

12-2016

An Initiative to Improve Primary Prevention of Heart Disease in Adults With Type II Diabetes Based on the ACC/AHA (2013) and ADA (2016) Guidelines

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AN INITIATIVE TO IMPROVE PRIMARY PREVENTION OF HEART DISEASE IN
ADULTS WITH TYPE II DIABETES
BASED ON THE ACC/AHA (2013) AND ADA (2016) GUIDELINES

by

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Acknowledgements

Litzie Garza would like to thank her committee chair Dr. Jean Dols, her committee member Dr. Maria Gillespie, and Dr. Javier Bocanegra for their support in this project endeavor.

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Abstract

Heart disease is the leading cause of death in the United States and in Texas. Hyperlipidemia is a precursor to cardiovascular disease and is a highly manageable and treatable acute and chronic disease in the outpatient primary care setting. This project is designed to increase clinicians' adherence to the American College of Cardiology/American Heart Association (2013) and American Diabetes Association (2016) clinical practice guidelines for the prevention of heart disease in 40 to 75 year old adults with type II diabetes through interactive education, an electronic alert, and quality improvement sessions on the treatment and management of cholesterol in a primary care setting. The objectives were to initiate assessment of atherosclerotic cardiovascular disease risk scores, improve diet/exercise counseling, and increase use of statin therapy when applicable. Key activities included interactive meetings, open discussions with staff, resources including the guidelines, and weekly performance emails. The electronic alert was implemented as a reminder to assess the target group. Three outcomes were analyzed. Atherosclerotic Cardiovascular Disease risk score assessment increased from 0% to 76.7%, diet and exercise counseling documentation increased from 85% to 100%, and statin therapy application increased from 55.1% to 72.2% in eligible adults 40 to 75 years old with type II diabetes. The interventions were successful in improving clinician adherence to the clinical practice guidelines. This initiative helps to build the body of evidence regarding useful interventions to improve primary prevention of heart disease by improving provider adherence to the clinical care guidelines for 40 to 75 year old adults with type II diabetes.

Keywords: clinician adherence, type II diabetes, hyperlipidemia, heart disease, clinical practice guidelines

Heart disease is the leading cause of death in the United States and in Texas (Department of State Health Services [TDSHS], 2013). Hyperlipidemia and increased low density lipoproteins (LDL) are major risk factors and precursors to atherosclerosis and endothelial damage leading to cardiovascular disease (CVD) and stroke (Mozaffarian et al., 2014). Hyperlipidemia affected four of ten Texas adults in 2009 (DSHS, 2013) and is a highly manageable condition in the primary care setting.

Adults with type II diabetes are at an increased risk for cardiovascular morbidity and mortality when compared to adults without diabetes. Randomized control trials have demonstrated that this risk can be assessed and found that 40 to 75 year old adults with type II diabetes, with LDL-C levels between 70-189 mg/dL can benefit from statin therapy as a means of primary prevention of cardiovascular disease. Effective interventions to promote evidence-based practice for cardiac risk assessment while strengthening diet/exercise counseling are needed to improve primary prevention of heart disease in adults with diabetes.

Statement of the Problem

Adults with diabetes are two to four times more likely to develop heart disease or stroke than adults without diabetes (Mozaffarian et al., 2015). Cardiovascular Disease (CVD) is the leading cause of morbidity and mortality for adults with diabetes. In adults 65 or older, 68% of adults with diabetes die of CVD, with 16% dying from stroke (Mozaffarian et al., 2015). The presence of elevated plasma levels of the lipid cholesterol leads to an inflammatory process called atherosclerosis (McCance, 2014). Atherosclerosis is a pathological process which affects various vascular systems in the body that can vary in symptom and severity (McCance, 2014). Innate and adaptive immune responses are contributors in the development of atherosclerosis.

This inflammatory response leads to endothelial damage and to the formation of plaque within the cardiovascular system, which can lead to heart attacks and strokes (McCance, 2014).

The most up-to-date clinical practice guidelines for lipid management are the American College of Cardiology/American Heart Association (ACC/AHA) (2013) (Stone et al., 2014) and the American Diabetes Association (ADA) (2016). These guidelines highlight the importance of treating hyperlipidemia in adults with diabetes using a risk score to assess cardiovascular risk, prescribing the appropriate strength of statin therapy, and reinforcing dietary/exercise counseling.

There is a paucity of studies demonstrating methods to improve primary care practice adherence to the ACC/AHA (2013) and/or ADA (2016) guidelines. It is imperative for clinicians to understand and implement these guidelines in order to decrease cardiovascular risk, morbidity, and mortality among type II adults with diabetes.

Background and Significance

CVD refers to a group of diseases that target the heart and blood vessels. Common forms of CVD include high blood pressure, stroke, coronary heart disease, and congestive heart failure (CHF) (DSHS, 2013). The Texas Department of State Health Services (TDSHS, 2013) estimated that 30.5% of all 2010 deaths in Texas were attributed to CVD. In 2010, hospitalization costs for CAD and CVD approached \$20 billion, resulting in a financial burden for Texas (DSHS, 2013).

The first of two clinical practice guidelines available for the treatment of dyslipidemia in adults with type II diabetes are the ACC/AHA guidelines published in November 2013. The ACC/AHA (2013) state that 40 to 75 year old patients with diabetes should be assessed with the ASCVD risk calculator available online or through a phone application. Following the risk assessment, a moderate to high intensity statin therapy is recommended, in addition to diet and

exercise counseling to lower cardiovascular risk. The ADA clinical practice guidelines were published in January 2016 after an update to align with the clinical practice guidelines of the ACC/AHA (2013). The ADA (2016) guidelines reinforce the recommendations of the ACC/AHA (2013) guidelines in treatment of dyslipidemia by using the risk score, medication therapy, and reinforcing diet and exercise patient counseling in 40 to 75 year old adults with type II diabetes.

The primary goal of the guidelines is lowering blood cholesterol in at-risk groups based on the current evidence supporting the ACC/AHA (2013) guidelines (Smith, & Grundy, 2014). The use of statin therapy with diet and regular exercise is indicated as primary prevention in accordance with the ACC/AHA (2013) and ADA (2016) guidelines for adults with diabetes who are 40 to 75 years old with LDL-C levels of 70-189 mg/dL. The assessment of ASCVD risk is recommended by the ACC/AHA (2013) in order to guide the intensity of statin treatment and direct provider discussion of patient risk for heart attacks and strokes.

The guidelines state that adults 40 to 75 years old with type II diabetes with an LDL-C level of 70-189 mg/dL benefit from the use of statin therapy. The use of the ASCVD risk calculator aids in application of moderate to high intensity statin therapy based on risk. Adults with type II diabetes, LDL-C levels of 70-189 mg, and with an ASCVD risk greater or equal to 7.5% qualify for high statin therapy. Adults with less than 7.5% ASCVD risk qualify for moderate statin therapy. The current guidelines aid the clinician in determining the risk score and application of moderate to high statin therapy for this at-risk population. The ACC/AHA (2013) guidelines continue to reinforce adherence to a healthy lifestyle through diet and exercise. The recommendations are for patients to eat a heart healthy diet, increase vegetable intake, legumes, and fiber, reduce consumption of red meats, and sweetened beverages (ACC/AHA, 2013).

Adults should engage regularly in 30-40 minutes of physical exercise, maintain a healthy body weight, and avoid tobacco products to decrease LDL-C levels (ACC/AHA, 2013).

Assessment

An independent primary care clinic in south central Texas was selected as the project site. The clinic is open Monday through Friday, and for a half day every other Saturday. Providers include one physician and three physician assistants. In a 12-month period from August 1, 2014 to July 31, 2015 the clinic lists 16,596 established patients with 670 new patients seen annually. Individuals of Hispanic ethnicity compose the majority of the patient population. Patient demographics are depicted in Table 1. The clinic accepts 22 different insurance payers with the top four insurances billed being Blue Cross Blue Shield (25.4%), United HealthCare (17.4%), Medicare/Private (16%), and Medicare (5.4%). In general, patients have chronic conditions that include diabetes type II, hyperlipidemia, hypertension, asthma, and other conditions that require close monitoring by a primary care provider (PCP).

Table 1

Age Demographics

Age Range	% of Patients Seen
≥ 12 years old	4
13-18 years old	7
19-44 years old	45
45-65 years old	46
66 and older	8

Pre-Intervention Assessment

Sixty nine medical records were audited for patients with diabetes 40 to 75 years old without complications for adherence to the clinical guidelines including ASCVD risk assessment, diet/exercise counseling documentation, and statin therapy. Data collected included age, date of visit, lipids, blood pressure, BMI, HbA1c, statin therapy, statin strength, and documentation of diet/exercise counseling. Of the 69 charts reviewed there were no ASCVD risk scores documented. Of the 69 reviewed charts, 85.5% (59) had documentation of diet/exercise counseling while 14.5% (10) did not. From the 69 charts audited, 55.1% (38) of the patients were on statin therapy, 23.2% (16) were not receiving statin therapy, and 21.7% (15) were excluded because the LDL-C levels were 69 mg/dL or less.

The analysis of the records demonstrated that Atherosclerotic Cardiovascular Disease (ASCVD) risk assessments were not being documented and verbal review verified that they were not being performed. Improvement in diet/exercise counseling was needed, as 15% of the patients had no documentation of counseling. The review also demonstrated decreased statin therapy application for patients who were eligible for statin therapy and were 40 to 75 years old with an LDL-C of ≤ 100 mg/dL.

Organizational Readiness

The results of the medical records review were shared with the clinicians. The clinic is an active participant in quality improvement activities including participating in the Accountable Care Organization (ACO) program. Through the ACO program, the clinic works to provide high quality care to Medicare recipients and, if sufficiently demonstrated, receives a percentage of costs saved by the Centers for Medicare and Medicaid Services. The clinic also participates in the Health Care Incentive Improvement Institute (HCI3) Quality Improvement program by

voluntarily participating in the HCI3 “Bridge to Excellence Program” (Healthcare Incentives, 2015) in which clinicians work to improve care measures in diabetes, cardiac care, and asthma care. The clinic receives monetary incentives to report and improve the care metrics of these patients. The clinicians actively participate in these evidence-based practice initiatives to improve the quality of care provided to patients. As a part of these initiatives, clinicians participate in meetings to review performance, discuss changes, and plan effective implementation. The clinic demonstrates adaptability to change and quality improvement.

Project Identification

Purpose

The purpose of this project was to increase clinician adherence to the ACC/AHA (2013) and ADA (2016) clinical practice guidelines for the treatment and management of dyslipidemia in 40 to 75 year old patients with diabetes by providing an education/discussion session for clinicians, implementing an electronic medical record alert, and providing clinician resources for decision making in a primary care setting. The guidelines emphasize ASCVD risk screening, diet/exercise counseling, and medication therapy. The ACC/AHA (2013) risk tool will be used to determine a 10-year cardiac risk for cardiovascular disease per guideline recommendations (Stone et al., 2014).

Objectives

The objectives for the project are as follows:

1. Within 10 weeks of project implementation, 50% of 40 to 75 year old patients with type II diabetes seen at the clinic will be assessed using the cardiovascular risk calculator once every five years in accordance with the ACC/AHA (2013) guidelines.

2. Within 10 weeks of project implementation, 90% of 40 to 75 year old adults with type II diabetes seen at the clinic will have diet and exercise counseling documented in their charts by the clinicians.
3. Within 10 weeks of project implementation, 83% of 40 to 75 year old adults with type II diabetes and LDL-C levels above 70mg/dL seen at the clinic will be treated with statin therapy as a method of primary prevention for ASCVD in accordance with the ACC/AHA (2013) and ADA (2016) guidelines.

Table 2

Objectives and Anticipated Outcomes

Objectives	Outcomes	Anticipated Outcomes
1. 40 to 75 year old adults with type II diabetes will have their atherosclerotic cardiovascular disease (ASCVD) risk assessed.	Assess ASCVD risk in target group (Chart review)	Increase percent assessed from 0% to 50%.
2. 40 to 75 year old adults with type II diabetes will have diet and exercise counseling documented in their charts.	Increase in diet and exercise counseling documentation in target group (Chart review)	Increase percent counseled from 85% to 90%.
3. 40 to 75 year old adults with type II diabetes will be treated with statin therapy, if applicable.	Increase in the use of statin medication therapy in target group (Chart Review).	Increase percent treated from 51% to 83%.

Anticipated Outcomes

The clinic will increase the use and documentation of the ASCVD risk assessment in 40 to 75 year old adults with type II diabetes from 0% to 50% per ACC/AHA (2013) by using the risk tool for eligible patients. The clinic will improve and reinforce diet and exercise counseling of all 40 to 75 year old adults with type II diabetes from 85% to 90%. The clinic will increase the use of statin therapy, when applicable, from 51% to 83% in 40 to 75 year old adults with type II diabetes.

Summary and Strength of the Evidence

Adults with diabetes are two to four times more likely to have heart disease or stroke than adults without diabetes (AHA, 2016). The ADA (2016) considers diabetes to be a modifiable risk factor along with obesity, high cholesterol, lack of physical activity, and high blood pressure. Despite the well-established evidence between diabetes and the development of heart disease, minimal evidence exists in the literature regarding evidence-based practice for heart disease prevention in adults with type II diabetes. A search of the literature for the years 2013-2016 demonstrated no published studies of interventions used to target adherence to the evidence-based practices in the ACC/AHA (2013) guidelines. Practice implications of the ACC/AHA (2013) guidelines are not known. Studies are available regarding interventions used to increase adherence to the ADA standards of care regarding annual microalbumin screening, annual foot screening, and diabetic kidney disease knowledge (Anabtawi, 2013; Thompson-Martin, McCullough, & Agrawal, 2015; Umar-Kamara & Adams, 2013). The literature demonstrated that a multifaceted approach was an effective method to improve practice.

Clinician Education

Two studies demonstrated the effectiveness of educational sessions to improve adherence to standard guidelines. Lozman, Belcher, and Sloan (2013) conducted a quality improvement study in which a 30-minute education session in a primary pediatric clinic resulted in significant outcomes toward achieving the goal of reducing Papanicolaou screening according to the American Academy of Obstetrics and Gynecology pediatric guidelines. The education resulted in a reduction in Papanicolaou testing aligning with the guideline recommendations for the pediatric population (Lozman et al., 2013).

A comparable study performed an education session as an intervention to improve adherence to obesity guidelines. The study by Barnes, Theeke, and Mallow (2015) implemented a bundle of interventions that included an education session, provider resources for patient education, a provider reminder, and used provider feedback to improve practice adherence to clinical practice guidelines (CPG). The methodology used to evaluate pre and post intervention outcomes was a review of the electronic medical record. The results of the study demonstrated no significant increase in diagnosis and patient management with body mass index (BMI) greater than or equal to 30 (Barnes et al., 2015). However, there was a 13% increase of height, weight, and BMI recording by the medical assistants (Barnes et al., 2015).

Electronic Medical Record Alert

A study by Gill, Chen, Glutting, Diamond, and Lieberman (2009) used an electronic decision alert for patients whose LDL-C was not at goal and for patients due for lipid laboratory tests. The alert was used to improve hyperlipidemia management and other chronic conditions, which resulted in slight improvements. The study explored the use of lipid management tools in the EMR for adherence to the Adult Treatment Panel III (ATP III) guidelines, however the study noted slight improvement in quality of lipid management after implementing the EMR reminder

in the primary care setting (Gill et al., 2009). The study did state that the EMR reminder might be useful to set up clinical reminders and reinforce adherence to CPG recommendations. Gill et al. (2009) suggested that electronic reminders and other quality measures would only have a modest impact until financial incentives for improved performance are offered. This study speaks to the impact of pay per performance reimbursement, which was implemented in Britain (Gill et al., 2009), and is currently a health model adopted by the affordable health care act. Recent reimbursement, incentives, and penalties from Centers for Medicare and Medicaid programs are encouraging providers to meet patient quality metrics.

Clinician Resources

Barnes et al. (2015) utilized a variety of methods to improve CPG adherence with education sessions, provider resources, a reminder system, and provider feedback, to improve team adherence to national obesity practice guideline. A Body Mass Index (BMI) poster on top of the scales served as a visual reminder to adhere to BMI assessment. Clinicians were given a patient education packet and a one-page summary form recommended by the National Institutes of Health to assess patient readiness to lose weight (Barnes et al., 2015). At mid-point, feedback on performance was provided to the staff and providers (Barnes et al., 2015). Medical assistants increased BMI documentation by 13%, which was significant ($p < 0.01$) (Barnes et al., 2015). The number of charts with BMIs of 30 or higher with a documented obesity diagnosis increased from two (pre-intervention) to four (post-intervention), a finding which was not significant. Documentation of weight loss increased from two to six. The intervention methodology used in this study demonstrated that educational resources, clinician feedback, and a reminder alert have the potential to be beneficial interventions.

Methods

A pre-intervention medical records review was performed on April 15, 2016 through April 30, 2016, for patient encounters with a diagnosis code of E11.9 (type II diabetes without complications) from December 1, 2015 to March 1, 2016. A total of 69 charts were reviewed. Data showed that 43.5% (30) were males and 56.5% (39) were females. From this group, 97.1% (67) were of Hispanic descent and 2.9% (2) were non-Hispanic ethnicity. Data analysis demonstrated that for 40 to 75 adults with type II diabetes with LDL-C \geq 70 mg/dL, 55% of 69 patients were on statin therapy in accordance with the guideline recommendations. Only 85% of the patient records screened had documented diet/exercise counseling. No ASCVD risk assessment was documented in the records screened for the target population. Three interventions were selected to drive guideline adherence. The first intervention was to provide an educational session for the clinicians and adjunct staff. The second intervention included building a customized EMR alert with recommendations to assess ASCVD and apply statin therapy for adults 40 to 75 years old with type II diabetes. The third intervention included coordinating three QI meetings with the clinicians to address barriers, suggestions, and make appropriate changes.

Education Session

The education intervention took place on June 6, 2016. The ADA (2016) and the ACC/AHA (2013) guidelines were reviewed with the clinicians for the target population of 40 to 75 year old adults with type II diabetes. The patient diet/exercise counseling handout was discussed during the education session. This handout reinforces clinicians' verbal counseling of the importance of adhering to a heart healthy diet and 40 minutes of physical exercise. The handout was to be given to hyperlipidemia care patients (Appendix A). The guidelines were

printed and emailed to the clinicians for future use and as a reference. On June 20 and June 21, 2016 the scribes were trained on how to use and document ASCVD risk scores.

EMR Intervention

An EMR alert was created under the EMR health guideline features. The EMR alert was designed to activate for patients 40 to 75 years old with diabetic codes E11.9 type II diabetes mellitus without complications, E11.21 type II diabetes mellitus with diabetic nephropathy, E11.40 type II diabetes mellitus with diabetic neuropathy unspecified, and E11.65 type II diabetes mellitus with hyperglycemia. The EMR alert acted as a reminder system for the clinicians to follow through with recommendations based on the target group, 40 to 75 year old adults with type II diabetes. The alert would appear when a patient encounter was opened and no ASCVD risk documentation was found. The alert was set as a reminder to assess ASCVD risk if it had not been performed for the patient within the last 5 years and to consider the need for adjustment in exercise/diet or statin therapy.

Clinician Resources

A clinician resource was provided, which summarizes the ACC/AHA CPG (2013) (Cupp, 2014) in a format that is easy for clinicians to read, follow, and use. In addition, the ADA (2016) summary CPG was provided and emailed to the clinicians.

Quality Meetings and Incentive

Following implementation, the clinicians were asked to participate in three quality improvement meetings. Meeting one was held one week after implementation and addressed clinician concerns with adherence. Patient handouts were provided. Meeting two was held 4 weeks after implementation and addressed clinician recommendations. Additional copies of the patient handouts were provided. Meeting three was held 10 weeks post implementation. At this time, the

student leader reviewed the clinic's adherence and discussed the incorporation of processes into the clinic's routine. As an incentive for participating in the project, taking time from their practice to attend quality improvement meetings, and working to determine the barriers and facilitators to guideline adherence, clinicians were awarded \$100 for active participation in each quality improvement meeting. The incentive was sponsored by the Astellas Heart Health Through the Age Span Award (Appendix B). The clinic assessed the ASCVD risk score in 40 to 75 year old adults with type II diabetes in all patients who needed laboratory work-up for chronic care and physical assessments. An educational handout was given to patients whose lipids were high and the clinicians provided reinforcement of diet and exercise counseling. This multifaceted intervention approach included an interactive educational discussion, an electronic alert, quality meetings, and clinician resources for decision-making for 40 to 75 year old adults with type II diabetes in this family practice.

Two adjustments were made based on clinician feedback. The first was to assess ASCVD risk during physicals, and when patients came to the clinic for laboratory draws. The second was to only assess patients who were scheduled for chronic management/laboratory or physical exams. Assessing ASCVD risk for chronic care, laboratory results, or physical exams was practical for the clinic, and convenient for the patients as blood samples are collected in the clinic when fasting. This change, acknowledged by the student leader, assisted the clinicians to adhere to the implementation as it improved the clarity of which patients needed to be assessed.

Organization Barriers and/or Facilitators

Barriers to implementation of the clinical practice guidelines included identifying meeting times that accommodated clinician schedules. Performance in the beginning of implementation varied among clinicians with one clinician demonstrating lower guideline

adherence than others. ASCVD risk scores were calculated for patients who had a recent (within three months) lipid panel. Risk scores could not be calculated for patients whose total cholesterol was less than 130 mg/dL, and for patients whose systolic blood pressure was less than 90 mmHg.

Facilitators included the presence of a quality improvement administrator who manages intervention and implementation changes based on quality measures established by payers. The use of established EMR software was helpful with creating an electronic alert for the clinic. The use of an EMR to collect data was a facilitator. Clinician and staff collaboration was essential to improve study objectives and adherence to guidelines. The incentive served as a facilitator to gain stakeholder support and become an active participant to implement changes based on weekly performance evaluations. This initiative demonstrated that team collaboration, stakeholder engagement, and the use of an incentive increased adherence to guidelines.

Results

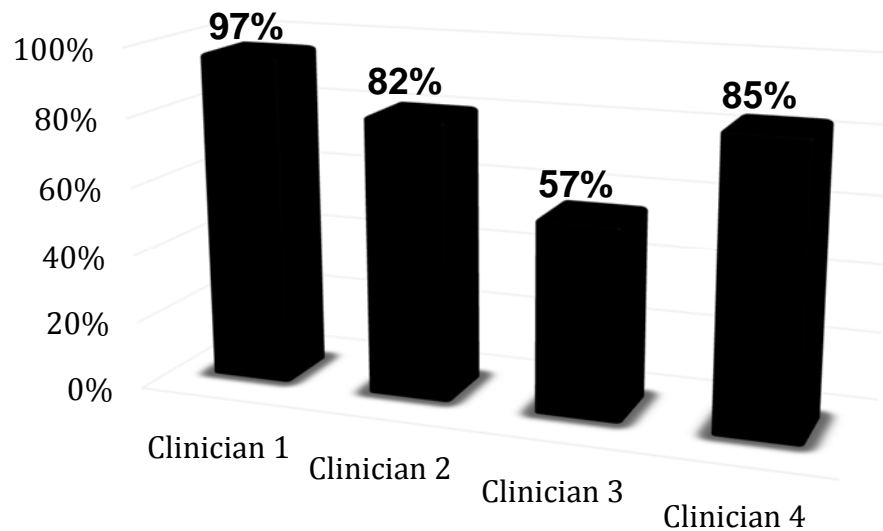
Data collection

A retrospective chart review was conducted post implementation between August 22, 2016 and August 31, 2016. Charts were reviewed for all diabetic patients 40 to 75 years old seen from June 20, 2016 to August 26, 2016. The total number of charts reviewed post intervention was ninety. The same variables that were collected pre-intervention were collected post-intervention. Variables included age, demographics, Medicare, blood pressure, lipid levels, HbA1c, aspirin use, body mass index, statin use, statin strength, clinician, and ASCVD risk assessment with score. During implementation, weekly reviews were conducted over the 10 weeks to assess clinician adherence to ASCVD risk assessments. Three QI meetings were coordinated to identify barriers and facilitators, and provide a forum for clinician feedback.

Figure I depicts average clinician performance for ASCVD risk assessment throughout the implementation timeframe.

Figure 1

Average Clinician Performance for ASCVD Risk Assessment



Data indicated that of the 90 patient charts reviewed, 42.2% (38) of the patients were males and 57.8 (52) were females; 97.8% (88) of the patients were of Hispanic ethnicity and 2.2% (2) were non-Hispanic ethnicity.

Objective 1: Increase the ASCVD risk assessment from 0% to 50%. The ASCVD risk assessment pre-intervention was 0% and rose to 76.7% (69) in the post intervention data. Only 23.3% (21) of the patients were not screened with the ASCVD risk assessment. A Chi square demonstrated that among 40 to 75 year old adults with type II diabetes, there was a statistically significant relationship between pre and post intervention rates for ASCVD risk screening ($\chi^2(1,159) = 93.46, p < .001$).

Table 3

ASCVD Risk Assessment Pre and Post Intervention

	Yes	No	Total
Pre-Intervention	0	69	69
Post-Intervention	69	21	90
Total	69	90	159

Objective 2: Increase diet and exercise counseling documentation from 85% to 90%. For objective number two, diet and exercise counseling rose to 100% (90), achieving more than the target goal of 90%. These were attributed to the constant feedback and reminder to counsel and document appropriately in the EMR.

Among 40 to 75 year old adults with type II diabetes, there was a statistically significant relationship between pre and post intervention for diet and exercise counseling documentation ($\chi^2(1,159) = 21.60, p < .001$).

Table 4

Diet and Exercise Counseling Documentation

	Yes	No	Total
Pre-Intervention	54	15	69
Post-Intervention	90	0	90
Total	144	15	159

Objective 3: Increase statin therapy when applicable for 40 to 75 years old adults with type II diabetes from 55% to 83%. For objective number three, statin therapy treatment improved from 55% to 72.2%. A Chi square revealed that among 40 to 75 year old adults with type II diabetes and LDL-C levels $\geq 70\text{mg/dL}$, there was a statistically significant relationship between the intervention and the application of statin therapy ($\chi^2 (1,159)=11.55, p = .003$).

Table 5

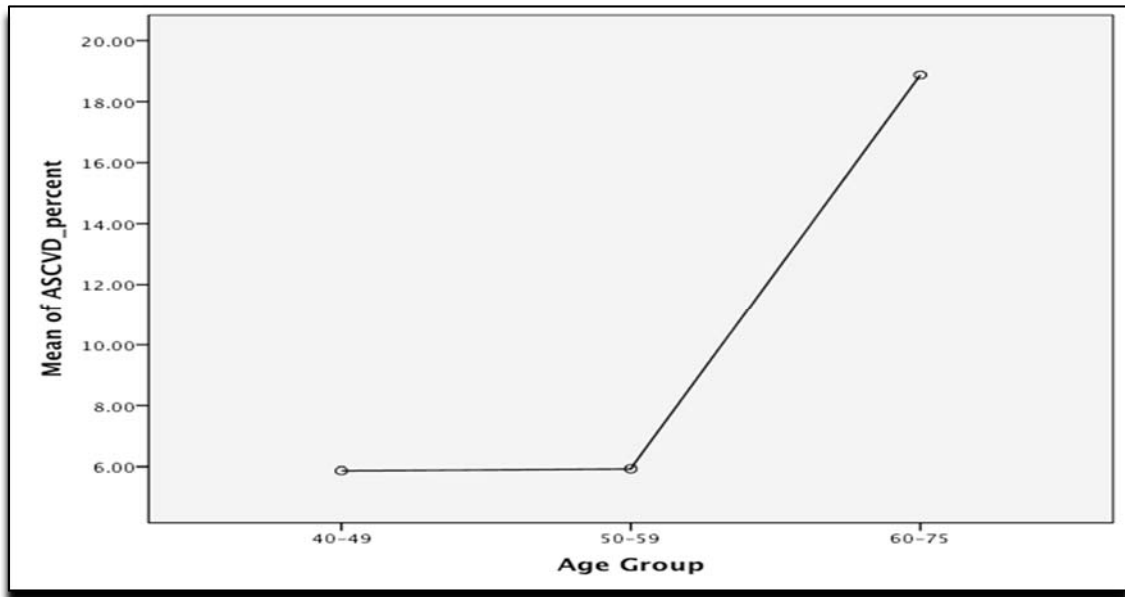
Statin Use Pre & Post Intervention

	Yes	No	Not Applicable	Total
Pre-Intervention	38	16	15	69
Post-Intervention	65	21	4	90
Total	103	37	19	159

A One-way ANOVA demonstrated that mean ASCVD Risk Score differed significantly between the age groups of 40 to 49, 50 to 59, and 60 to 75 ($v (2, 65) = 35.014, p < .001$). Post hoc comparisons using the Tukey HSD showed significant differences in the mean ASCVD Risk Score between the 40 to 49 age group and 60 to 75 age group ($M = 13.0, SE = 2.21, p < .001$) and the 50 to 59 age group and the 60 to 75 age group ($M = 12.9, SE=1.73, p < .001$). However, there was no significant difference in the mean ASCVD Risk Score between the 40 to 49 age group, and the 50 to 59 age group ($M = .06, SE = 2.36, p = 1.00$). These findings reinforced the need for early intervention with diet/exercise lifestyle modifications, and statin therapy to decrease CVD risk later in life.

Figure 2

ASCVD Risk Score Differences by Age Groups



Discussion

The ASCVD risk score was assessed for all 40 to 75 year old adults coming to the clinic for their physical exam and/or laboratory workup. However, for the purpose of this project, data was collected only for 40 to 75 year old adults with type II diabetes. The clinicians were given weekly performance reviews, and the student leader conducted three quality improvement meetings to discuss barriers, changes, and clinician feedback. An electronic alert was used to reinforce changes and clinician resources for decision-making were given in hard copy and emailed. Two of three objectives were successfully met, and surpassed expectations. ASCVD risk screening increased from 0% to 77%, while diet and exercise counseling documentation increased from 85% to 100%. Statin therapy application increased significantly from 55.1% to 72.2%, however did not achieve the goal to increase to 83%. There is no data or evidence in the literature to compare ASCVD risk screening rates to that of the clinic.

Clinician participation and adjunct staff participation in this QI initiative resulted in an increase in adherence to the ACC/AHA (2013) and ADA (2016) guidelines for lipid management. The interventions and objectives met provide a step forward towards implementation of evidence-based best practice recommendations by practice guidelines, as mandated both by the Institute of Medicine and current health care models to improve the care provided to 40 to 75 year old adult patients with type II diabetes. Progress was seen through the QI initiative for improving outcomes in adults with type II diabetes for primary prevention of heart disease in a family primary care setting when clinicians and adjunct staff participation resulted in adherence to the ACC/AHA (2013) and ADA (2016) guidelines for dyslipidemia management.

Limitations

Limitations included implementation timeframe, which impacted the number of charts reviewed post intervention to 90. Sample size pre intervention (69) and post intervention (90) was small. In addition, clinicians were absent due to maternity leave and vacation time during implementation. Ninety seven percent of the patients were of Hispanic origin, a factor that may limit the interpretation of this project with other populations.

Recommendations

The results of this QI initiative demonstrate the positive impact of multifaceted interventions to improve dyslipidemia patient care for adults with type II diabetes. The first recommendation is to engage clinicians by scheduling quality meetings and having open discussion for suggestions and improvement. Meetings serve to address barriers to change noted by the clinicians and project leader. It is important to stay attentive for Centers for Medicare and

Medicaid Services incentives to initiate similar initiatives in the clinic as incentives are a useful resource to increase stakeholder engagement.

The use of an EMR alert, weekly performance measures, and patient education handouts, reinforce the continuation of the changes that need to take place to meet objectives. Weekly performance reports provide a tangible comparison of each clinician, thus incentivizing peers to perform equally. It is important to consider the use of computer technology, phone applications, and/or use of EMR alerts as reminders to reinforce practice changes.

There is a need for literature contributions regarding ASCVD risk assessment and intervention methods used. ASCVD risk discussion between clinician and patient should be studied.

Implications for Practice

In 2011, the Institute of Medicine made a call to advance practice research DNP prepared nurses, to target the challenges discovered in the current provider driven, fragmented, volume based delivery of care, to a cost effective, coordinated, evidence based practice driven, value based care, needed to improve population health and quality outcomes (Kendall-Gallagher & Breslin, 2013; Zaccagini & White, 2014). The doctor of nursing practice (DNP) is a degree, but often with a practice role that prepares nurses to the highest level of education for practice application in the use of EBP to achieve patient positive outcomes, implement routine QI methods, and effectively improve adherence to changes (Zaccagini & White, 2014).

This initiative demonstrated that team collaboration, stakeholder engagement, and the use of an incentive increased adherence to guidelines. The positive outcomes of this initiative indicate that APRNs can have an impact in practice and collaborate with an interdisciplinary

team. Primary care clinicians and APRNs can play a significant role in mitigating the negative cardiovascular risk outcomes found in adult patients with type II diabetes.

Conclusion

Cardiovascular disease remains the number one cause of death in the United States. It is important to assess ASCVD risk and initiate statin therapy for adults with type II diabetes whom are susceptible to heart attacks and strokes. It is imperative to begin the discussion of CVD risk with the population of adults who have diabetes and implement best practice methods to improve the quality of care provided to adults with type II diabetes. In a complex healthcare system, it is necessary to work collaboratively to achieve measured outcomes. Incentives were a helpful resource to initiate, gain stakeholder interest, and sustain QI efforts. The APRN has the advanced training to bridge the gap between evidence to practice. Their expert knowledge and complex decision making skills are needed to translate the changing healthcare models to align evidence and practice.

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Appendix A

PATIENT TEACHING GUIDE



ATHEROSCLEROSIS AND HYPERLIPIDEMIA

PROBLEM

Hyperlipidemia (excess lipids in the blood) is called "hardening of the arteries." The excess lipids increase your risk of developing heart disease and heart attacks.

CAUSE

Elevated blood cholesterol levels lead to plaque formation in the walls of the major arteries in the body. The higher the level of low-density lipoprotein (LDL), or "bad" cholesterol, the greater the chance of getting heart disease. On the other hand, the higher the level of high-density lipoprotein (HDL), or "good" cholesterol, the lower the risk of heart disease.

PREVENTION/TREATMENT PLAN

Lowering your risk of heart disease involves the following:

- A. Diet changes to lower your bad cholesterol (LDL) and raise your good cholesterol (HDL).
- B. Lose weight. Start with losing 5 to 10 pounds.
- C. Start or increase your physical activity. Walking is a good exercise to start getting active.
- D. Other ways to modify your risk factors:
 1. Stop smoking.
 2. Control your blood pressure.
 3. If you are a diabetic, control your blood sugar level.

Activity: Regular exercise, such as walking vigorously for 30 minutes three times a week, increases your good cholesterol levels, lowers blood sugar, and promotes weight loss.

Diet: Follow the dietary approaches to stop hypertension (DASH) and low-fat/low-cholesterol diet:

- A. Decrease total fat calories and cholesterol.
- B. Decrease total saturated fats, and replace with monounsaturated fats such as canola oil, olive oil, and margarine.
- C. Increase fiber with oatmeal, bran, or fiber supplements.
- D. Increase daily intake of fruits and vegetables.
- E. Try garlic, soy protein, and vitamin C to help lower LDL cholesterol.

Medications: You may be prescribed a medicine to lower your cholesterol. You will need to come into the doctor's office have your blood drawn to monitor your liver and cholesterol levels.

You Have Been Prescribed: _____

You Need to Take: _____

You Need to Notify the Office If You Have:

- A. Chest pain.
- B. Shortness of breath or trouble breathing while exercising.
- C. Abdominal pain.
- D. Muscle pain or weakness.
- E. Other: _____

Phone: _____

Appendix B

**Nurse Practitioner Healthcare Foundation***Improving Health Status and Quality of Care through Nurse Practitioner Innovations*

May 16, 2016

Litzie Ramos BSN, RN

6718 Callaghan Rd. # 202

San Antonio, TX 78229

Dear Litzie,

The Nurse Practitioner Healthcare Foundation is pleased to inform you that you have been selected to receive a 2016 NPHF/Astellas Heart Health Through the Age Span Award for your project, "Diabetic Heart Disease Prevention." The award of \$4000 total will provide support for your project and for disseminating your findings to enhance knowledge and practice. Your project, as well as your commitment to advancing heart health, are testimony to the impact that nurse practitioners have in shaping the health care system now and in the future.

The award will be made in two payments: the first payment of \$3000 to support project development and initiation, the second payment of \$1000 provided at the end of the project for project dissemination (poster or podium presentation at a healthcare conference, journal article, etc.). Please submit the enclosed W-9 now and your IRB approvals or exemptions no later than August 30, if they were pending or not submitted with your original application. Once we receive these, we will release the initial payment to you. We will require a progress report on your project by December 20, 2016 and a final report by June 30, 2017.

The Nurse Practitioner Healthcare Foundation will prepare a press release for national publication and will announce the award on our website. Please provide a color photo headshot and a short bio-sketch no later than June 30 to pamjw@nphealthcarefoundation.org

Please remember that you have agreed to acknowledge the Nurse Practitioner Healthcare Foundation/Astellas Heart Health Through the Age Span Award Program in any clinical, educational or research publications, posters or presentations stemming from work done through this funding. Please notify us of all poster and podium presentations of your work and send us a copy of any publications from your research project. We will use your successes to help us gain support for future award programs.

I will send required forms and agreements for your signature within the next two weeks. Please complete and return them by the deadline noted below.

Our very best wishes for a successful and productive future as a nurse practitioner leader and, again, congratulations!

Sincerely,



Pam Jenkins-Wallace, MS, NP

Program Director, NPHF

pamjw@nphealthcarefoundation.org

NPHF Program Office

7592 Highland Oaks Dr. Pleasanton, CA 94588

925-989-5431 (Mobile- preferred) 925-461-1102 (Office)

pamjw@nphealthcarefoundation.org

Appendix C

Community Family Medicine, P.A

March 3, 2015


Re: Litzie Ramos

To Whom It May Concern:

Attached is Litzie Ramos BAA agreement. This allows her to access records as needed for any quality improvement program is working on in the clinic.

For further questions I can be contacted at 210-435-1218.

Thank you,



Christina Perez, MHA, ACHE

Healthcare Administrator

Community Family Medicine

Javier Bocanegra, M.D.

210-435-1218
