments in the patients' teaching on foot care. The diabetic education department was given the pamphlets and logs, and questions were answered by emails and face to face conversations. The community outreach department received the material, and questions were answered through email communication. In addition, the hopes are that upon this DNP candidate completion of the degree, this project can be implemented at another clinic, particularly in community-based, free clinics in the area.

Implications for Advanced Nursing Practice

Educating health care professionals guide them to make an informed decision, and effectively care for patients and better the quality of care (Greiner, & Knebel, 2003). Educating staff for new methods and practices ignites the passion for developing new projects and

educational practice as well. Diabetes is a complex chronic disease that requires continuing medical care and screening for complication (Armstrong, 2017). Implementation of this project opened doors for nurses and providers to initiate other evidence-based screening tools and programs that can tailor to meet the unique need of patients with chronic health disorders. Employing such a model to educate clinicians and implementing evidence-based practice created an opportunity to engage providers and supporting clinicians, increased staff confidence, influenced the patients' care, and promoted health outcome.

Findings Support of the Theoretical Framework

The finding supported Lippitt, Watson, and Westley seven-step theory which focused on the role of the change agent. The result displayed that the problem, lack of foot screening was diagnosed correctly. Clinicians were motivated to change their practice to improve patients' care. The material for clinicians' and patients' education were well-written. The questions were answered after the educational session for clinicians. Continuous help was given with face to face conversations and through email when needed. This DNP candidate's help terminated when providers and clinicians felt comfortable and no help needed. Lippitt, Watson, and Westley theoretical framework was a great guide to this project.

Spread the New Performance and Implications for Future Professional Development

Continuous reinforcement and chart audits are important to sustain the level of performance. Continuous education for MAs and nurses on educating the patients on foot care helps with the sustainability of improved care. The education can be done through online modules or a quick refresher course during the monthly meetings.

Interpretation

SPLG Clinic continuously seeks new ways to improve patient care and better serve the community. Lack of time because of seeing a high number of patients in a day, administrative responsibilities, and focusing on educating patients on diet and blood sugar control prevented the providers to think of new ways to improve diabetic patients care. This DNP candidate volunteered time and presented evidence to guide this project improvement change in the practice. The objectives of this project were met by the evidence-based change in the SPLG Clinic. The knowledge of clinicians increased more than 50%. Clinicians reported that Majority of diabetic patient received the brochure, and more than half of the patients received the foot logs. The project can be formed into a model and can be adapted in other branches of SPLG Clinic and other clinics in the area.

The theoretical framework required well-written timetables, deadlines, and assigned responsibilities. The role of external change was explained to staff to prevent any misunderstanding or resentment. The helping relationship from this DNP candidate terminated, and the change was made permanent by creating rules and policies that have to be followed by staff. The assessment for lack of foot screening, the staff motivation, assessing for the time that the organization needs to implement the change agent was discussed with the DFP.

The success was built due to clinicians' readiness to change and previous projects on diabetic patients' care improvement. The implications of this project require a process to ensure continuing education for MAs, nurses, and providers. In addition, a protocol should be written in regard to patient foot screening and foot care education. A mandatory online module and a short education refresher course during a meeting would be effective ways to educate the clinicians. The success of this project can help to increase clinicians' confidence and find out other areas of

improvement for diabetic patients. SPLG leadership was encouraged by this fact that MAs educating the patients resulted in time-saving for providers. In addition, MA's involvement in educating patients decreased providers' neglect on educating patients due to time constraints and increased the effective use of time while the patient is waiting to be seen by MD or to get discharged from MD's care.

Limitations

Barriers. The barriers to implementing foot inspection during a visit at the SPLG Clinic include the shortage of providers, time constraints, and a lack of resources for treatment or referral to already overstretched wound care centers and podiatrists in the Watsonville area. SPLG Clinic has one podiatrist, and there is a long waiting time for a patient to be seen. Furthermore, there is a need for a referral system for patients to a podiatrist outside of the clinic. The Simplified 60-Second Diabetic Foot Screening Tool practically takes around one to two minutes to perform, and time constraints was mitigated by educating providers on how to perform the tool efficiently. The brochures for foot care helped providers to manage their time since MAs and nurses were able to educate patients before and after the visit during intake time and discharge process. Many patients only speak Spanish, so brochures were provided in English and Spanish languages to overcome the language barrier. Patients' reservation to have their feet assessed because of lack of foot hygiene can be overcome if they become aware that they would have foot screening on their visit and to be notified when appointments are scheduled.

Implications. Foot screening is inexpensive and non-invasive; however, clinicians may not inspect patients' foot due to the mentioned barriers. The Simplified 60-Second Diabetic Foot Screening Tool is user-friendly with limited time-consuming. In the short term, it is expected that providers assess patients' feet and educate patients on self-foot care. In the long-

term, the sustainability of the screening is endangered due to clinicians' shortage, resistance to change of attitude toward foot screening, and lack of time and resources for microfilament and printing educational materials. Educating patient increases their awareness regarding diabetes, its complication, and the care needed for their feet. Providing continuous education to patients on every visit and passing on the brochures and foot log is an effective way to reduce the burden of diabetic complication on patients and their families. Implementing this project needs an effective leadership structure enforced by providers and administrative team and a culture that promotes change.

Conclusions

SPLG Clinic is located in the rural area of the city of Watsonville which provides care to a high volume of diabetic patients. The foot screening tool on the SPLG Clin electronic health record system is a short screening tool with an unknown origin. Clinicians frequently do not perform the screening because due to lack of time and evidence-based foot care education. This DNP project was designed to implement the Simplified 60-Second Diabetic Foot Screening Tool and provide resources for clinicians to pass on to patients on foot care. An educational pamphlet was written for patients in English and Spanish languages. Clinicians were eager to educate patients in their self-foot care and pass on the brochure to patients. Admirative team decided to publish the Simplified 60-Second Diabetic Foot Screening Tool on the electronic health record system in the next schedules system update.

Health care workers play a huge role in patients' outcome. Clinicians have the opportunity to improve the quality of life of their clients by screening and consequently preventing complication of diabetes. They are able to teach patients evidence-based self-care and

engage patients and families in the management of diabetes. A united voice is necessary between healthcare sectors to train clinicians and subsequently advance care for patients.

Section VI: Funding

The time for literature review, planning for the presentation for clinicians, educational materials for patients, and implementation of the project was volunteered by this DNP student. The leadership agreed to invest in printing material for patients' education and implement the Simplified 60-Second Diabetic Foot Screening Tool in next scheduled electronic health record system update. In the meantime, providers agree to take extra steps and screen patients on the items that is not included in the existing foot screening tool to insure identification of diabetic foot problems in patients at risk.

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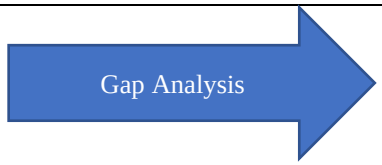
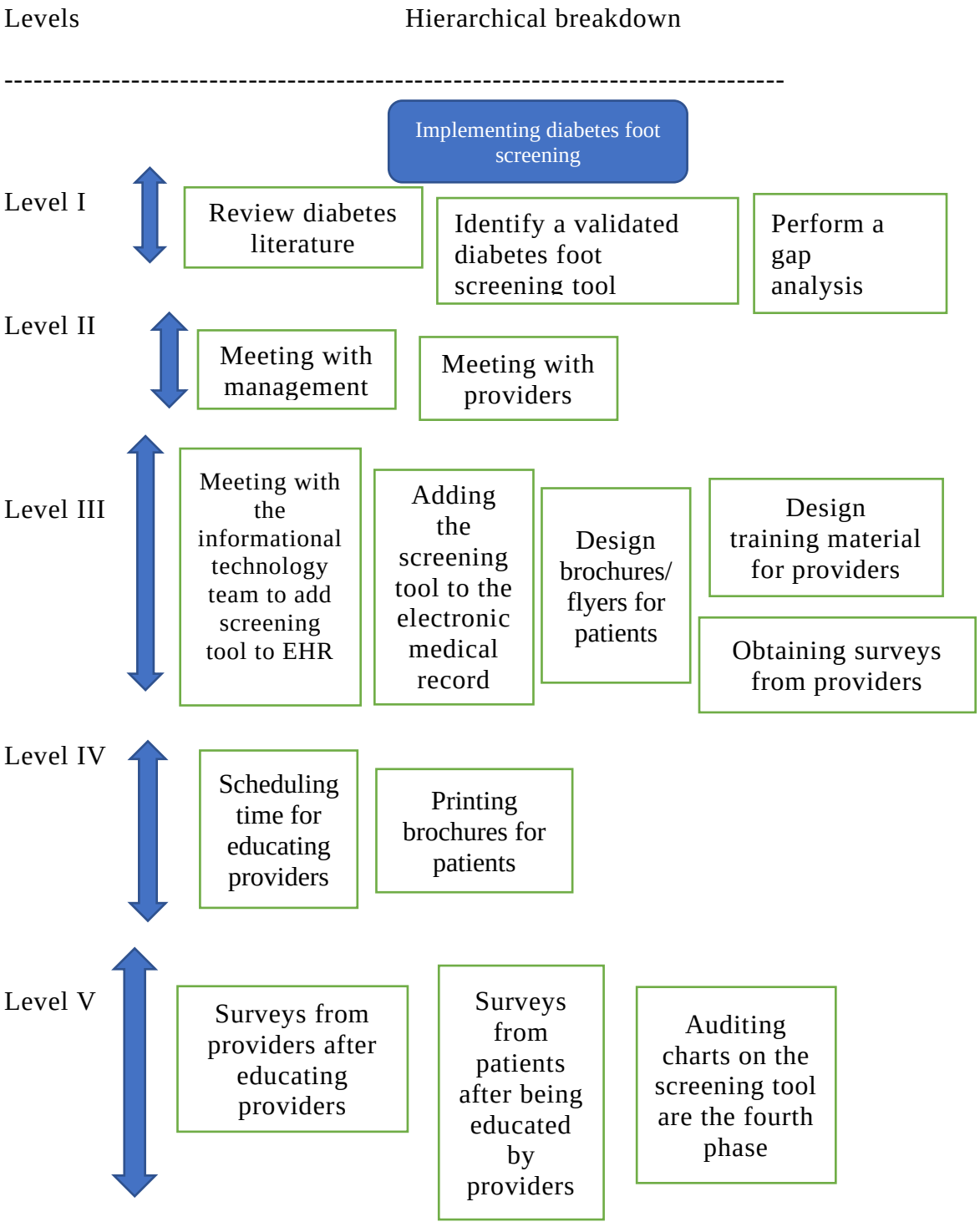
Appendix 1: Gap Analysis

Current State		Desired State
-Yearly foot screening -Diabetic education on diet, Ha1c, and insulin administration	-The low rate of adherence to therapy and consequently a high rate of foot ulcer. -Diabetic education only on diet -Yearly screening tool with non-adherence of clinicians to do it -An outdated and non-evidence-based foot screening tool	-60% of patients have Foot screening on every visit -%50 of patients be educated on foot care -50% of patients receive foot screening/care brochures

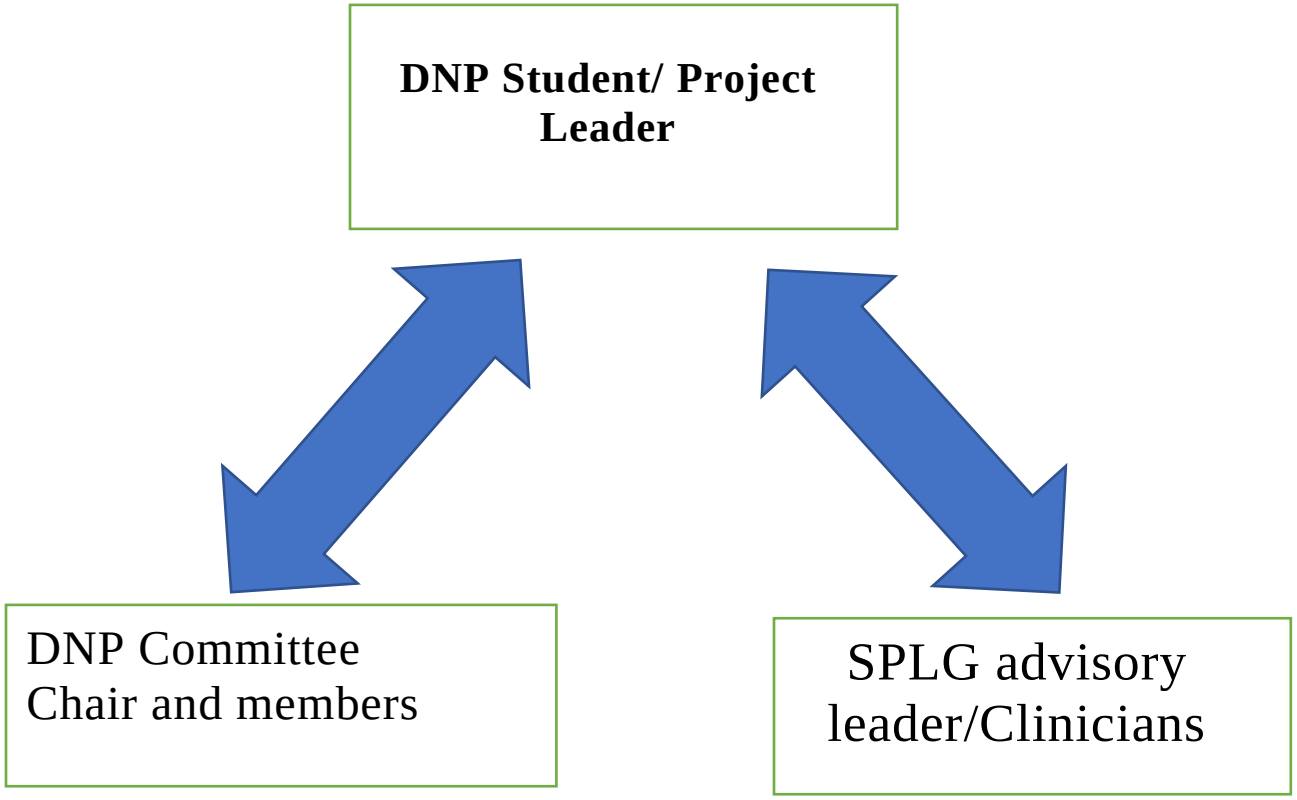
Appendix 2: SWOT Analysis

	Positive Factors	Negative Factors
Internal Factors	**Strength** • Exciting weekly diabetes program in the clinic • Spanish-speaking providers • Spanish-speaking medical assistance • Supportive culture • Patients' trust in providers' decisions • Strong Multidisciplinary team participation • Supportive management to the Hispanic community • Spanish and English brochures/flyer on diet	**Weaknesses** • No education regarding foot care during a patient's visit • No education regarding foot care during weekly diabetic educational sessions • No brochure or pamphlet neither in Spanish nor in the English language regarding foot care • Low-income patients with no insurance.
External Factors	**Opportunities** • Patient learn self-management • Improvement of patients' health outcomes • Potential decrease in emergency room visits and hospitalizations • Increase patient population by adding foot care screening and education	**Threats** • Challenges on changing providers' practice and attitudes • Limited visit time • Patients' hesitancy to foot screening due to hygiene practices

Appendix 3: Work Breakdown Structure



Appendix 4: Communication Matrix

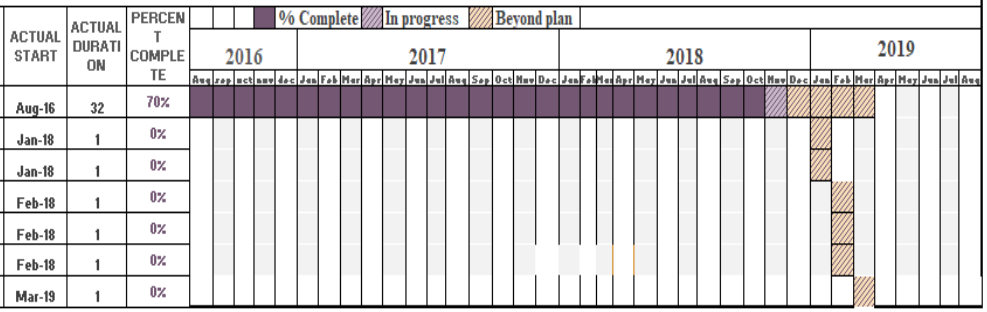


Appendix 5: GANTT Chart

DNP Project GANTT Chart
Mali Bakhshi
University of San Francisco, School of Nursing
Population Health Leadership and Teamwork in Project Planning
NURS 7005
Dr. Maxworthy
Nov 2018

DNP Project

Steps	ACTIVITY	PLAN START	PLAN DURATION in Month	ACTUAL START	ACTUAL DURATION	PERCENT COMPLETE
1	litrature review	Aug-16	32	Aug-16	32	70%
2	power points presentation for clinicians	Jan-18	1	Jan-18	1	0%
3	brocheurs for patinets	Jan-18	1	Jan-18	1	0%
4	pre-survey for assesing clinicians knowledge	Feb-18	1	Feb-18	1	0%
5	educating providers	Feb-18	1	Feb-18	1	0%
6	post survey	Feb-18	1	Feb-18	1	0%
7	power points presentation for CANP	Mar-19	1	Mar-19	1	0%



Appendix 6: Proposed Budget

Item	Cost
Microfilament	$6400
Providers hours	$225
DNP student	Volunteered by DNP student; however, ongoing education may cost $175 for each session
Printing of material for patient's education	$1000

Appendix 7: Pre-survey

Clinic:

Medical Doctor Nurse Practitioner Registered Nurse Medical assistance

Please write down any other position:

Pre-survey

Knowledge of diabetes foot care screening guidelines	No knowledge at all	A little knowledge	A moderate amount of knowledge	A great deal of knowledge	Knowledge of diabetes foot care screening guidelines	
The practice of foot screening according to guideline	More likely provide/screening if a patient has a history of foot ulcer	More likely provide/ foot screening if a patient is at high risk of developing an ulcer	Provide/ screening to average risk patients	Recommend screening for every diabetic patient		
Strategies for helping Diabetic patients be informed on self-foot care	Make foot care screening information more accessible and available in a variety of forms and languages	Make foot care screening information materials simple and short	Provide patient education and seminars through community outreach	Communicate through printed materials	Communicate through mass media	
Barriers to foot screening	Lack of time during a visit	Lack of knowledge on foot screening guideline	Patients' low literacy or low health literacy	Patients reservation to have their feet checked due to lack of hygiene	Providers reservation to check due to patients' lack of foot hygiene	Lack of resources (such as no monofilament, no pediatrist referral)

Appendix 8: Post-survey: Workshop Evaluation Form

Choose your title: MA RN NP MD/DO PA

Please write down any other title/position:

	Strongly agree	agree	Neutral	disagree	Strongly disagree
1-This workshop was applicable to my practice/work flow.					
2-The program was well paced within the allotted time.					
3-I will recommend this workshop to other clinicians/ colleagues.					
4-The workshop activities stimulated my learning.					
5-The difficulty level of this workshop was appropriate.					
6-The pace of this workshop was appropriate.					
7-The material was presented in an organized manner.					
8-As a result of attending this workshop, I would more likely educate diabetic patients on foot care.					
9-As a result of attending this workshop, I would more likely pass on the foot care brochure to diabetic patient.					
10-As a result of attending this workshop, my knowledge increased 50% or more.					

11-Given the topic, this workshop was ☐ Too short ☐ Right length ☐ Too lung

12-In your opinion, this workshop was ☐ Introductory ☐ Intermediate ☐ Advanced

	Excellent	Very good	Good	Fair	Poor
13-Powerpoint Presentation	☐	☐	☐	☐	☐
14-Brochures on foot care	☐	☐	☐	☐	☐
15-The workshop overall	☐	☐	☐	☐	☐

16-What did you most appreciate/enjoy/ think was the best about the training? Any suggestion for improvement?

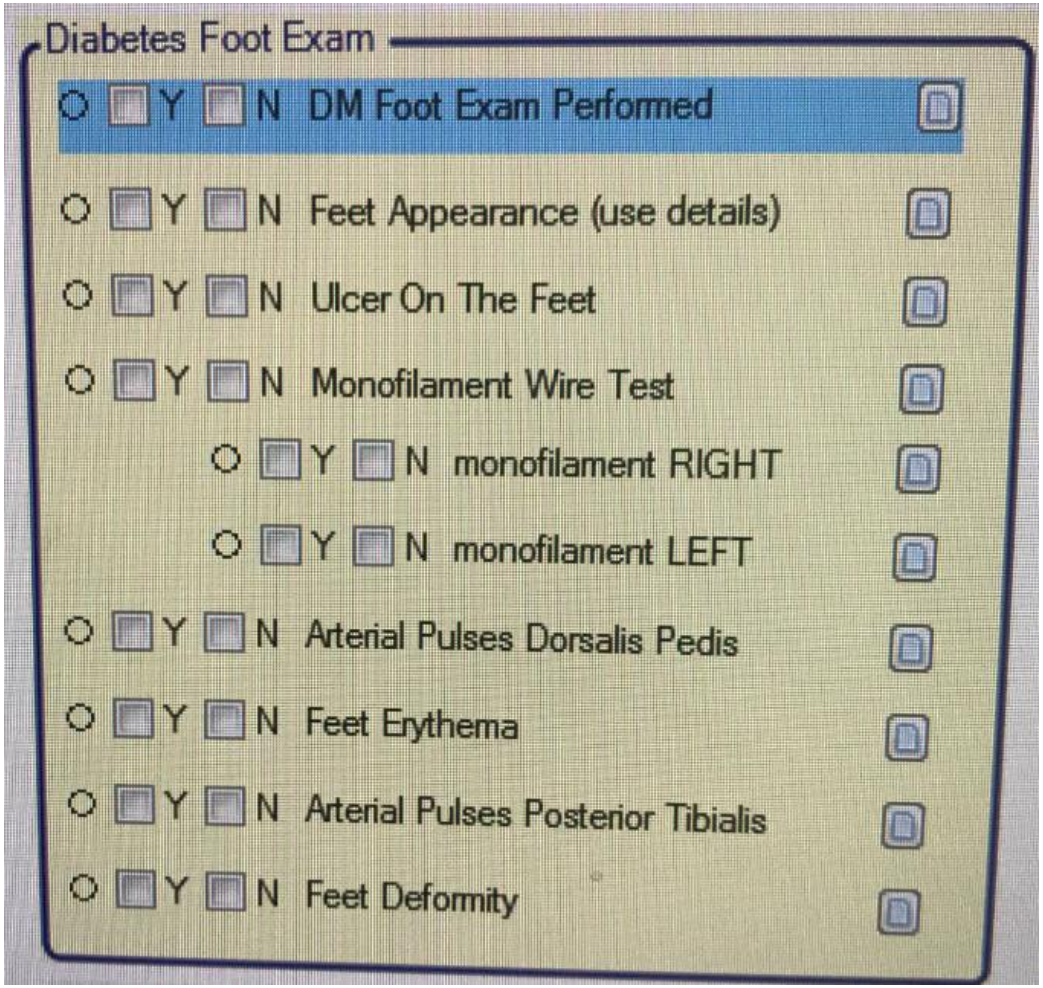
Appendix 9: Evaluation Table

Author/Year	Title	Purpose	Design	Sample	Method/Result
Allen, M. L., Van der Does, A. M., & Gunst, C. (2016).	Improving diabetic foot screening at a primary care clinic: A quality improvement project.	Educating health care workers (HCWs) in a primary health care clinic to increase diabetic foot screening practices.	Quality improvement project	Clinic staff members, 32 diabetic patients	A quality improvement project that staff members were trained on foot screening and patient information pamphlets and screening tools were made available to all clinic staff. Thirty-two consecutive diabetic patient folders were audited to compare screening in 2013 with that in 2014 after initiation of the quality improvement cycle. The result showed increased in Health care workers' confidence to conduct foot screening using the diabetic foot assessment questionnaire improved markedly after training. Diabetic foot screening practices increased from 9% in 2013 to 69% in 2014 after the first quality improvement cycle.
Ren, Yang, Lin, Xiao, Mai, Guo, & Yan (2014).	Effect of intensive nursing education on the prevention of diabetic foot ulceration among patients with high-risk diabetic foot: A follow-up analysis.	Discuss the effect of intensive nursing education on the prevention of diabetic foot ulceration among patients at high risk for diabetic foot	Prospective Observational Study	One hundred eighty-five diabetes patients at high risk for foot diseases	One hundred eighty-five diabetes patients at high risk for foot diseases were provided with intensive nursing education, including individualized education about diabetes mellitus and diabetic foot diseases, instruction in podiatric care (the right way of washing the foot, the care of foot skin, appropriate choice of shoes and socks, intense examinations and records of feet by patients themselves every day, and the assistant management of calluses). Study subjects were followed up for 2 years. The results showed statistically significant improvements in plasma glucose, blood pressure, and high-density lipoprotein cholesterol levels, and significant prevention of diabetic foot ulceration and decrease

					the rate of amputation among patients at high risk for diabetic foot.
Persaud, R. Coutts, P. M., Brandon, A., Verma L., Elliott, J. A., & Sibbald, R. G. (2018).	Validation of the healthy foot screen: A novel assessment tool for common clinical abnormalities.	developed the Healthy Foot Screen, an easy to use, rapid, validated, and clinical tool, for assessing foot health to identify common foot problems.	Prospective Observational Study	18 patients from a community dermatology clinic	18 patients were screened by 11 interprofessional healthcare assessors using a preliminary tool. Interrater reliability was calculated for the items of the final tool and a minimum of 0.6 was set for the tool. All items of the tool had an interrater reliability score of more than 0.6. Assessors found the tool facilitate primary care provider diagnosis and treatment of common foot problems and is easy to use, although some areas for improvement were noted.
McInnes et al. (2011).	Foot care education in patients with diabetes at low risk of complications: a consensus statement	To define and agree on a practical educational framework for delivery by all healthcare professionals managing patients with diabetes, particularly those at low risk of developing foot complications	Literature review	The search covered the period from 1995 to 2009	A literature review between 1995 to 2009 by the multidisciplinary expert was conducted on educating diabetic patients on foot care. Four key educational priorities emerged from Lit. review: (i) attending annual foot screening appointment; (ii) maintaining adequate glycaemic control; (iii) checking feet regularly; (iv) reporting any changes in feet immediately to a healthcare professional.
Lavery, Wunderlich, & Tredwell, (2005).	Disease management for the diabetic foot: Effectiveness of a diabetic foot prevention program	To demonstrate the effectiveness of a diabetic foot disease management program in a	Prospective Observational Study	2738 persons with diabetes	An educational program on diabetic foot disease management was implemented for 2738 patients with DM. Utilization was tracked over 28 months. After implementation of the program, the amputation rate was decreased 48% and foot-related hospital admissions decreased 38%; SNP

	to reduce amputations and hospitalizations	managed care organization.			admission decreased 70% and LOS decreased an average of 3 days.
Baraz, Zarea, Hajie Bibi, & Latifi (2014)	Comparison of the accuracy of monofilament testing at various points of feet in peripheral diabetic neuropathy screening	Evaluate the effectiveness of Semmes–Weinstein monofilament ten gram in 3, 4, eight and ten points in the screening of diabetic peripheral neuropathy in patients with diabetes mellitus	Descriptive correlational design	150 patients with diabetes mellitus	150 patients with diabetes mellitus were evaluated for sensory neuropathy using ten-gram Semmes-Weinstein Monofilaments and a questionnaire on neuropathy symptoms. The result showed that the different sensitivity and specificity of Monofilament in three and four points with sensitivity and specificity in eight and ten points is not statistically significant. The use of monofilaments in combination with another reflexes test for neuropathy is suggested. It is enforced that the testing is important in the context; however, taking a profile/history is important along the testing.

Appendix 10: Salud Para La Gente Clinic Foot Screening Tool



Appendix 11: The InLow 60-Second Screening Tool

Inlow's 60-second Diabetic Foot Screen[36]

Screening Tool www.cawc.net

Patient Name: Clinician Signature:

ID number: Date:

1. Skin 0=intact and healthy 1=dry with fungus or light callus 2=heavy callus build up 3=open ulceration or history of previous ulcer			
2. Nails 0=well-kept 1=unkempt and ragged 2=thick, damaged, or infected			
3. Deformity 0=no deformity 2=mild deformity 4=major deformity			
4. Footwear 0=appropriate 1=inappropriate 2=causing trauma			
5. Temperature – Cold 0=foot warm 1=foot is cold			
6. Temperature – Hot 0=foot is warm 1=foot is hot			
7. Range of Motion 0=full range to hallux 1=hallux limitus 2=hallux rigidus 3=hallux amputation			
Assess – 30 seconds	**Left Foot**	**Right Foot**	**Care Recommendations**
8. Sensation – Monofilament Testing 0=10 sites detected 2=7 to 9 sites detected 4=0 to 6 sites detected			
9. Sensation – Ask 4 Questions: I. Are your feet ever numb? II. Do they ever tingle? III. Do they ever burn? Iv. Do they ever feel like insects are crawling on them? 0 = no to all questions 2=yes to any of the questions			
10. Pedal Pulses 0=present 1=absent			
11. Dependent Rubor 0=no 1=yes			
12. Erythema 0=no 1=yes			
Score Totals=			

Screening for foot ulcers and/or limb-threatening complications. Use the highest score from left or right foot.
Score=0 to 6 → recommend screening yearly Score = 7 to 12 → recommend screening every 6 months
Score=13 to 19 → recommend screening every 3 months Score = 20 to 25 → recommend screening every 1 to 3 months

Comments:

Appendix 12: The Simplified 60-Second Diabetic Foot Screening Tool

Table 1. Simplified 60-Second Screen for the HIGH-RISK DIABETIC FOOT 2012.

Name:_____		**CHECK BOTH FEET**	
ID#: _____ **Phone #:**_____		(Circle correct response)	
Facility: _____			
DOB (dd/mm/yy):_____/_____/_____			
Gender: M □ F □ Years with diabetes:_____		**"YES" on either foot = HIGH RISK**	
Ethnicity: Black □ Asian □ Caucasian □ Mixed □ Other		**LEFT**	**RIGHT**
Date of Exam (dd/mm/yy): _____/_____/_____			
HISTORY	**1.** Previous ulcer	NO YES	NO YES
	2. Previous amputation	NO YES	NO YES
PHYSICAL EXAM	**3.** Deformity	NO YES	NO YES
	4. Ingrown toenail (thickened nail fold)	NO YES	NO YES
	5.Absent pedal pulses (Dorsalis Pedis and/ or Posterior Tibial)	NO YES	NO YES
FOOT LESIONS *Remember to check 4th and 5th web spaces/nails for fungal infection and check for inappropriate footwear.*	**6.** Active ulcer	NO YES	NO YES
	7. Blisters	NO YES	NO YES
	8. Calluses (thick scale on plantar skin)	NO YES	NO YES
	9. Fissure (linear crack)	NO YES	NO YES
NEUROPATHY *MORE THAN 4/10 SITES LACKING FEELING =* ***"YES"***	**10.** Monofilament exam **(record negative reaction):**	NO YES	NO YES
	a)Right_____/10 negatives (4 negatives = Yes)		
	b) Left_____/10 negatives (4 negatives = Yes)	**Total # of YES:**_____	**Total # of YES:** ____
PLAN			
a) POSITIVE SCREEN- Results when there are one or more "Yes" responses. **Refer to a foot specialist or team for prevention, treatment and follow up.** (Bony deformity, current ulcer, absent pulse are most urgent). These individuals are at increased risk of a foot ulcer and/or infection. Patients should be educated on what changes to observe and report, while waiting for the specialist appointment.			
Referral to: _____ **Appointment time:**_____			
b) NEGATIVE SCREEN- Results when there are all "No" responses. **No referral required.** Educate patient to report any new changes to their healthcare provider and re-examine in 1 year.			
One Year Date for Re-Examination (dd/mm/yy):_____/_____/_____			
Completed By: _____ **Date:** _____			
Additional Note:			
For **POSITIVE SCREEN**, in addition to referral plan above, **positive risk factors** can be linked to the care recommendations in "Root Risk Classification and Follow- Up Guide" table on the bottom of reverse side. Local referral patterns may vary depending on expertise and available resources			

doi:10.1371/journal.pone.0125578.t001

Appendix 13: Foot care brochure in English and Spanish

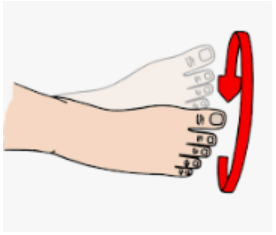
Check your feet every day. If you can not see the bottom of your feet use a mirror. Make sure to check in between your toes.

Keep the skin soft and smooth.
Check water temperature with your hands before soaking your feet.
Make sure to dry in between your toes.
Use talcum powder or cornstarch to keep the skin between your toes dry to prevent infection.
Rub a thin coat of lotion, cream, or petroleum jelly on the tops and bottoms of your feet.
Do not put lotion or cream between your toes because this might cause an infection.

If you can see, reach, and feel your feet, trim your toenails regularly.
Trim your toenails straight across and smooth the corners with an emery board or nail file. This prevents the nails from growing into the skin. Do not cut into the corners of the toenail.
Smooth corns and calluses (thick patches of skin) gently.
Do not cut corns and calluses.
Do not use razor blades, corn plasters, or liquid corn and callus removers—they can damage your skin and cause an infection.

Wear shoes and socks at all times.
Do not walk barefoot when indoors or outside.
Do not wear sandals, high heels, flip-flops.
Check inside your shoes before you put them on. Make sure the lining is smooth and that there are no objects in your shoes.
Wear shoes that fit well and protect your feet.

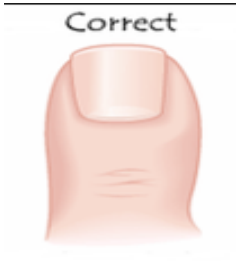
Keep the blood flowing to your feet.
Put your feet up when you are sitting.
Wiggle your toes for 5 minutes, 2 or 3 times a day.
Move your ankles up and down and in and out to help blood flow in your feet and legs.
Do not cross your legs for long periods of time.
Be active. Move more by walking, dancing, swimming, or going bike riding.
Do not smoke. Smoking can lower the amount of blood flow to your feet.



Revisa tus pies todos los días. Si no puede ver la parte inferior de sus pies use un espejo. Asegúrese de verificar entre sus dedos de los pies.

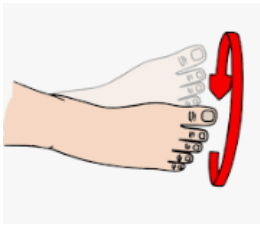
Mantener la piel suave y tersa.
Verifique la temperatura del agua con las manos antes de remojar sus pies.
Asegúrese de secarse entre los dedos de los pies.
Use talco o almidón de maíz para mantener la piel seca entre los dedos de los pies para prevenir infecciones.
Frote una fina capa de loción, crema o vaselina en la parte superior e inferior de sus pies.
No coloque loción o crema entre los dedos de los pies porque esto podría causar una infección.

Si puede ver, alcanzar y sentir sus pies, recorte sus uñas de los pies con regularidad.
Recorte las uñas de los pies en línea recta y alise las esquinas con una tabla de esmeril o una lima de uñas. Esto evita que las uñas crezcan en la piel. No corte en las esquinas de la uña del pie.
Callos lisos y callos (parches gruesos de piel) con suavidad.
No corte los callos y los callos.
No use cuchillas de afeitar, emplastos de maíz ni removedores de callos o de maíz líquidos, ya que pueden dañar su piel y causar una infección.



Lleve zapatos y calcetines en todo momento.
No camine descalzo cuando esté adentro o afuera.
No uses sandalias, tacones altos, chanclas.
Revisa dentro de tus zapatos antes de ponerlos. Asegúrese de que el forro sea suave y que no haya objetos en sus zapatos.
Use zapatos que le queden bien y proteja sus pies.

Mantén la sangre fluyendo hacia tus pies.
Pon los pies en alto cuando estés sentado.
Mueve los dedos de los pies durante 5 minutos, 2 o 3 veces al día.
Mueva sus tobillos hacia arriba y hacia abajo y hacia adentro y afuera para ayudar a que la sangre fluya en sus pies y piernas.
No cruce las piernas durante largos períodos de tiempo.
Ser activo. Muévase más caminando, bailando, nadando o yendo en bicicleta.
No fume. Fumar puede disminuir la cantidad de flujo de sangre a sus pies.



Bakhshi, M. (2019). Implementing Foot Care Program in a Rural Clinic. *Doctor of Nursing Practice (DNP) Projects*.

Johns Hopkins Medicine. (N.D.). Diabetes Education: Foot Care for People with Diabetes. Retrieved from https://www.hopkinsmedicine.org/gim/core_resources/Patient%20Handouts/Handouts_May_2012/Foot%20Care%20for%20People%20with%20Diabetes.pdf

Appendix 14: Cutting nail brochure

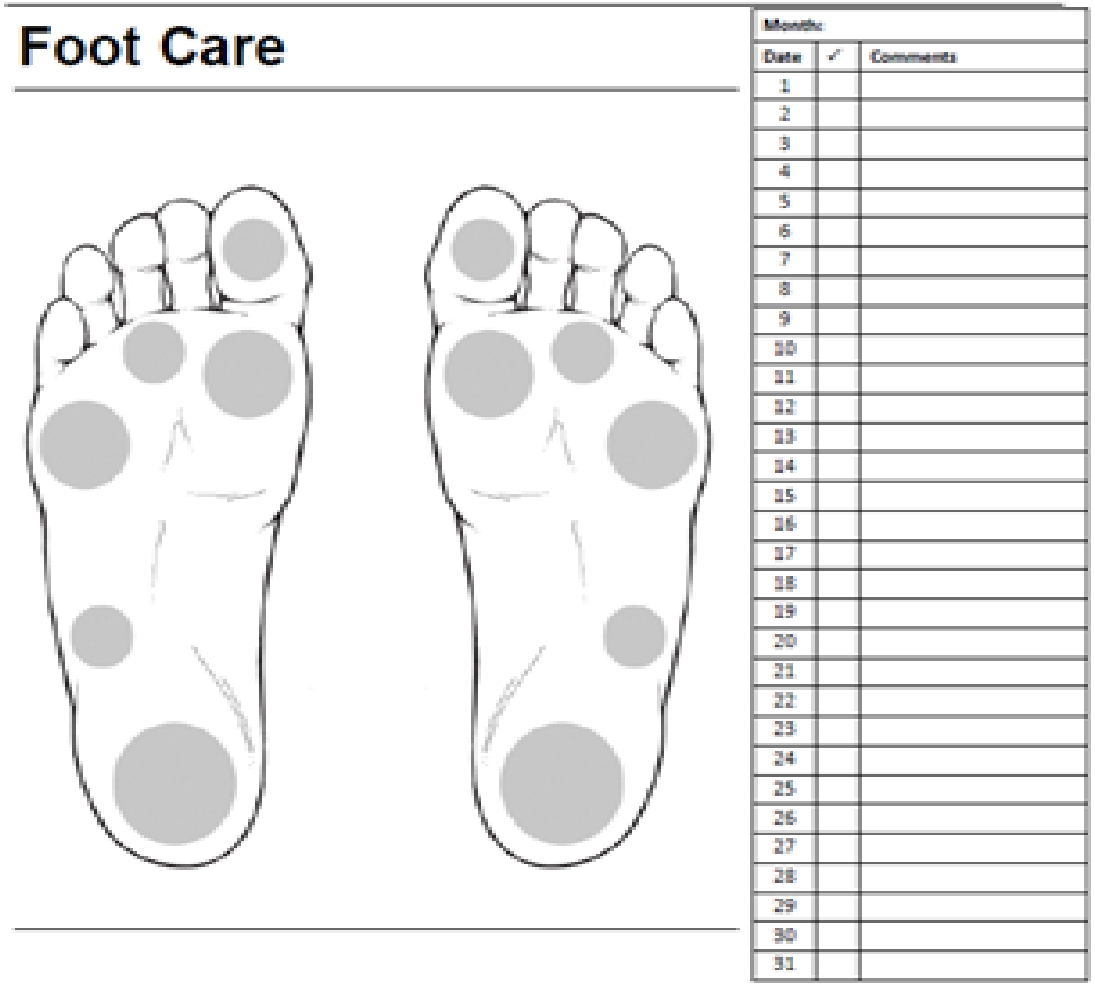
Instructions: When cutting your toenails, they should look like this

Specific Instructions:

Cutting Your Toenails

Johns Hopkins Medicine. (2012). Foot care log. Retrieved from https://www.hopkinsmedicine.org/diabetes/diabetes_education/patient_education_material/Foot%20Care%20Log.pdf

Appendix 15: Foot log



Foot Care

Month:

Date	✓	Comments
1		
2		
3		
4		
5		
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12		
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Johns Hopkins Medicine. (2012). Foot care log. Retrieved from https://www.hopkinsmedicine.org/diabetes/diabetes_education/patient_education_material/Foot%20Care%20Log.pdf

Appendix 16: PowerPoint slides for Educating Clinicians

FOOT CARE SCREENING AND PATIENT EDUCATION

Mali Bakhshi
University of San Francisco
Doctorate candidate
DNP-FNP-BSN-RN

THE SIMPLIFIED 60 SECOND DIABETIC FOOT SCREENING TOOL

TEACHING PATIENTS

- Cold feet can be a sign of poor circulation
- Feet can get injured from:
  - Something that breaks skin (such as a cut)
  - A penetrating wound (such as stepping on a tack)
  - Walking barefoot on a hot surface
  - Constant pressure in one spot (as from a tight shoe)
  - Repeated stress or infection
- When examine their feet every day, see if there is anything of concern:
  - A new sore
  - An irritated spot that is not getting better
  - A break in the skin

DM STATISTICS

- People over 18 years old with T2D: 5.5 million to 21.9 million from 1980 to 2014
- Increased number of patients with diabetes by 1.5 million every year in America
- In 2017, the cost of care for patients with T2D was $327 billion, including $237 billion in direct medical care and $90 billion spent for diminished productivity
- Diabetes is the leading cause
  - Blindness
  - Responsible for 40% of kidney injuries, 66% of diabetic neuropathy
  - 50% to 75% higher risk of surgical wound infection
  - 50% higher risk of mortality in postoperative patients.
  - 108,000 lower-extremity amputation annually
  - 20% of hospital admissions in people with diabetes due to foot ulcers
  - 85% of major amputations that are caused by a foot ulcer initially in a year

MONOFILAMENT TEST

- Used for detecting neuropathy in feet in most foot screening tool
- Loss of pressure sensation is predictive of subsequent ulceration (Singh, Armstrong & Lipsky, 2005; Mayfield & Sugarman, 2002; McCulloch, 2018).
- Increasing number of testing point on a patient's feet did not increase the sensitivity or specificity (Baruz, Zaren, Hajie Bibi & Latifi, 2014)
- Areas of callus should always be avoided when testing for pressure perception (Boulton et al., 2008)
- Sole use of a monofilament test to diagnose peripheral diseases is not recommended (Dros, Wewerinke, Bindels & van Weert, 2009)
- The diagnosis of peripheral neuropathy can be made only after a careful clinical examination with more than 1 test (American Diabetes Association, 2008).

PATIENTS BROCHURE

- Check your feet every day. If you can not see the bottom of your feet use a mirror. Make sure to check in between your toes.

At least 50% of all amputations due to neuropathy **are preventable with early intervention.**

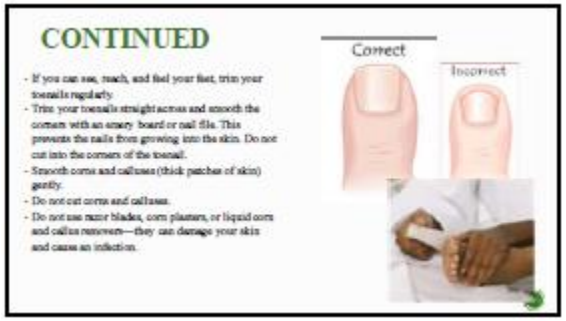
CDC 2014
NIH 2014
WOCN 2012

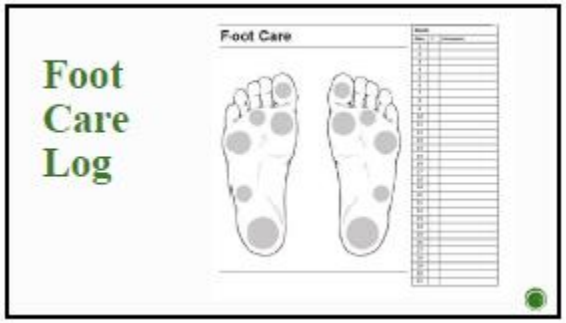
SCREENING

- Medical history. The presence of infection or inflammation, Structural changes, and circulation assessment
- Assess patients' level of knowledge about foot care and its relationship to diabetes
- Educated patient on the importance of maintaining good glycemic control, attending their annual foot screen appointment, checking their feet regularly, and reporting any changes in their feet condition to healthcare provider.

CONTINUED

- Keep the skin soft and smooth.
- Make sure to dry in between your toes.
- Check water temperature with your hands before soaking your feet.
- Use talcum powder or cornstarch to keep the skin between your toes dry to prevent infection.
- Rub a thin coat of lotion, cream, or petroleum jelly on the tops and bottoms of your feet.
- Do not put lotion or cream between your toes because this might cause an infection.





Bakhshi, M. (2019). Implementing Foot Care Program in a Rural Clinic. *Doctor of Nursing Practice (DNP) Projects*.

Appendix 17: Result of Pre- and Post-Survey

Pre-Survey result	Post-Survey result
Return rate: 17/20: 85% for pre-survey	Return rate: 16/20: 80% for post-survey.
13 MAs and 4 providers fill out the survey.	9 MAs, 5 providers, and 2 administrators fill out the survey.
Providers acknowledged that they have a "moderate" to a "great deal of knowledge" on diabetic foot care screening.	50% of providers agree that their knowledge increased 50% and higher.
The MAs stated that their knowledge is "a little" to "moderate knowledge"	80% of MAs agree that their knowledge increased 50% and higher.
80% of clinicians stated that foot care education to patients should be in patient's language.	85% of clinicians believed that the workshop is intermediate in content. 15% believed that the workshop content was Advanced.
80% of clinicians said material should be short and simple.	80% of clinicians graded the brochure is very good and 20% as excellent for teaching patients.
20% believed that education should be through community outreach.	12.5% of clinicians voted that the overall workshop was excellent. 81% believed it was very good. 6.5% voted the workshop was good.
	100% of clinicians and providers agree that as a result of attending this workshop they will more likely to educate patients on foot care and give the foot care brochure and the foot log to patients.
Comments: • The quality of care improves with teaching patients on foot care. • Foot care subject was never been discussed in the clinic. • Many MAs wrote that their knowledge increased with the teaching provided • More statistic on diabetes foot expenses on patient and healthcare system	

Appendix 18: Letter of Support from Agency

After many conversations with the Director of Family Practice at Salud Para La Gente Clinic in Watsonville area, On August 9th, 2017, the Director of Family Practice accepted this DNP student implement her quality improvement project involved an educational intervention for clinicians on foot care at the SPLG clinic site located at the city of Watsonville.

Appendix 19: DNP Statement of Non-Research Determination Form

Student Name: Mali Bakhshi

Title of Project: Diabetic foot screening tool

Brief Description of Project: In 2012, the cost of care for patients with type 2 diabetes was $245 billion, including $176 billion in direct medical care and $69 billion spent for diminished productivity (ADA, 2016). Providers' poor knowledge about foot care assessment and lack of screening tools in practices contribute to 108,000 lower-extremity amputations (CDC, 2018). Annually, 20% of hospital admissions in people with diabetes was due to foot ulcers (), and 85% of major amputations that are caused initially by a foot ulcer in the U.S. (Snyder, & Hanft, 2009; Brownrigg, Apelqvist, Bakker, Schaper, & Hinchliffe, 2013). Studies showed that educating providers on an appropriate foot screen tool improve foot screening and consequently improve diabetic patients' foot care outcomes. A screening tool will be implemented, and providers will be educated on the Simplified 60-Second Diabetic Foot Screening Tool and teaching patients on foot care.

A) Aim Statement: By May 1st, 2019, develop, implement and evaluate a foot screening toolkit.

B) Description of Intervention: A diabetic foot screening tool will be implemented at Salud Para La Gente Clinic where is located in the city of Watsonville. The SPLG Clinic provides affordable health care to nearly 27,000 patients, including more than 1,700 diabetic patients that are seen by providers. A diabetes program available to diabetic patients only on diet and blood glucose monitoring. An education sesion provided to clinicians on the Simplified 60-Second Diabetic Foot Screening Tool and educating patients of foot care.

C) How will this intervention change practice? A diabetic foot management program in a community is an inexpensive preventive measurement and educating providers to use an easy to use foot screening tool reduce foot ulcers, re-ulceration, and foot amputation rate (Persaud et al., 2018). In addition, the studies showed that taking a short period of time during a primary care visit to assess diabetic patient's feet decreases hospital admissions and length of stay in acute care hospitals and skilled nursing facilities (Ren et al., 2014; Persaud et al., 2018). Educating patients on diabetes complications and screening their feet increases patients' motivations and engages patients in their self-care that result in patients' behavioral change and significant improvement in health outcomes (McInnes et al., 2011).

D) Outcome measurements: 60% of diabetic patients will be screened per implemented protocol. Staff knowledge attainment on proper foot screening techniques will increase by 50% percent or more. Assessment of the staff of the process will be done pre and post educational session.

To qualify as an Evidence-based Change in Practice Project, rather than a Research Project, the criteria outlined in federal guidelines will be used: (http://answers.hhs.gov/ohrp/categories/1569)

X This project meets the guidelines for an Evidence-based Change in Practice Project as outlined in the Project Checklist (attached). Student may proceed with

implementation.

☐ This project involves research with human subjects and must be submitted for IRB approval before project activity can commence.

Comments:

EVIDENCE-BASED CHANGE OF PRACTICE PROJECT CHECKLIST *

Instructions: Answer YES or NO to each of the following statements:

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

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

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

STUDENT NAME (Please print):

Mali Bakhshi

_____

Signature of Student: _____DATE_10/14/2018

SUPERVISING FACULTY MEMBER (CHAIR) NAME (Please print):
Dr. Jo Loomis_____

Signature of Supervising Faculty Member (Chair): _____DATE_____