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A Quality Improvement Project to Increase Eye Care Screenings and Recommendations for Patients With Type II Diabetes Mellitus

Amber Ojeda
University of the Incarnate Word, ojedaamber@gmail.com

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A QUALITY IMPROVEMENT PROJECT TO INCREASE EYE CARE SCREENINGS AND RECOMMENDATIONS FOR PATIENTS WITH TYPE II DIABETES MELLITUS

by

Amber Ojeda BSN, RN

APPROVED BY DNP PROJECT ADVISOR / CLINICAL MENTOR:

Karen Weis PhD, RNC, FAAN

Elizabeth Mathes RN, FNP-BC

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Amber Ojeda

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Abstract

Type 2 diabetes affects more than 90 million people and is a major cause of reduced vision and blindness in the United States (Lu et al., 2016). Without proper preventative measures, type II diabetes mellitus damages the microvascular within the retina causing diabetic retinopathy (Lima, Cavalieri, Lima, Nazorio, & Lim, 2016). Despite the success of early detection and the availability of diabetic retinopathy screenings, many people diagnosed with T2D do not complete the recommended routine eye exam (Lu et al., 2016). Healthy People 2020's (2016) target goal for annual dilated eye exams for patients with T2D is 58%. At baseline, only 2% of patients received eye care screenings & referrals within the host Internal Medicine clinic. The purpose of this quality improvement project was to increase the number of eye care screenings performed and referrals completed in non-WellMed patients over the age of 18 diagnosed with T2D. The primary objective was to increase eye care screenings and ophthalmology referrals and educate patients and staff regarding diabetic retinopathy. The intervention included staff training, a patient education handout, and the development of a provider protocol checklist. Between June 12 and August 4, 2017, 76 patients met the inclusion criteria. Following the intervention, 40 patients (53%) received a complete eye care assessment, 29 patients (38%) were recommended to an ophthalmologist, and 33 patients (43%) received patient education handouts. Results suggest that a combination of staff training, patient education, and assistance with the assessment and referral process can influence provider's adherence to recommended care.

Key Words: diabetic retinopathy, checklist, vision, ophthalmology, type 2 diabetes

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Type 2 diabetes (T2D) is a chronic disease affecting many body systems. Without proper preventative measures and treatment, T2D damages the microvascular within the retina causing diabetic retinopathy (DR) (Lima, Cavalieri, Lima, Nazorio, & Lim, 2016). DR is the leading cause of reduced vision and blindness in the United States (Lima et al., 2016; Lu et al., 2016). Most patients with T2D are not aware of the devastating consequences the disease can have on their eye health and vision and do not experience warning signs before vision is impaired or lost (Kovarik et al., 2016; Lu et al., 2015). According to the American Diabetes Association (ADA) Standards of Medical Care in Diabetes, routine screening and dilated eye exams provide the best approach for ensuring early detection and prevention of vision loss (American Diabetes Association, 2016; Lima et al., 2016; Lu et al., 2016).

Statement of the Problem

Despite the success of early detection and the availability of DR screenings, many people diagnosed with T2D do not complete the recommended routine eye exam (Kovarik, et al., 2016; Lu et al., 2016). According to Lu et al. (2016), only 56% of adults in the United States were screened for DR in 2002. Incomplete preventative screening leads to decreased patient safety, inefficient medical care, and progressive vision loss. To increase routine DR screening and adherence to the standards of medical care, patients and providers need to be educated on the importance of prevention and become familiar with ways to decrease barriers and increase motivation (ADA, 2016; Denig, Dun, Schuling, Haaijer-Ruskamp, & Voorham, 2012; Dorland & Liddy, 2014; Lu et al., 2016).

Background and Significance

T2D affects more than 90 million people and is a major cause of reduced vision and blindness in the United States (Lu et al., 2016). More than 12,000 new cases of blindness occur

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each year due to DR and over a third of the population has some form of DR (Giloyan, Harutyunyan, & Petrosyan, 2015; Lima et al., 2016; Ovenseri-Ogbomo, Abokyi, Koffuor, & Abokyi, 2013). Retinal structures and cells within the eye responsible for vision (neurons, and pericyte, glial, and glanglion cells) are damaged in patients affected with T2D (Giloyan et al., 2015; Lima et al., 2016). T2D can lead to significant microvascular changes within the retina causing permanent damage to pericyte cells responsible for retinal blood flow (Giloyan et al., 2015; Lima et al., 2016). According to Giloyan et. al. (2015), 2% of patients with T2D will become blind within 20 years and over 10% of patients will develop advanced stages of visual impairment. Twenty years after progressive T2D, over 75% of patients will develop some form of DR (Giloyan et al., 2015).

Reduced vision and blindness due to T2D leads to disability, anguish, decreased productivity, and diminished quality of life (Giloyan et al., 2015; Kovarik et al., 2016). Worldwide, loss of vison is one of the top 10 disabilities among adults (Giloyan et al., 2015). According to Lima et al. (2016), retinal damage can occur long before signs and symptoms of DR are apparent. Early detection and prevention is key to vision preservation (Lu et al., 2016). The ADA Standards of Medical Care recommend that patients with T2D should have a dilated eye exam performed by an optometrist/ophthalmologist upon disease diagnosis then every year thereafter (ADA, 2016; Kovarik et al., 2016). Adherence to standards of medical care, timely detection, and treatment of DR can prevent up to 70% of T2D related vision loss and could save the United States over 600 million dollars annually (Kovarik et al., 2016).

Assessment

The Internal Medicine clinic is in a metropolitan area on the north side of San Antonio, Texas in Bexar County, and in the 78258 zip code. This zip code contains 524,246 housing units

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and approximately 41,000 people reside within the clinic's zip code (United States zip codes, 2014). The community has a higher concentration of Non-Hispanic White (81%) than San Antonio (United States zip codes, 2014). The median age of the population is 36, which is older than the county at 32.8 (United States zip codes, 2014). The median annual house hold income is $107,500, which is significantly above the average for San Antonio ($55,000) (United States zip codes, 2014). The majority of the population have fulltime employment (53%), are married (63%), and 41% of the population have obtained a bachelor's degree while 17% have obtained a master's degree (United States zip codes, 2014). This area has some of the highest percentages of people who attended college of any zip code in San Antonio (United States zip codes, 2014). This population is unique in the fact that it is an older, more affluent, and less diverse than that of the larger community.

The clinic is in the Northside Medical Center in the Stone Oak area. Many clinics, specialists, hospitals, labs, and medical procedure offices surround this clinic. There is at least one other adult Internal Medicine office within 2 miles of the clinic. The clinic is on the second floor of a two-story medical building and shares the building with a dermatology office and orthopedic specialist. The lead physician rents the clinic space from the building manager. The building has ample parking with eight handicapped designated parking spaces. The building has numerous ramps and an elevator to increase accessibility. The clinic has hospital affiliation with North Central Baptist hospital, which is located one-half mile away from the clinic.

A microsystem assessment was performed to obtain baseline clinical data. The microsystem assessment included staff interviews. The clinic is owned and operated by the lead physician who specializes in adult internal medicine. Two nurse practitioners (NPs) assist the physician in seeing patients within the clinic. The majority of patients live within the community

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(52%), are female (48%), and between the ages of 40-50 (63%). The clinic accepts three main insurance providers (Humana, United Health Care-Health Select, Blue Cross Blue Shield, Medicare B, Aetna) and self-pay patients. The clinic does not accept Medicaid. The physician is a WellMed provider and accepts WellMed patients. Currently there are 256 WellMed patients who are seen at the clinic.

There is a total of 10 staff members within the clinic. The clinic has three providers; a physician who owns the clinic and two NPs. Each of the providers has a medical assistant. Two people run the front desk and one is also the clinic manager. The clinic has one lab technician. Within the clinic there is one small waiting room, consisting of approximately 10 chairs. The clinic has three offices (one for each provider). There are five examination rooms in the clinic. There is one exam room for the physician, one room for one of the NPs, and two rooms for the other NP. The fifth examination room holds a DEXA Scan for bone density assessment. The DEXA Scan room is not utilized for any other purpose. The physician and the NPs are qualified to perform DEXA Scans. The clinic has a lab technician and an in-house lab that can run urine analyses, glycosylated hemoglobin/hemoglobin A1cs (HgA1c), prothrombin times, and international normalized ratios. The lab can send the remaining lab orders out to Lab Corp, Quest, and Texas State lab. The clinic has access to a treadmill utilized for cardiac stress tests and an electrocardiogram for cardiac rhythm assessment. The physician conducts treadmill cardiac stress tests and the NPs conduct and read electrocardiograms.

An exam room within the clinic is contracted out to WellMed for health care screenings. Patients who are associated with WellMed can establish appointments with the physician and receive their preventative health screenings with a WellMed employee within the office and, if needed, are referred out to a specialist. WellMed serves more than 286,000 patients, mostly

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Medicare-eligible, in Texas and Florida (WellMed, 2017). There were 100 WellMed patients with T2D who are seen in the clinic. Fifty-two percent of the clinic's WellMed patient population received eye care screenings and 52% were referred to an ophthalmologist/optometrist for an annual eye exam. Only 2% of the remaining patient population (2,500 patients) at the clinic received eye care screenings and referrals.

A needs assessment was utilized to discover gaps between current clinical practices and desired results (Watkins, Meiers, & Visser, 2012). Gaps increase poor patient outcomes by causing a decrease in communication, organization, and collaboration (Harrison, 2016). A needs assessment allowed quality improvement personnel to make informed decisions and plan performance actions that will make the greatest impact (Watkins et al., 2012). Needs assessments assist in gathering information regarding clinical processes and prioritizing areas in need of the greatest improvement (Watkins et al., 2012). By utilizing the needs assessment, focus was pinpointed on a specific clinical processes that affects patient safety and efficient medical care. The microsystem assessment performed between October 6, 2016 and November 18, 2016 identified nonadherence to the standards of medical care for patients with T2D regarding eye care screenings and annual eye exam referral. A needs assessment was performed at the clinic to understand the providers' current eye care screening and referral practices.

Following a staff meeting, a gap in the knowledge and awareness among the staff and providers regarding diabetic eye screening, the need for referral, and the need of an annual eye exam was discovered. The providers were not aware of the standards of care regarding eye care assessment and referral for patients with T2D. Also, unless the patient's complaint involved the eyes, an eye assessment was not performed. Upon interviewing the lead physician, he expressed concern in not having sufficient time for staff meetings to educate or train his fellow providers

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regarding eye care assessments and referrals for patients with T2D. Additional contributing factors to the problem included the lack of DR education materials available in the clinic for staff or patients, a lack of communication between providers and optometrist regarding the importance of eye care assessment and referral, and a lack of an organized system to document completed screenings and referrals.

Observation of practices within the clinic and conversations with the staff revealed that optometry referrals were rarely made for patients with T2D. The providers verbalized that they did not know of any optometrist in the area to whom they could refer patients. A systematic paper referral system was place at the clinic for other specialties, but is not utilized for annual eye exams.

Organization's Readiness for Change and Stakeholder Engagement

Assessing a clinic for readiness to change is essential to the success of a quality improvement (QI) project. Engagement of all the staff members helps smooth the transition and maintain the clinic's productivity (Rodriguez, Xiao, Martinez, & Friedberg, 2016). Including every staff member in the change process will create a culture that promotes collaboration, appreciation, and respect (Rodriguez et al., 2016). Change in work flow can be a hard adjustment, but it is imperative for the staff to envision the improvements that will be made in their patients' quality of life. Readiness to change can also be assessed by how well the staff work together and assist each other during difficult and hectic days (Rodriguez et al., 2016).

The Practice Improvement Capacity Rating Scale (PICRS) was utilized to assess the clinic's readiness to conduct QI interventions (Appendix A) (Robert Wood Johnson Foundation, 2014). The PICRS lists 15 questions designed to identify the level of health care unit readiness to pursue a QI initiative (Robert Johnson Wood Foundation, 2014). After the 15 questions are

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answered the results are calculated. If the results are between 0 and 99, the clinic is in the Red zone and is not ready for a QI project. If the results are between 100 and 249, the clinic currently has limited capacity for a QI project. Results above 250 indicate a Green zone and the clinic is ready for a QI initiative. The PICRS has a must-pass area, which is a necessity for QI interventions to successfully occur. An interview was conducted with the doctorate of nursing practice (DNP) student's mentor on March 14, 2017. After the PICRS tool was described, the questions were answered, and the results tallied. Results showed the clinic was in the yellow zone, scoring 210 on the PICRS. Also, the clinic did not score in all the needed must-pass areas.

It was determined the clinic and staff were not ready for a QI project and change initiative. The must-pass areas the clinic scored poor in included lead physician support and existing competing priorities. To increase the success of the QI initiative, the DNP student spoke with the physician and relayed how important his contribution to group meetings and to intervention ideas were to the success of the project and patient outcomes. The clinic manager was bombarded with front-desk tasks and was unable to provide a stable leadership support structure for the staff. The intervention needed to include training of other staff members on how to handle the referral system to alleviate some burden on the clinic manager. Also, cross-training staff within the clinic increased efficiency and staff morale.

The existing competing priority in the clinic is the newly acquired electronic health record (EHR). The staff were in the process of learning the EHR system and diligently utilizing the EHR to enter all new patient data. The staff seemed to be learning the system quickly and were taking the necessary steps (e.g. calling the help desk when a problem arises or staying late to complete a patient chart in the EHR) to make the EHR easily assessable and efficient.

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The clinic scored low on the PICRS in community involvement and utilizing QI resources. The clinic did not participate in community improvement efforts, nor did the clinic participate in community involvement activities. Past improvements (e.g. implementing EHR system) within the clinic did not utilize QI resources or methods.

Although the PICRS score was in the 'yellow zone', the staff worked well together, shared the same values and beliefs, and worked towards a common purpose and goal. The clinic staff members understand the importance of adhering to the standards of medical care in diabetes and were ready to change their care processes to include assessment and screening for eye care and increase referrals. The staff showed concern and enthusiasm by aiding and expressing ideas to begin the QI project and make it successful.

Focus groups, observations, interviews, Root Cause Analysis Worksheet (RCA), and the Priority Issue Worksheet were utilized to obtain the data necessary for the needs assessment. The RCA tool is the most beneficial and appropriate to pinpoint problems, determine solutions, and prevent future issues within the microsystem (Appendix B) (Quality Assurance/ Performance Improvement [QAPI], n.d). Staff observations and a stakeholder interview were used to complete the RCA tool. The ADA standards for medical care for patients with diabetes helped guide the overall aim of the QI project and was used to explain the importance to the providers.

The lead physician and NPs were interviewed regarding the QI project. Interview topics included results expected, roles, responsibilities, needed tools, resources, and possible barriers to success (Watkins et al., 2012). The DNP student discussed the prospective timeframe, who could be involved in the needs assessment, the necessary resources, and the ADA standards for medical care. The stakeholders revealed they were not fully aware of the standards of care regarding eye care screenings and referrals for patients with T2D. The providers did not routinely assess for

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eye complications, educate patients regarding diabetic eye disease, or refer to a specialist unless the patient presented with a complaint. The providers understood the time frame and their roles and responsibilities regarding the QI project.

During the interview, the stakeholders expressed their concerns and explained possible barriers. Lack of time to educate the staff about the interventions was a concern. The clinic manager was interviewed regarding charting, the referral process, and insurance coverage. During the interview, it was discovered that the office had utilized paper charting for several years and just recently acquired the EHR system. Longstanding patients within the clinic have most of their medical records on paper. When the office received the EHR, the staff began charting digitally without converting the entire patient records to the EHR. Also, on days that the office is extremely busy, the staff found it faster to utilize paper charts instead of the EHR. The set-up of the patient exam rooms and provider offices did not promote use of the EHR. Most of the patient exam rooms included a computer, but the providers did not have computers within their offices. The clinic manager voiced concern that the clinic needed a systematic approach for charting eye assessments and completed eye exam referrals. The clinic manager handled referrals by receiving the paper referral from the provider, faxing it to the designated location, scanning and documenting it in the EHR, and then gave the results to the corresponding provider once results were obtained.

Optometrist and ophthalmologists clinics within 10 miles of the Internal Medicine clinic were contacted for potential referrals. Over-the-phone interviews were conducted. The closest ophthalmologist to the clinic is 4.4 miles away, accepts the same insurance providers as the project clinic, and has five other locations if needed. The office is home to 18 providers whose specialties include diabetic eye disease (San Antonio Eye Center, 2015). The office could accept

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new patients and had available appointments within a few days. The other office is 13 miles away, accepted the same insurance providers, and had two other locations if needed. These offices were able to support the referral process for the clinic's patients with T2D.

A staff meeting consisted of the two NPs, their medical assistants, and the front desk personnel where assembled for the staff to voice their opinions regarding eye care and referrals for patients with T2D. During the meeting the DNP student observed who among the staff was enthusiastic and had ideas regarding the QI project. The QI focus group was chosen based on the staff's interactions during the meeting. The focus group consisted of the student's mentor and her medical assistant. The QI focus group helped the student develop the intervention checklist and referral system for the project, trained staff on the new interventions, and kept track of the completed eye care screenings and referrals.

During the focus group meeting the staff were asked about their knowledge regarding standards of care for patients with T2D, how they documented eye care screenings, how they educated patients regarding the necessary annual eye exam, and how referrals were completed.

During the meeting the Prioritizing Issues Worksheet (Appendix C) was completed by the group and utilized to pinpoint the most important problem in the clinic where more emphasis is needed to increase the quality and safety of patient care. The priorities on the worksheet were chosen based on stakeholder interviews and staff observation. The three priorities chosen were assessment of eye care in patients with T2D, time for staff education and in-services, and utilizing the EHR. Each staff member then scored the topic in regards to priority. This process considered factors as to what the clinic staff consider high-risk (a score of 5) to very low risk (a score of 1) (University of Iowa, n.d.).

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The focus group meetings with all staff members and the Prioritizing Issues Worksheet proved to be very valuable in obtaining staff perspectives, attitudes, and identifying their most important issue within the clinic. With a high score of 33, the results of the Prioritizing Issues Worksheet depicted a high priority for eye care assessments for patients with T2D. The staff believed this issue would have the most effect on the organization, quality of care, costs, and satisfaction. Eye care assessment was applicable to several clinical areas including nursing, providers, front desk personnel (for referrals), optometrist/ophthalmologist. This data helped guide the QI project and interventions. The teamwork displayed during the meetings and the results from the worksheet indicated that the staff had passion for change and shared the same interest for improving the standards of care for patients with T2D.

Project Identification

Purpose

According to HP2020, only 53.4% of adults 18 years and older diagnosed with T2D receive an annual dilated eye exam. HP2020's target goal for annual dilated eye exams is 58% (HP2020, 2016). The purpose of this quality improvement project was to increase the number of eye care screenings performed and referrals completed in non-WellMed patients over the age of 18 diagnosed with T2D from 2% to 58% by August 4, 2017 within an Internal Medicine clinic. Table 2 represents the evaluation plan and outcome measures of the QI project.

Objectives

The objectives of this project were:

1. To increase eye care screenings and ophthalmology referrals to 58% for patients with T2D.
2. To educate all staff members regarding the importance of eye care screenings and

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referrals, how to educate patients, and which ophthalmologist in the area accept referrals appropriate for the clinic population.

3. To educate every patient with T2D who visits the clinic regarding diabetic eye complications by utilizing an ADA education pamphlet.

The aims of this QI project were:

1. To increase the number of eye care screenings performed for non-WellMed patients with T2D
2. To increase completed ophthalmology referrals from 2% to 58% by August 4, 2017.

The process began with provider's assessing for eye complications in patients with T2D. The process ended with referral to an optometrist/ophthalmologist. This intervention was aligned with the ADA standard of guidelines for patients with T2D to receive an annual dilated eye exam by an optometrist/ophthalmologist upon T2D diagnosis and every year thereafter.

Anticipated Outcomes

By utilizing the intervention process, the clinic staff expected to increase awareness of diabetic eye disease in patients, increase provider education regarding eye care assessment, increase optometrist referrals, and increase patient care outcomes. The need to improve the implementation of the standards of care provided to patients with T2D in the clinic and improve communication among health care providers has been identified. Specific benchmarks for this project included:

- By June 8, 2017, 100% of staff members and providers will be educated:

1. On the importance of eye care screenings and referrals
2. On how to educate patients

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3. On available optometrist/ophthalmologist in the area who are prepared to accept patient referrals and provide follow-up summaries of care to the clinic.

- By June 8, 2017, 100% of staff members and providers will be educated regarding their roles and responsibilities regarding the ophthalmologist referral procedure.
- By August 4, 2017, 58% of patients with T2D will have eye care screening performed and a completed referral to an optometrist/ophthalmologist.
- By August 4, 2017, every patient with T2D who visits the clinic will be educated regarding diabetic eye complications by utilizing the ADA education pamphlet.

Summary and Strength of the Evidence

Despite published guidelines, adherence to standards of medical care among PCPs has been inadequate and few studies have examined adherence to referral recommendations (Mendu et al., 2014). Mendu et al. (2014), performed a prospective, non-randomized study designed to investigate adherence to chronic kidney disease (CKD) standard medical care guidelines utilizing checklists. The study included 368 participants, 105 in the intervention group and 263 in the control group (Mendu et al., 2014). Implementation of the checklist significantly improved adherence to CKD standards medical care guidelines and delivery of necessary care (Mendu et al., 2014). Checklists have been shown to be successful in guideline adherence not only in primary care settings, but also within other health care related fields (Mendu et al., 2014). Providing a checklist specifically for patients with T2D to be screened for eye complications and referred for the recommended eye exam can be used to increase adherence to standards of care.

Altshuler et al. (2015) performed a descriptive study consisting of 71 participants to evaluate whether educating patients improved patient knowledge utilizing pre- and post-education questionnaires. During the study, the participants were taught the importance of

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preventing skin cancer, and were given a detailed description of the clinical aspects of skin cancer (Altshuler et al., 2015). The education materials included a handout explaining basal cell carcinoma and another handout explaining the importance of sunscreen as a preventative measure (Altshuler et al., 2015).

The study addressed gaps within the literature on how to enhance patient education and provider-patient communication regarding disease prevention. The study demonstrated how patient education can be utilized to increase patient awareness regarding disease assessment, treatment, and prevention (Altshuler et al., 2015).

Methods

Project Intervention

The project setting was an adult outpatient Internal Medicine clinic. The clinic was in a metropolitan city in Texas. The clinic providers included one physician and two nurse practitioners. The EHR system and paper charts were used to collect provider name, patient demographic data describing the sample (age, race, sex, ethnicity), T2D diagnosis, completed eye care screenings, and completed optometrists/ophthalmologists referral. Equipment included one ophthalmoscope for each provider, Snellen charts printed and placed in every exam room, provider protocol checklists and ophthalmologists contact cards printed and placed in every exam room, and patient education pamphlets were printed and placed in every exam room.

The participants in the study included one Internal Medicine physician, two nurse practitioners, one clinic manager, and three medical assistants. A consent form was not required for this project as the project involved a required aspect of care. All information retrieved from the patient record during the microsystem assessment was de-identified. All aspects of the

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intervention were supported by the clinic's lead physician (Appendix G). No compensation was provided to patients, facility staff, or contracted employees.

Implementation of the quality improvement project, data collection, and analysis was anticipated to take approximately four months. Training of the staff and collection of data from the EHR and paper charts began June 8, 2017, and ended August 4, 2017. All data collection and analysis was completed by August 18, 2017.

The project was a prospective interventional study to increase eye care exams and optometry/ophthalmology referral for patients with T2D. Retrospective patient electronic and paper chart reviews were conducted to obtain baseline pre-assessment data of the adherence of providers to the ADA standards for medical care in patients with T2D. Pre-and post-intervention data was collected by reviewing charts. The data were recorded into a password-protected excel spreadsheet, and uploaded into Statistical Packages for Social Sciences IMB® (SPSS) version 23 for analysis. Demographics were described and displayed in charts and tables. Provider adherence indicators were analyzed using Chi-Square.

The project intervention involved staff education and training, provider protocol checklist development, and patient education pamphlets.

The DNP student provided an initial 30-minute training session (Appendix E) June 8, 2017, for the physician, the two nurse practitioners, the clinical nurse manager, and the three medical assistants. Topics included 1) the background and significance of diabetic eye disease; 2) ADA medical standards of care for patients with diabetes; 3) purpose for the quality improvement project; 4) the provider protocol checklist; 5) steps in the eye care assessment; 6) complications and abnormalities to look for during the ophthalmoscope exam; 7) how to perform visual acuity assessment utilizing the Snellen chart; 8) screening for dilated eye exam; 9) when,

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how, and whom to refer patients (cross-training the staff on referral system was included); 10) patient education pamphlet; and 11) routine staff training and evaluation meetings. Bimonthly QI meetings were held for overall intervention evaluation, needed adjustments, and/or roles, responsibilities, and expectations of the staff. Attendance was taken at each meeting.

The organized protocol checklist (Appendix D) was designed to provide the medical providers a place to document and at the same time remind them to perform eye care screenings, document completion, and recommend ophthalmology appointment. The protocol checklist included a section for the patient's name, date of birth, insurance provider, phone number, and date of exam. A section was provided for the PCP to document if 1) ophthalmoscope exam was completed, 2) visual acuity assessed, and 3) screening for last dilated eye exam completed. The protocol checklist included the names and contact information of two ophthalmologists who agreed to accept new patients from this clinic. The protocol checklist included a section for the referring provider signature and a section for comments.

The specific intervention steps performed during the PCP appointment included 1) patient asked when they had their last dilated eye exam; 2) visual acuity assessed by medical assistant utilizing hand-held Snellen chart; 3) eye care assessment performed by the provider utilizing ophthalmoscope; 4) preferred ophthalmologist for referral visit confirmed with patient; 5) education handout with ophthalmologist's contact information given to patient; 6) provider protocol checklist with designated ophthalmologist completed by provider; 7) protocol checklist to clinic manager or available staff placed within a plastic bin next to the fax machine; 8) protocol checklist faxed to designated ophthalmologist every morning before the Internal Medicine clinic opened by the clinic manager or staff; 9) protocol checklist scanned into

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patient's electronic health record by clinic manager/staff; and 10) completed protocol checklist placed into designated folder for DNP student to review.

The patient education material consisted of a handout regarding diabetic eye disease, prevention, and the importance of a dilated eye exam. Ophthalmologist/ Optometrist contact information was attached to the handout for the patient to schedule an appointment. Every patient seen within the clinic diagnosed with T2D received the education handout (Appendix F).

During each week of the intervention stage of the QI project, the DNP student collected the provider protocol checklists. The checklists were assessed for the following data: 1) documentation of ophthalmoscope exam, 2) visual acuity, 3) screening for dilated eye exam, 4) inclusion and exclusion criteria (T2D diagnoses, patient has not yet received annual dilated eye exam), 5) whether patient education handout was provided, 6) referral was completed. A completed eye care assessment was documented when 1) documentation of ophthalmoscope exam, 2) visual acuity, and 3) screening for dilated eye exam were all three performed. The data were documented on a spreadsheet for analysis. The measured outcomes correlated with the primary purpose of the study which was to develop the provider protocol checklist (Table 1).

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Table 1

Outcome Measures

Outcome Measure	Source
Provider Recommendation	Completed Provider Checklist
Eye Care Assessment	Completed Provider Checklist
1) Ophthalmoscope Exam	
2) Assess Visual Acuity	
3) Screen for Last Dilated Eye Exam	
Patient Education Pamphlet	Completed Provider Checklist
Patient Eligibility	Patient Medical Record

Organizational Barriers and Facilitators

A SWOT (Strengths, Weaknesses, Opportunities, Threats) analysis was utilized to discover a clinics internal strengths and weaknesses, opportunities for growth and improvement, and the external threats to QI sustainability (Harrison, 2016, p. 92). It was critical to identify these factors as they can make an impact on the QI project planning, design, development, implementation, and evaluation (Watkins et al., 2012). SWOT data were collected through staff observation and interviews between March 3, 2017, and March 20, 2017.

The internal strengths included a highly motivated and competent clinical staff who shared common values and work together to fulfill a common goal, a desire for quality improvement, a need for increased patient care outcomes, and increased adherence to the standards of care for patients with T2D. The staff consisted of an experienced physician, NPs,

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and medical assistants. These individuals all had at least 10 years' experience working with this area's adult population in a family medicine arena. All staff members put patient care first and were motivated to improve their patients' health and well-being. The staff recognized the importance of eye care exams and referrals for patients with T2D and are excited to make changes in the clinic necessary for the QI project's success and sustainment. The staff was open to an implemented checklist and referral system and was available to help develop these interventions. DR education pamphlets were offered free of charge through the THHS website to help with educating patients and staff regarding eye screenings, exams, and eye health (THHS, 2016). Patients received continued care once the provider recommended and/or referred them for an annual eye exam. Several optometrists/ ophthalmologists were identified in the area and in a surrounding city. These optometrists/ophthalmologists were willing to accept new patients from this clinic and could book patients within a few days of request.

Weaknesses within the clinic included fragmented documentation, not fully utilizing the EHR system, little knowledge regarding the standards for eye care screening and referral for patients with T2D, lack of staff and patient education regarding DR, poor communication with optometrists/ophthalmologists, lack of systematic and organized documentation and referral system, and little time to perform staff education. Lack of communication, fragmented documentation, and unorganized systems caused decreased continuity of care and poor patient outcomes (Harrison, 2016). Staff and patient education is critical to standards of care adherence and motivation to complete needed processes.

Opportunities included collaboration among providers and specialist, patient-provider rapport, and clinical interventions to improve the quality and efficiency of medical care. Collaboration among the clinic's providers and optometrists/ophthalmologists provided a

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community resource partnership and allowed for continued and conclusive patient care. The development of clinical interventions (e.g. checklist with referral data) increased collaboration, quality, and efficiency by quickly identifying patients who need eye care screenings and expediting referral. The patients at the clinic were happy with their care and value the providers' advice and judgement.

External threats included patients' perceived cost, lack of available transportation, time constraints, lack of child care, patients' attitude toward eye care screenings and annual exam, and lack of perceived threat. The insurance companies accepted at this specific clinic cover annual eye exams at no cost to the patient. Patients needed to be educated regarding insurance eligibility, benefits, and coverages. DR can only be prevented by good blood sugar regulation and annual eye exams (Kovarik et al., 2016). Blindness and vision loss caused from DR presents without warning signs.

The study posed minimal risk to participants. There was no direct interaction with patients. The staff was not required to perform any activities that they would not normally be performed during normal duties. The providers' adherence to guidelines was audited as a routine part of clinic operations. The intervention did not involve drugs or devices. The data was collected from non-invasive sources and stored on a password protected computer. Only information pertinent to the project was collected. All subject information was de-identified when reported.

There could have been a risk of increased costs to the patient if he/she chose to attend a medical appointment that was not covered by insurance benefits. This information was routinely disclosed when the appointment is scheduled. There was also a potential risk of staff not following the protocol, therefore training was provided.

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The benefits included improving provider adherence to guidelines. Clinical outcomes improved by identifying patients with diabetic eye complications and providing appropriate treatment options and referral. Another benefit was that understanding symptoms associated with diabetic eye complications and the benefits of prompt optometrist referral for a dilated eye exam helped providers to better understand the factors that affect patient outcomes and guide interventions.

Confidentiality of all data was assured by the following procedure: 1) the master report and the completed provider checklists containing the patient name and information was kept in a locked file cabinet within the Internal Medicine clinic nurse practitioner's office (only the DNP student had access to the contents of the file cabinet), and 2) patient data was not released to anyone other than authorized clinic staff and faculty. De-identified data was recorded in an excel spreadsheet and then uploaded into IBM® SPSS® version 23 for analysis. The DNP student project leader routinely monitored all data collection, de-identification, and storage. Consent forms were not required for this EBP project. All patient information related to demographics, pay or sources, procedures, diagnoses, providers, and encounters with the health care system was de-identified when reported. Only information pertinent to the project was collected.

Results

Between June 12, 2016, and August 4, 2017, a total of 76 adult patients diagnosed with T2D were seen at the Internal Medicine clinic and met inclusion criteria for the quality improvement project (Table 2).

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Table 2

Patient Characteristics (n=76)

Characteristic	Mean (*SD*)	
Age	65	(12)
	n	%
Sex		
Male	46	60
Female	30	40
Ethnicity		
White non-Hispanic	52	68
Hispanic	19	25
American Indian/Alaskan Native	2	3
Black non-Hispanic	1	1
Other	2	3
Insurance		
Humana	10	13
United Health Care	10	13
Blue Cross Blue Shield	8	11
Medicare B	34	45
Aetna	13	17
Cash	1	1
Provider Seen		
Physician	23	30
NP 1	25	33
NP 2	28	37

Note. *SD*= Standard Deviation.

From June 12, 2017, – August 4, 2017, a total of 76 patients meeting eligibility criteria were included in the study. There was an equal division for the number of study patients seen by the three providers (Table 2). All three providers took a week's vacation during the intervention period. However, they still saw roughly the same number of patients diagnosed with T2D. The primary outcomes of the project were the provider recommendation and complete eye care assessment. The provider recommendation information was taken directly from the completed provider protocol checklist. Out of the 76 eligible patients, 40 patients (53%) were screened for

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their last dilated eye exam and 29 patients (38%) were recommended to an ophthalmologist (Figure 1). Results indicated there was a significant association between the provider seen and screening for the last dilated eye exam, x^2 (2) = 26.755, p = .000 as well as a significant association between the provider seen and the recommendation made to see an ophthalmologist, x^2 (2) = 9.782, p = .008. The physician only screened 3 patients for their last dilated eye exam and recommended 3 patients to an ophthalmologist, while both NPs screened and recommended ophthalmology visits for 26 and 25 patients respectively (Figure 2).

Evaluation of complete eye care assessment included three components: 1) ophthalmoscope exam, 2) visual acuity assessment, and 3) screening for last completed dilated eye exam. All three elements were obtained from the provider protocol checklist. There were 25 complete eye care assessments. Figure 2 provides the breakdown of completed elements of the eye care assessment by provider. The results were consistent for each element of the assessment. The physician completed only 3 eye care assessments, to the nurse practitioners' 22 eye care assessments. A chi-square test was used to analyze whether there was a statistically significant association between the provider seen and the completion of an eye care assessment. There was a borderline significant association between the provider seen and a completed eye care assessment, x^2 (2) = 5.937, p = .051.

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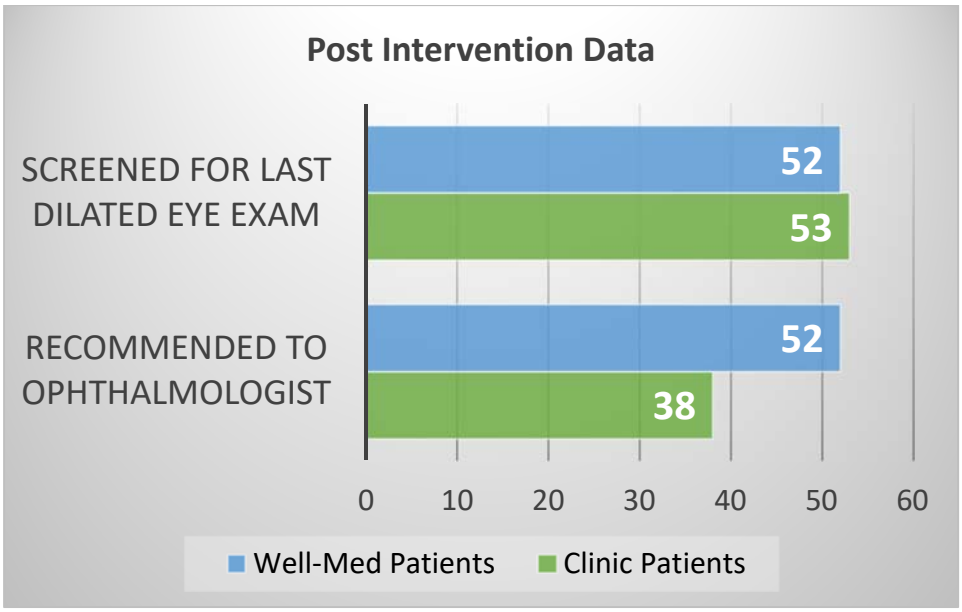

Figure 1. Post Intervention data.

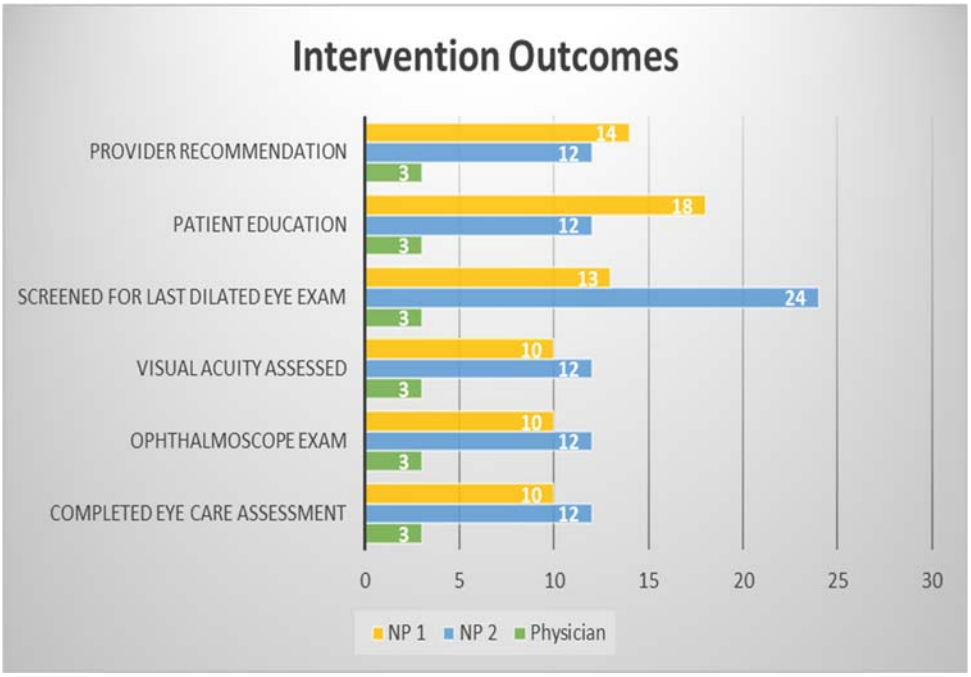

Figure 2. Intervention outcomes.

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Discussion

This quality improvement project was designed to help the host clinic staff increase adherence to standards of care for patients diagnosed with T2D. The results overall indicated staff training, patient education, and implementation of a provider protocol checklist does increase eye care assessments and ophthalmologist recommendations. HP2020's (2016) target goal for annual dilated eye exams for patients with T2D is 58%. Prior to project implementation, the clinic's screening and referral rate was 2% for non-WellMed patients. After the provider checklist was implemented, screening increased by 51% and ophthalmology recommendations increased by 36%. The clinic did not meet the DNP student's goal of 58% for both screening and recommendation. However, the quality improvement interventions helped the clinic progress towards HP2020's target goal.

Studies have shown checklists to be successful for increasing compliance and coordination with patient chart documentation within primary care settings and hospitals (Hale & McNab, 2015). The provider protocol checklist intervention is similar to an intervention by Hale and McNab (2015) who evaluated the effectiveness of a safety checklist for medical floor rounds. Staff found the checklist helpful in organizing patient care. After the introduction of the checklist, overall compliance with documentation improved by 44%.

The added element of staff training was an important component to implementing the provider protocol checklist. In the case of this study, elements of the provider protocol checklist were performed by the medical assistants. The NPs indicated low self-efficacy for the ophthalmoscope exam which caused decreased commitment to the quality improvement process. Low self-efficacy led to a second training session to increase checklist implementation. Furthermore, the medical assistants expressed how time and lack of collaboration was a big

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factor for not completing the checklist. The medical assistants took initiative to complete the checklist to the best of their ability and when time allowed. The medical assistants and front desk staff became a stronger team as they worked together to increase checklist completion and make it a part of their routine to increase sustainability. The staff realized the importance of preventing diabetic eye disease, valued the checklist as a reminder, and used it to organize care. The staff found ways to work the intervention in while performing their daily routines. They assessed visual acuity and screened for last dilated eye exam while taking blood pressures and gave the education pamphlet to patients at the end of their visit while walking them to the front desk. While the patient was being checked out, the front desk staff would ask which ophthalmologist the patient would like to see, verified that the patient had the ophthalmology office information, then faxed the completed checklist to the designated office.

Perez et al. (2012) determined that low familiarity, decreased self-efficacy, and time constraints were the most significant factors with regards to clinical staff adhering to standards of medical care. Low familiarity can be related to inadequate training, and teaching and time constraints can be due to inadequate team work (Perez et al., 2012). Once the barriers were overcome, preventative standards of care (influenza vaccines and smoking cessation education) increased by 90% and 91%, respectively (Perez et al., 2012).

Limitations

This quality improvement intervention was established with the intention of the providers and medical assistants working together to complete the provider protocol checklist. Initially, the NPs expressed enthusiasm for the intervention and helped develop the checklist. When the intervention period began, the NPs no longer wanted to take the time to complete the checklist. Not long after intervention implementation, the physician expressed no desire for he and his

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medical assistant to participate in the intervention due to the fact he had two new students to mentor. Lack of provider buy-in, commitment, and ongoing participation limited the intervention's success.

The intervention was limited by the lack of awareness and lack of education regarding DR and eye assessments. Prior to the second staff training session, project involvement was extremely low. The staff displayed low self-efficacy when completing the tasks on the checklist. After concluding the second staff training session that included a 'return demonstration' teaching method, intervention completion increased. The staff revealed they felt more confident and prepared to implement the intervention.

The lack of organization and leadership within the clinic made it difficult for intervention implementation. The office is extremely busy and understaffed, leaving little time for added tasks. The fragmented EHR system limited intervention implementation. During the microsystem assessment, the providers relayed how they do not routinely utilize the new EHR system and charted instead within paper charts when the clinic was busy. The EHR could have provided a reminder system and a more convenient way to complete the intervention checklist and send documentation to ophthalmologists' offices.

Recommendations

Recommendations for intervention continuation would include more extensive provider training regarding the importance of prevention and eye care assessment. A team-work approach could be utilized to help with overworked staff and time limitations. Provider buy-in might be increased by suppling a cost/profit analysis. According to Restuccio (2014), primary care providers can bill the CPT code of 92012 (ophthalmology exam and evaluation with initiation or continuation of diagnostic and treatment program; intermediate, established patient) to Medicare

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and gain approximately $96 per exam. The intervention could have gained over 3,000 dollars in profit from Medicare patients alone. A projected cost/profit analysis could be provided to the physician to help support provider buy-in.

Consideration needs to be given for following up with patients who received ophthalmology recommendation as to whether they completed the appointment and the dilated eye exam. Patient recommendations for the intervention could also be included in modifications to improve the intervention.

Once the staff are familiar with the new EHR system and all patient records/encounters are electronically charted, the checklist can be automatized into the system. The EHR will provide a reminder system and an organized way to complete the checklist.

Implications for Practice

This quality improvement intervention aimed to improve patient care processes by increasing interdisciplinary practice and adherence to standards of care. Coordinated patient care encompassing a multidisciplinary team leads to higher quality of care, improved patient outcomes, and increased patient satisfaction (American Nurse Association, 2012). In this study, coordinated health care decreased fragmentation and increased health promotion and disease prevention.

Checklists have been shown to increase adherence to standards of care and promote patient safety by simplifying chronic and complex conditions into structured and consistent tasks (Health Research & Educational Trust, 2013). The staff in the host Internal Medicine clinic utilized the checklist framework as a reminder and to organize patient assessments to increase eye care screenings and ophthalmology recommendations. Checklists are only effective when all staff members feel confident with the tasks, have high outcome expectancies, and are aware of

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the importance (Hale & McNab, 2015; Health Research & Educational Trust, 2013). Project intervention results found the lack of staff participation with the checklist was partially due to low self-efficacy and lack of awareness. The use of checklist can be very successful when these issues are addressed throughout intervention development and implementation (Health Research & Educational Trust, 2013).

A DNP-prepared nurse's role in intervention development is crucial to positive patient outcomes. Nurses with DNPs provide focused patient care that encompasses patient education, staff training, and collaborative care (American Nurse Association, 2012). DNP-prepared nurses develop interventions that are individualized to their patients' needs and ensure the highest standards of quality care are met. Nurses with DNPs are skilled in effective and organized decision-making and strong leadership skills, which fosters teamwork and communication to improve clinical practice (American Nurse Association, 2012). These traits were utilized during checklist development and project implementation to assess the needs of the clinic, formulate a plan, and implement an intervention.

Conclusion

An evidence-based intervention was designed to increase eye care screenings and ophthalmology recommendations. Staff education and training increased staff awareness regarding the importance of annual dilated eye exams and ophthalmology recommendations. The training led to increased staff participation regarding the provider protocol checklist, which helped increase the number of eye care screenings and ophthalmology recommendations for adult patients diagnosed with T2D. Results suggest that a combination of staff training and assistance with the assessment and referral process can influence adherence to recommended standards of care. Although the clinic did not reach the student's set goal, these quality

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improvement interventions helped the clinic progress to HP2020's target goal of 58% for annual dilated eye exams in persons diagnosed with T2D.

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Appendix A

Practice Improvement Capacity Rating Scale (Robert Wood Johnson Foundation 2014, pg. 4-8)

- Guide to Scoring for the Practice Improvement Capacity Rating Scale

1. Score each practice based in each of the criteria
- Red = 0 points
- Yellow= 5 points
- Green = 10 points

2. Each criterion is weighted

1: lowest importance
2: moderate importance
3: most important**

**Criteria with a weighting of 3 is a must-pass area. Practices need to be at the green level on all of these criteria to have a final score in the green.

3. Scoring—Multiply the number of points earned for each criterion (0 v. 5 v. 10 points) by the corresponding weight assigned to that criterion, then sum up the individual scores for each criterion into a total score—for example, let's say the model included only the first two criteria listed in the table below:
- 1st criterion: practice is "yellow"—score for this criteria = 5 points x weight of 3 = 15 points
- 2nd criterion: practice is "green"—score for this criteria = 10 points x weight of 3 = 30 points
- Total score (assuming there were only two criteria in model) = 45 points—the total possible score = 60 points if the practice had scored "green" on both: (10 points x weight of 3) + (10 points x weight of 3)

4. Final Scoring
- Red—Practice is not ready for quality improvement (QI) work.
- Yellow—Practice has limited capacity for QI work at this time but night be ready in the future if improvements are made in the must-pass criteria.
- Green—Practice is ready and capable for immediate QI work.

Date: _____ Practice: _____ Interviewee: _____ Position: _____

Question	Weight	Criteria	Scripted Questions	Red (0 points)	Yellow (5 points)	Green (10 points)	Score

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1	3	**Commitment: Senior Leadership: QI Champion/ sponsor** Senior leadership: person or group that has responsibility for designation of time, finances, and resources (Physician, RN, office manager)	Can you tell me about the commitment that senior leadership (the administration /the practice) has made to the project? • Do you have a designated leader? • Is there a team that meets regularly? • In terms of time, finances, resources?	No designated leader for quality improvement or if designated, not actively engaged.	Leader designated for quality improvement work—however quality improvement team non-existent, or if exists, not meeting regularly to review project status/data.	Leader designated for quality improvement work and quality improvement team meets regularly to review projects status/data and discuss improvement opportunities.	10 x3 OR **30**
2	3	**Commitment: Financial Resources**	IF NOT ANSWERED ABOVE: How do the leader and the QI team fit in QI work with their other responsibilities in the practice? • Are they paid for working on a QI project or is it volunteer work?	No time budgeted for QI activities. No specific funding to support QI activities.	Insufficient amount of FTE allocated for QI activities and/or limited/small amount of funding for QI activities.	Sufficient amount of dedicated FTE and funding allocated to QI activities.	10 x3 OR **30**

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3	3	**Level of Physician Leader Support**	Do you have a physician leader who supports this effort? (Physician leader is one whom the other clinicians and staff look up to and identify as a leader.) • What is the relationship between this person and the QI team?	Physician leader has not been engaged in discussions regarding QI initiatives or has not yet confirmed their formal support.	Physician leader has confirmed their formal support of QI initiatives, but there are no regular meetings or interactions to discuss/review progress.	Physician leader demonstrates behaviors consistent with actively supporting QI efforts—this includes convening regular meetings with QI team leaders to review progress and help address issues/challenges.	5x3 OR **15**
4	3	**Level of Practice Administrator Support**	Does your practice administrator or office manager support this effort? • How do they demonstrate this to the staff? (How does the staff know they support it?) • Do they meet with the QI team? • How do/will they help the QI team with this effort?	Practice administrator has not been engaged in discussions regarding QI initiatives or has not yet confirmed formal support.	Practice administrator has confirmed formal support of QI initiatives, but there are not regular meetings or interactions to discuss/review progress.	Practice administrator demonstrates behaviors consistent with actively supporting QI efforts—this includes convening regular meetings with QI team leaders to review progress and help address issues/challenges.	10 x3 OR **30**
5	3	**Competing Priorities**	Are there any changes that have occurred/are going to occur that may have an	Currently converting to an EMR OR	Modest competing priorities, such as end phase of EMR conversion	No significant competing priorities OR	5x3 OR

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			effect on this project? Are there any other projects the practice will be working on while this QI project is going on? • How do you see them affecting this QI project? • Do they overlap in terms of goals or data collection?	Significant staff turnover/changes OR # of QI projects competing for time of staff and resources OR Change in leadership expected or imminent OR Merger or acquisition anticipated in near future.	OR Other QI projects, but winding down soon OR Relatively stable staff and leadership structure.	Significant issues/challenges impacting execution of QI activities AND Stable staff and leadership structure.	**15**
6	2	**Communication**	• Does the rest of the staff know about his effort? • How have you kept the staff up to date with the projects in the past? • How are you communicating the work being done by the QI team to the rest of the practice?	Project not discussed at regular staff meetings, limited knowledge among practice physicians/staff, no data/information posted or distributed	Some effort devoted to sharing project information and updates with practice physicians/staff	Project information and updates discussed with practice physicians and staff at regular practice meetings, data/information shared, input/feedback recruited. Data posted in visible place.	10 x2 OR **20**

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7	2	**Access/Use of QI Infrastructure/** **Resources Available in the Community**	Does your practice participate in any community improvement efforts? Any EMR sponsored or trade industry sponsored improvement efforts?	No practice awareness of QI infrastructure or resources available in the community.	Some awareness of QI infrastructure and resources available, but not yet accessing/using.	Practice is accessing/using QI infrastructure/ resources available in the community.	5x 2 OR **10**
8	2	**Prior Experiences Executing QI Projects**	Tell me about the improvement work your practice has done in the past • What kind of experience do the members of the QI team bring to the effort? • Do you keep a record of what you have tried and how it went? • How do you decide if what you try/change is working? (You are looking for answers that indicate they use data to drive improvement.)	No identifiable improvement interventions pursued to date.	Improvement interventions pursued; but no formal QI method used (Model For Improvement, Lean, Six Sigma, etc.)	Previous improvement interventions pursued using formal QI method.	5x 2 OR **10**

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9	2	**QI team designated with appropriate representation**	Who is/will be on your QI team? Why?	No QI team in place OR Several team members identified for QI activities, but there is a lack of balance representing the testing to be done (e.g., no RN included on team for PCMH)	Team members identified for QI activities. Balanced representation of staff based on QI activity. No patient partner on QI team.	Team members identified for QI activities. Balanced representation of staff based on QI activity. Patient/parent part of the team.	5x 2 O R **10**
10	2	**Reliability of data**	How reliable do you think your reports are? • Does the information seem accurate to you? • Do you compare your data to other practices or national benchmarks? • Is there someone who looks over the reports for accuracy? • Does the QI team review the reports?	No designated point person reviewing data for accuracy.	Point person designated, but no defined process for monitoring accuracy/timelines of data.	Accuracy/timeliness of data monitored and addressed. Quality leadership person/team discusses data accuracy at regular intervals and identifies/pursues improvement opportunities.	5x 2 O R **10**

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11	2	**Reliability of data collection**	How reliable do you think your data are? • Do you think the data you need are reliably entered into the EMR with each encounter? • Is there a way to tell if they are? • Does everyone follow the same process for getting info/data into the EMR?	Data collection solely dependent on clinicians at time of encounter.	Redundancy built into data collection process. Point person designated, but no defined process for monitoring accuracy/timeliness of data entry.	Defined process for monitoring accuracy/timeliness of data entry. Quality leadership person/team discusses data collection process at regular intervals and identifies/pursues improvement opportunities.	5x 2 O R **10**
12	2	**External Payment Incentives from Commercial / Governmental Payors Linked to the QI Project**	Is the practice being paid to participate in an improvement effort other than MU? Are you being paid to report on or meet quality measures?	Not currently.	Currently being discussed by commercial/ governmental payors, but not yet in place.	Currently in place.	0x 2 O R **0**
13	1	**Meaningful Use**	Where is your practice in terms of applying for meaningful use?	Not attested to meaningful use.	Meaningful use in design phase.	Meaningful use implemented and criteria met.	10 x1 O R **10**

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14	1	**Source of IT support**	What do you do when you need to add fields to collect data or run reports? • Do you do this in office? • Do you need to contact someone outside the office? • Does this arrangement meet your needs/the needs for the QI project and QI team?	No internal or external IT support available to the practice.	Internal or external IT support available to the practice, but not meeting needs of QI initiatives.	Internal or external IT support to the practice is meeting the needs of QI initiatives.	5x 1 O R **5**
15	1	**Use of EMR/Registry/ Analytic Reporting Tool for Measurement/Data Reporting**	What data will you be collecting for this project? How do you plan to collect the data you will need for this project? • Is the information currently collected in your EMR? • Can you get reports based on the data from your EMR easily?	No EMR.	EMR in place, but data fields linked to key measures not embedded, or related data reporting capabilities (EMR, registry, or other analytic tool) no yet in place	EMR with data fields linked to key measures embedded, and data reporting capabilities in place.	5x 1 O R **5**
						Total Score	**210**
						Must-Pass Criteria Met	Yes/**NO**
Final Score-Circle Level		Red: 0-99		Yellow: 100-249	**Green: 250 or greater and <u>all must-pass criteria met</u>**		

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Note. The Practice Improvement Capacity Rating Scale (PICRS) was utilized to assess the clinic's readiness to conduct QI interventions (Appendix B) (Robert Wood Johnson Foundation, 2014). The clinic scored 210, which signifies the clinic "has limited capacity for QI work now but night be ready in the future if improvements are made in the must-pass criteria" (Robert Wood Johnson Foundation, 2014, p. 3).

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Appendix B

Root Cause Analysis Worksheet (QAPI, n.d.)

Steps:
1. A. Identify problem: Insufficient assessment of eye care in patients with T2D
1. B. Gather Supporting documentation: Located Standards of Care for Diabetes 2016: patients with T2D are at risk for eye complications. These patients need eye care assessment and annual referral to optometrist. Observed providers with patients, results demonstrate a lack of eye care assessment corresponding to the standards of care.
2. Select team members: Mentor, her MA, and the physician's MA. Leadership: the mentor and her DNP student. Short meetings were held roughly twice per month during lunch break.
3. Describe what happened: Providers were not aware of the standards of care regarding eye care assessments and referrals for patients with T2D. Interventions will include staff and patient education pamphlet and a reminder checklist.
4. Identify the contributing factors: Eye care, possible risks, and additional education materials are not available at the clinic for the providers or the patients. There is a lack of communication between providers and optometrists regarding the importance of eye care assessment and referral.
5. Identify the Root Causes: Lack of provider education, lack of communication with specialist, lack of patient education materials, lack of standard forms for eye care assessment and referral, and no standard process for eye care assessment.

Note. The Root Cause Analysis Worksheet (RCA) is a tool to help pinpoint problems, determine solutions, and prevent future issues within a clinic (QAPI, n.d). After staff observation and interviews, the identified problem is concluded as insufficient assessment of eye care and referral in patients with T2D.

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Appendix C

Prioritizing Issues Worksheet (University of Iowa, n.d.)

	Priority for				Likelihood to		
Topic Ideas	**Nursing** (1 = low; 5 = high)	**Organization** (1 = low; 5 = high)	**Magnitude of the Problem** (1 = small; 5 = large)	**Applicability** (1 =narrow; 5 = broad)	**Improve quality of care** (1 = low; 5 = high)	**Decrease length of stay/contain costs** (1 = low; 5 = high)	**Improve satisfaction** (1 = low; 5 = high)
Assessment of eye care in patients with T2D	5	5	5	5	5	3	5 Total: 33
Time for staff education and in-service	5	3	3	2	5	2	5 Total: 25
Utilizing EHR	5	5	4	4	5	3	5 Total: 31

Note. The *Prioritizing Issues Worksheet* is a tool to pinpoint the areas in most need for improvement. After stakeholder interviews and staff observation, three main topics of focus were chosen. Each staff member scores the topic in regards to priority. This process considers factors as what the clinic staff considers high-risk (a score of 5) to very low risk (a score of 1) (University of Iowa, n.d.). With the high score of 33, the results depict a high priority for eye care assessment in patients with T2D.

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Appendix D

Type II Diabetic Eye Screen Provider Protocol Checklist and Referral Form

Patient Name:_____ DOB:_____ Insurance Provider:_____
Patient Phone Number:_____ Today's Date:_____

Eye Care Assessment: ☐ Ophthalmoscope Exam ☐ Assess Visual Acuity. Results: _____ ☐ Screen for Last Dilated Eye Exam. Date: _____
☐ Diabetic Eye Complication Pamphlet & Ophthalmologist Business Card Given to Patient
☐ Referral Completed To: ☐ San Antonio Eye Center: 14807 San Pedro, 78232 • Phone: (210) 495-2020 • Fax: (210) 354-3885 ☐ Alamo City Eye: 11601 Toepperwein Road, 78233 • Phone: (210) 946-2020 • Fax: (210) 590-3936
Referring Doctor: Address: Phone: Fax:
Reason for Referral: I have referred the following patient to you for a dilated retinal eye examination and evaluation of diabetic retinopathy. Please fax back results upon examination completion. Comments:

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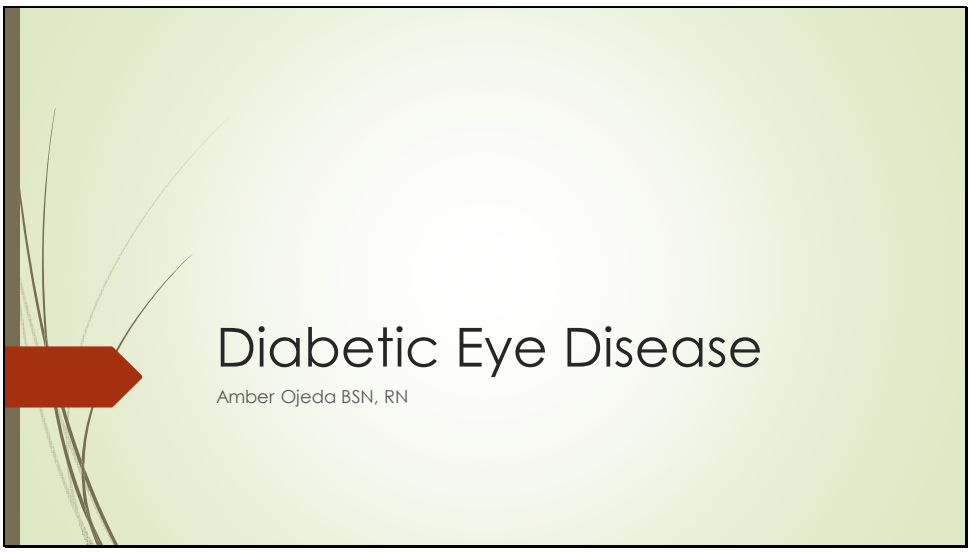
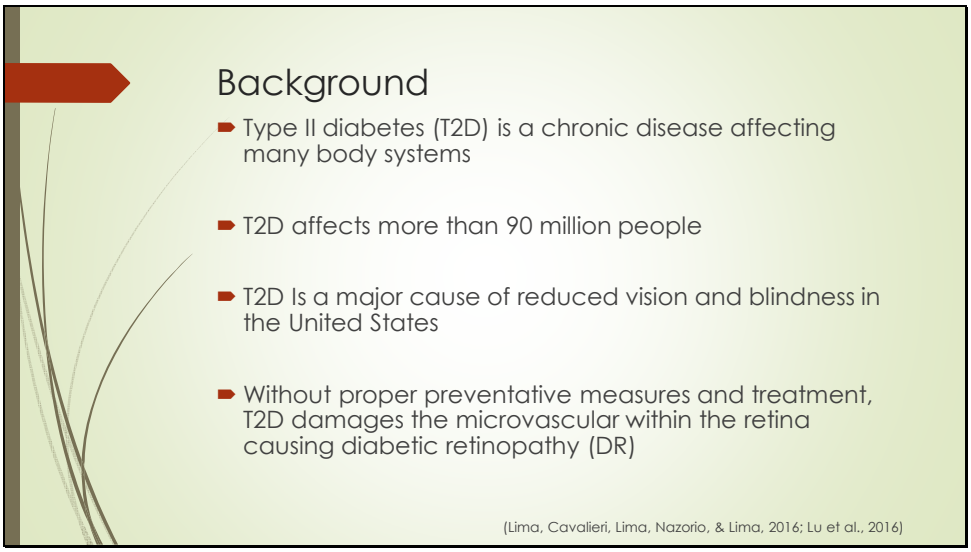
Appendix E

Staff Curriculum Power Point





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Significance

- DR is the leading cause of:
  - Reduced vision
  - Blindness
- >12,000 new cases of blindness each year are due to DR
- > 1/3 of the population has some form of DR
- Most patients with T2D are not aware of the devastating consequences the disease can have on their eye health and vision
- Patients do not experience warning signs before vision is impaired/lost

(Kovarik et al., 2015; Lima et al., 2016; Lu et al., 2016)

A Way to Save Vision

- Routine screening for DR can save a patient's vision
- Adherence to standards of medical care, timely detection, and treatment of DR can prevent up to 70% of T2D related vision loss
- Research and significant improvements in technology have increased providers' ability to diagnosis and treat DR

(Kovarik et al., 2016)

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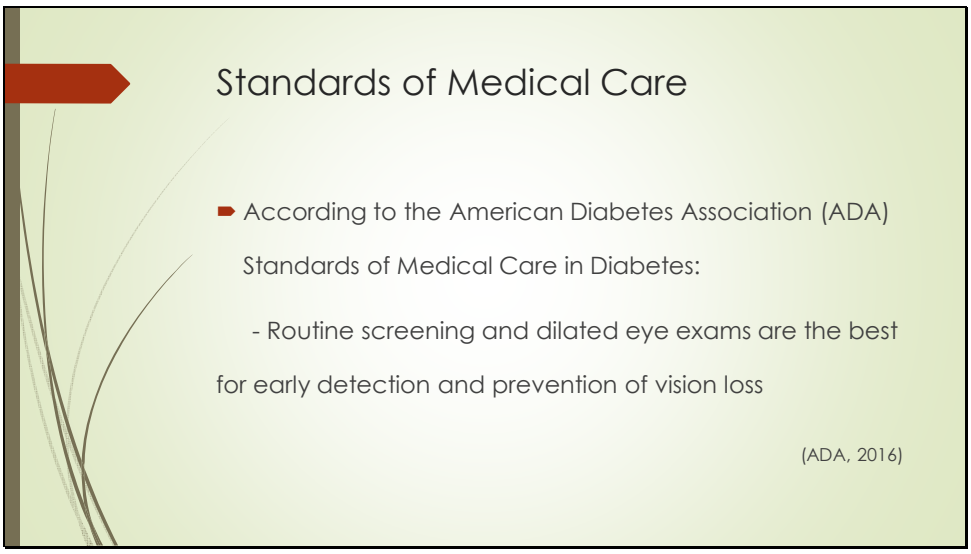

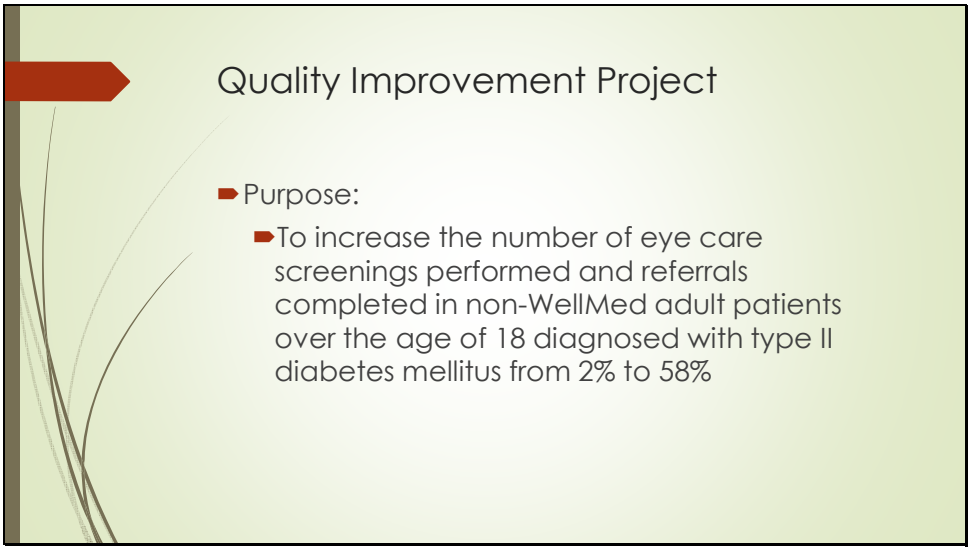

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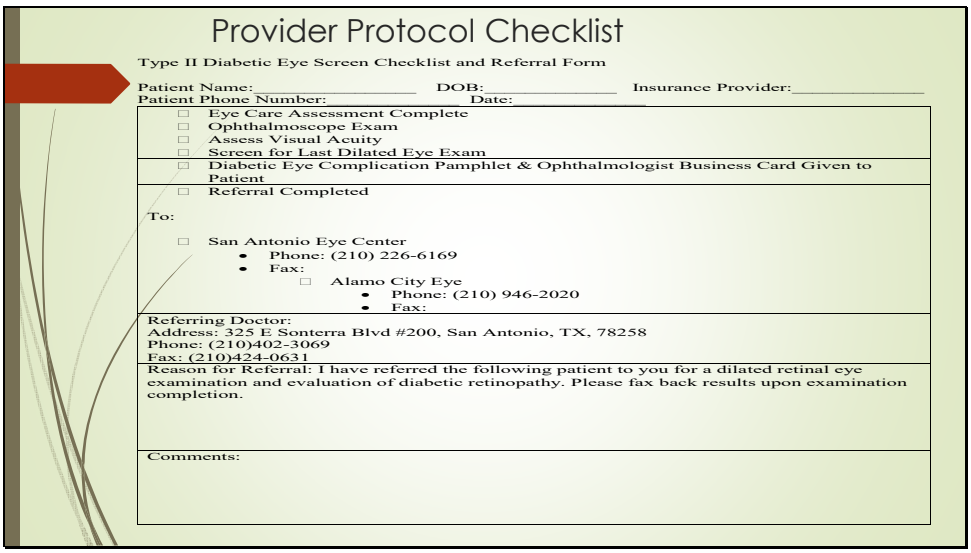


Provider Protocol Checklist

Type II Diabetic Eye Screen Checklist and Referral Form

Patient Name:_____ DOB:_____ Insurance Provider:_____
Patient Phone Number:_____ Date:_____

- ☐ Eye Care Assessment Complete
- ☐ Ophthalmoscope Exam
- ☐ Assess Visual Acuity
- ☐ Screen for Last Dilated Eye Exam

- ☐ Diabetic Eye Complication Pamphlet & Ophthalmologist Business Card Given to Patient
- ☐ Referral Completed

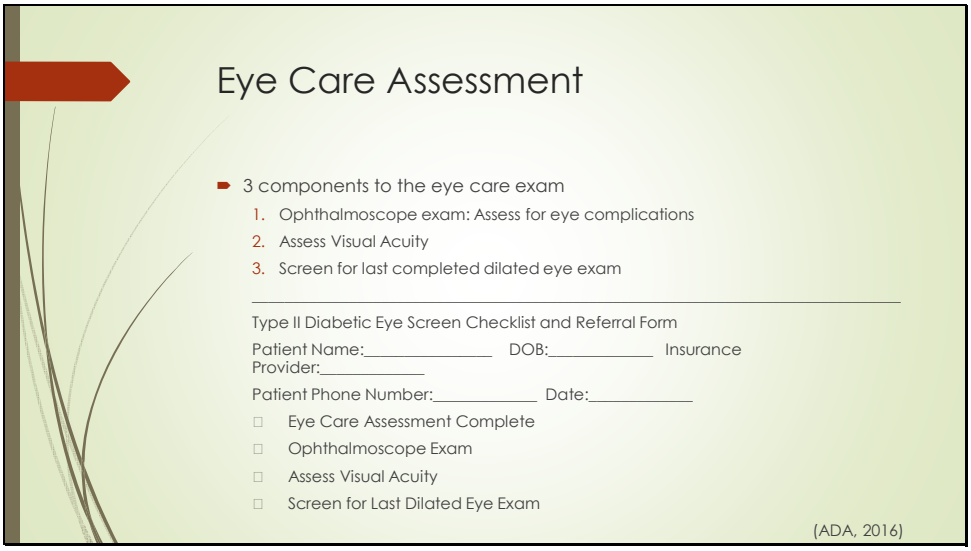
To:

- ☐ San Antonio Eye Center
  - Phone: (210) 226-6169
  - Fax:
- ☐ Alamo City Eye
  - Phone: (210) 946-2020
  - Fax:

Referring Doctor:
Address: 325 E Sonterra Blvd #200, San Antonio, TX, 78258
Phone: (210)402-3069
Fax: (210)424-0631

Reason for Referral: I have referred the following patient to you for a dilated retinal eye examination and evaluation of diabetic retinopathy. Please fax back results upon examination completion.

Comments:



Eye Care Assessment

- 3 components to the eye care exam
  1. Ophthalmoscope exam: Assess for eye complications
  2. Assess Visual Acuity
  3. Screen for last completed dilated eye exam

Type II Diabetic Eye Screen Checklist and Referral Form

Patient Name:_____ DOB:_____ Insurance Provider:_____

Patient Phone Number:_____ Date:_____

- ☐ Eye Care Assessment Complete
- ☐ Ophthalmoscope Exam
- ☐ Assess Visual Acuity
- ☐ Screen for Last Dilated Eye Exam

(ADA, 2016)

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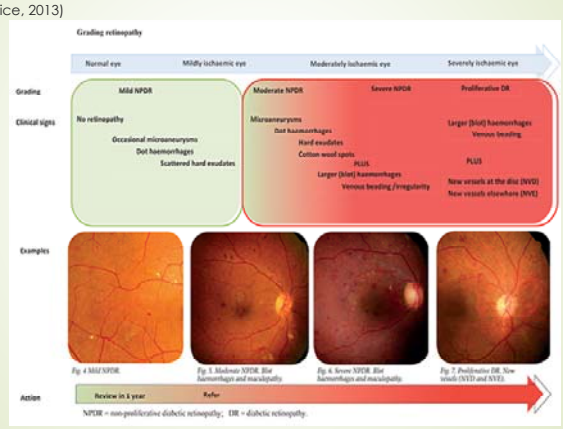
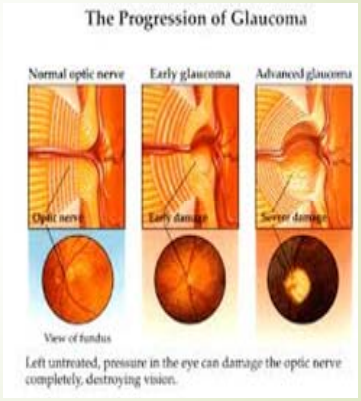
Ophthalmoscope Exam

(Rice, 2013)



Ophthalmoscope Exam

(Diabetes Solution, 2016)



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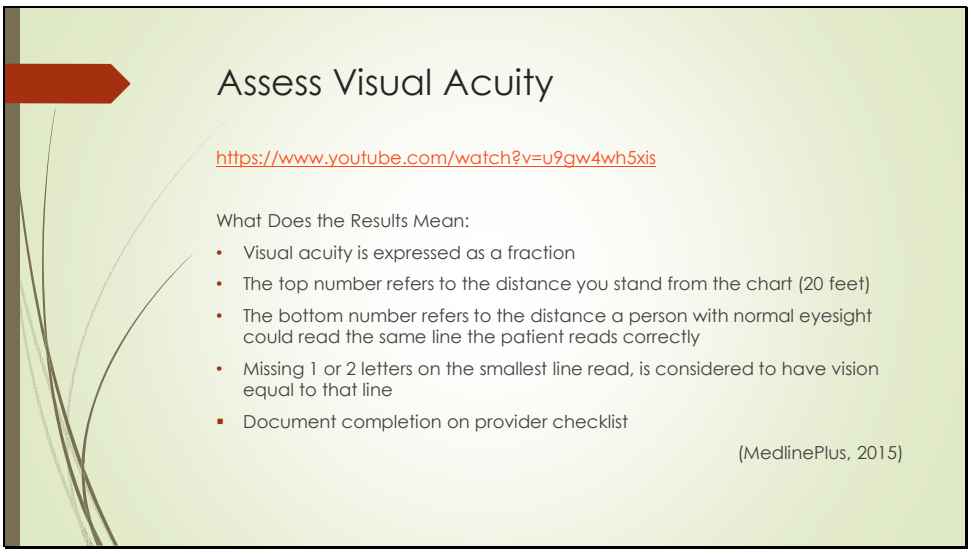
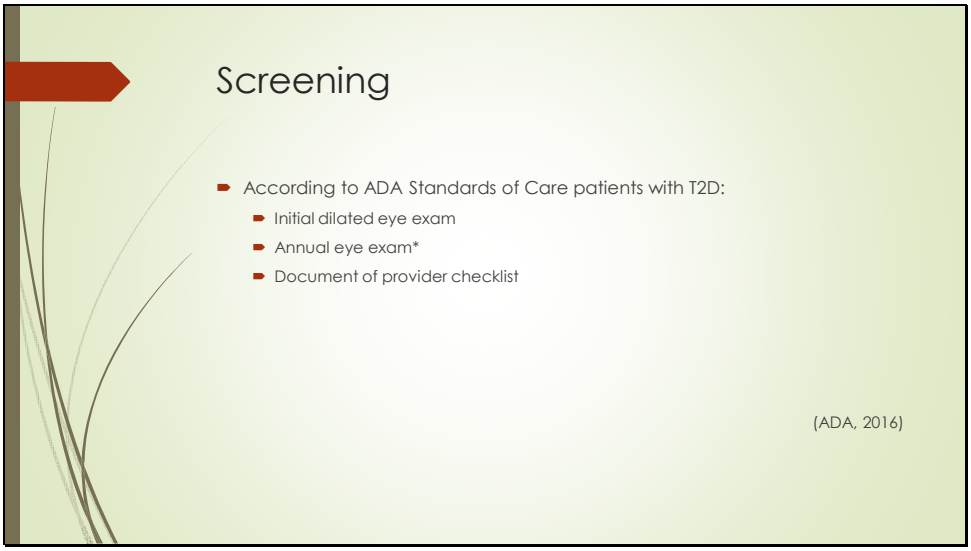


https://www.youtube.com/watch?v=u9gw4wh5xis



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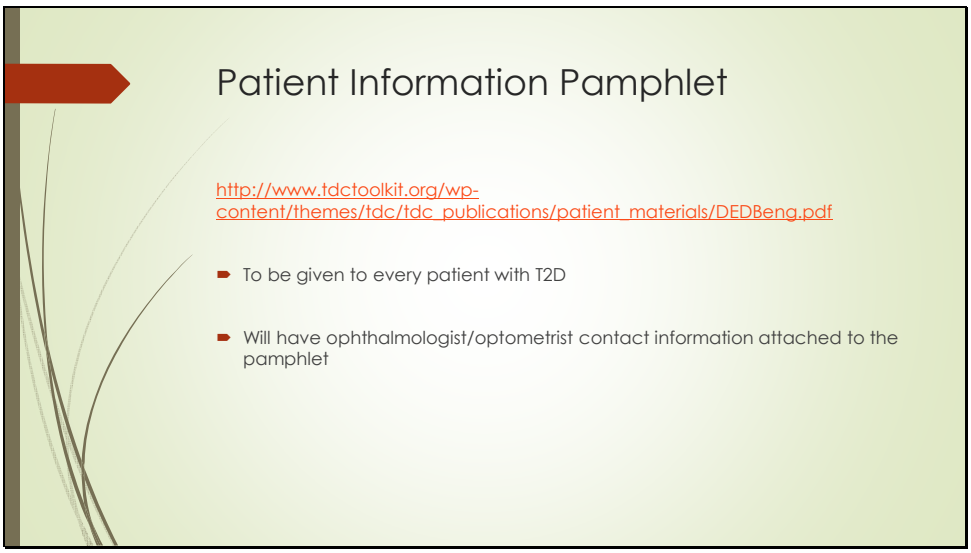

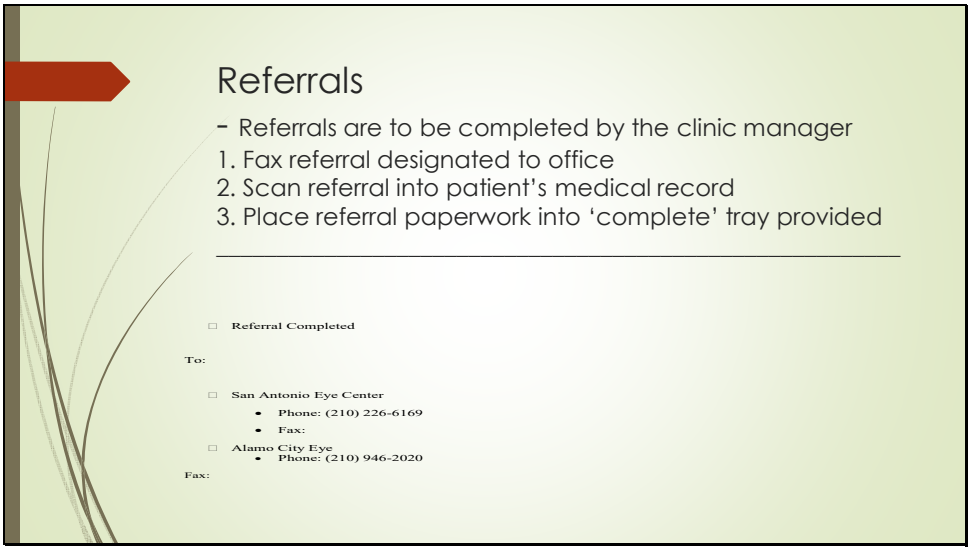

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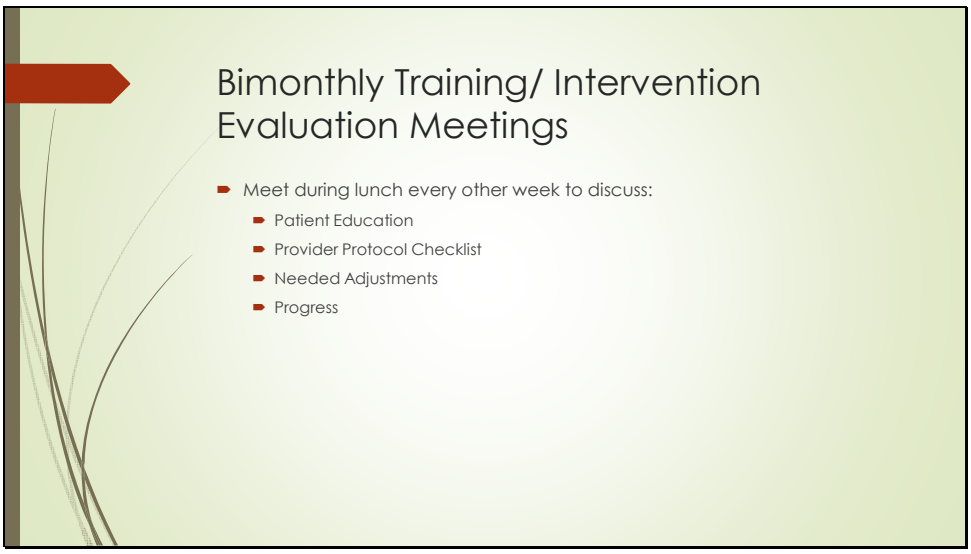

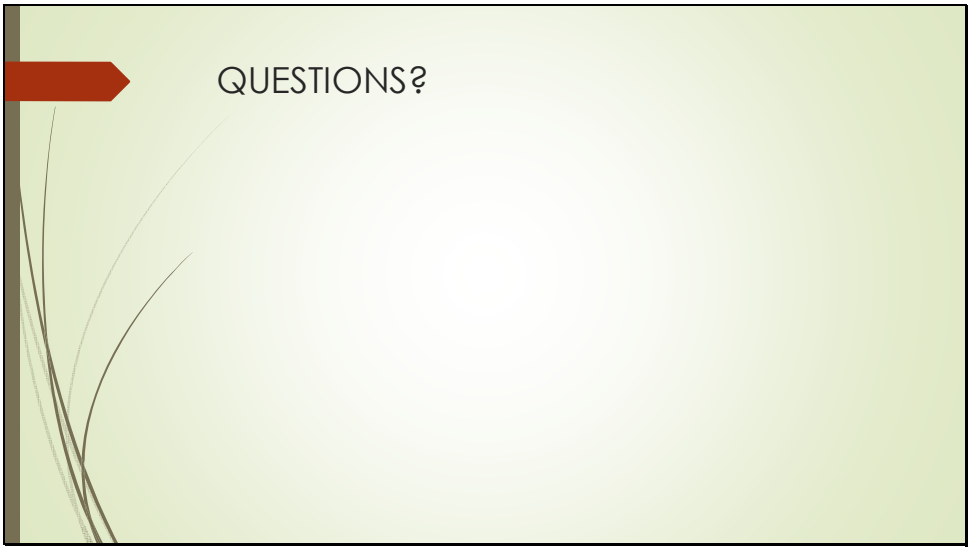

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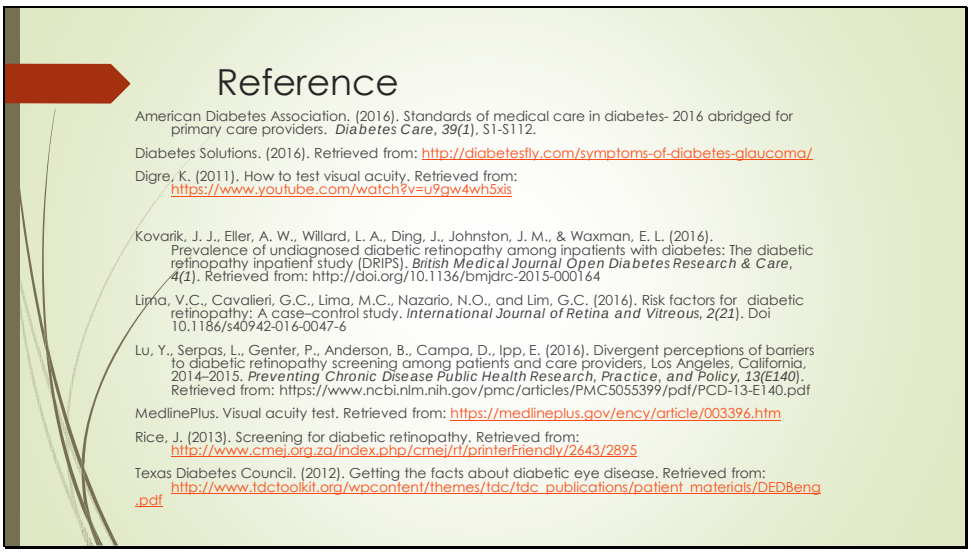

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Appendix F

Patient Education Handout

GETTING THE FACTS ABOUT DIABETIC EYE DISEASE

For more information on diabetic eye disease, contact:

- **EyeCare America**
  1-877-887-6327
  1-800-222-3937
  www.eyecareamerica.org
- **National Eye Health Education Program**
  31 Center Drive MSC 2510
  Bethesda, MD 20892-2510
  www.nei.nih.gov

On controlling blood sugar, contact:

- **National Diabetes Education Program**
  One Diabetes Way
  Bethesda, MD 20814-9692
  www.ndep.nih.gov
- **National Diabetes Information Clearinghouse**
  1 Information Way
  Bethesda, MD 20892-3560
  www.diabetes.niddk.nih.gov

The National Eye Institute, Institutes of Health contributed information for this brochure.

Texas Diabetes Council MC 1965
Texas Department of State Health Services
PO Box 149347, Austin, TX 78714-9347
www.texasdiabetescouncil.org 1-888-963-7111 ext. 7490

TEXAS Department of State Health Services

Publication # 10-01 06/2012

Facts About Diabetic Eye Disease

Diabetic eye disease refers to a group of eye problems that people with diabetes may face as a complication of this disease. All can cause severe vision loss or even blindness. With early detection, diabetic eye disease often can be treated before loss of vision occurs.

If you have diabetes, you should have a dilated eye examination at least once a year. During the exam, your eye care professional uses eye drops to enlarge your pupils. This allows him or her to see more of the inside of your eyes to check for signs of eye disease.

Diabetic Eye Disease

Diabetic eye disease includes diabetic retinopathy, cataracts and glaucoma.

Diabetic retinopathy is the most common diabetic eye disease. It is caused by changes in the blood vessels of the retina, often resulting in vision loss or blindness. Diabetic retinopathy is treated with laser surgery, and appropriate follow-up care can reduce the risk of blindness by 90 percent.

Diabetic Eye Disease

Glaucoma increases fluid pressure inside the eye which leads to **optic nerve** damage

Diabetic retinopathy damages the blood vessels in the **retina**

A cataract clouds the eye's **lens**

A **cataract** is a clouding of the natural lens, the part of the eye responsible for focusing light and producing clear, sharp images. Cataracts develop at an earlier age in people with diabetes and usually can be treated with surgery.

Glaucoma is a build-up of pressure in the eye, which can lead to damage of the optic nerve. A person with diabetes is nearly twice as likely to get glaucoma as other adults. The longer you have had diabetes, the greater your risk of getting glaucoma. Glaucoma is treated with medications, laser or other forms of surgery.

A Look at Diabetic Retinopathy

Anyone with diabetes is at risk for developing diabetic retinopathy, the leading cause of blindness in American adults. The longer a person has diabetes, the more likely he or she will get diabetic retinopathy. Here are some facts about this diabetic eye disease:

- Between 40 to 45 percent of individuals with diagnosed diabetes have some degree of diabetic retinopathy.
- Often there are no symptoms in the early stages of diabetic retinopathy. There is no pain, and there may not be any changes in vision. Over time, diabetic retinopathy can get worse and cause vision loss and blindness.
- Diabetic retinopathy usually affects both eyes.

- Every pregnant woman with diabetes should have a comprehensive, dilated eye exam early in her pregnancy. Your doctor also may recommend additional exams before your baby is born.
- Besides regular annual eye exams, your eye care professional may decide that you need to have your eyes examined more often than once a year, if you have diabetic retinopathy.
- Laser surgery often cannot restore vision that has already been lost. That is why finding diabetic retinopathy early is the best way to prevent vision loss.
- Diabetic retinopathy cannot totally be prevented, but your risk can be greatly reduced. Control of blood sugar level slows the onset and progression of retinopathy and lessens the need for laser surgery for severe retinopathy.

Preventing Vision Loss

Finding and treating diabetic eye disease early — before it causes vision loss or blindness — is the best way to control diabetic eye disease. Patients with diabetes should have a comprehensive, dilated eye examination at least once a year. Report changes in vision or eye problems to both your regular doctor and eye doctor.

People with diabetes also can take these steps to prevent complications:

1. Know your **ABC**s — **A**1c (blood glucose), **B**lood pressure (BP), & **C**holesterol numbers
2. Take medicines as prescribed by your doctor
3. Monitor blood sugar daily
4. Maintain a healthy weight
5. Get regular physical activity
6. Quit smoking

File Explorer

(Texas Diabetes Council. (2012). Getting the facts about diabetic eye disease. Retrieved from http://www.tdctoolkit.org/wpcontent/themes/tdc/tdc_publications/patient_materials/DEBeg.pdf)

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Appendix G

John E. Dickson, M.D., IRA

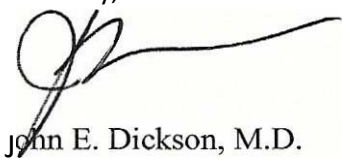
Diplomate of the American Board of Internal Medicine
325 Sonterra Blvd. E.
Suite 200
San Antonio, TX 78258
(210) 402-3069 Fax (210) 424-0631

February 24, 2017

To Whom it may concern,

As the owner and primary physician, I Dr. John E. Dickson grant permission for Amber Ojeda to access the Sonterra Internal Medicine clinic medical records in order to collect data relative to the DNP Project on Increasing Eye Care Screening & Referral for People with Type 2 Diabetes, being conducted at Sonterra Internal Medicine. Amber Ojeda has permission to access the medical records both pre-intervention and post-intervention. The data elements to be collected have been discussed and agreed upon. Elizabeth Mathes will provide oversight of the project in addition to her faculty advisor.

Sincerely,



John E. Dickson, M.D.

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