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Improving Adherence to Annual Diabetes Guidelines in Rural Primary Care

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Improving Adherence to Annual Diabetes Guidelines in Rural Primary Care

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Abstract

Background: The American Diabetes Association (ADA) (2022) identifies comorbidity risk assessments and treatment planning as key health maintenance components for diabetic patients. However, many providers do not adhere to the recommended national guidelines (Brenner et al., 2020).

Objectives: At a rural primary care clinic, the effectiveness of implementing a checklist was evaluated to improve provider adherence to the annual diabetes guidelines set by the ADA.

Methods: A quality improvement project was initiated and guided by the Lean Six Sigma framework. The checklist was implemented to assess if providers adhered to the recommended annual diabetes guidelines. The project evaluated if the checklist was used and the frequency of completion of the individual measures on the checklist.

Results: Provider use of the checklist put each measure's HEDIS score in the 90th percentile compared with the 50th percentile in the pre-implementation period. Fischer's exact test was completed to determine statistical significance.

Conclusions: Implementing a diabetes guideline checklist proved feasible to ensure provider adherence. Implementation of the checklist into the EHR should be considered for project sustainability.

Implications: A standardized tool should be utilized to assure provider adherence to the annual diabetes guidelines

Keywords: Quality Improvement, Diabetes, Annual Guidelines, Checklist

Introduction

According to the Centers for Disease Control and Prevention (CDC) (2021), diabetes is the seventh leading cause of death in the United States, affecting more than 37 million people. Diabetes mellitus, also known as diabetes, is a chronic health condition that affects metabolism due to a deficiency in insulin secretion or insulin resistance (Papadakis et al., 2021). Diabetes is the most expensive chronic condition in the United States, with an annual cost of over $327 billion dollars (CDC, 2022). Non-compliance of diabetes management can lead to pathologic changes in small and large blood vessels causing hypertension, kidney disease, blindness, neuropathy, extremity amputations, myocardial infarctions, and strokes (Papadakis et al., 2021). Strategies to reduce or prevent these complications are cost-effective. The ADA (2022) identifies comorbidity risk assessments and treatment planning as key health maintenance components for diabetic patients. However, many patients and providers do not adhere to the recommended national guidelines (Brenner et al., 2020).

Organizational Assessment

The current state of the organization was examined through the McKinsey 7s model (Appendix A). This DNP project focused on implementing a change in the organization's workflow; therefore, this model helped identify constructs needed to implement the proposed change successfully. A SWOT (strengths, weaknesses, opportunities, and threats) analysis was completed (Appendix B) and identified that the organization lacked a standardized tool to monitor guideline adherence and identify quality measure gaps. It was also found that the current electronic health record (EHR) is incompatible with other organizations and requires staff to scan lab results and referral notes into the system manually. This leads to many results getting lost and untimely uploads for patient appointments.

Literature Review

The literature revealed that primary care providers (PCPs) are the first line of defense to improve the quality of care for patients with diabetes (Riordan et al., 2020). Adherence to diabetes guidelines relieves the disease burden for patients and decreases the economic burden on society (Dai et al., 2018). Providers that lacked a system to identify gaps and monitor the completion of the recommended guidelines had higher rates of non-adherence (Valencia & Dols, 2021; Riordan et al., 2020; Salinas et al., 2019; Dai et al., 2018). However, using a standardized collection method proved to be effective in closing the gaps and completing the guidelines (Riordan et al., 2020; Salinas et al., 2019). Implementing a tool that alerts providers of missed guidelines is beneficial in closing the adherence gap (Riordan et al., 2020; Dai et al., 2018).

Purpose of Project

The purpose of this quality improvement project is to implement a diabetes care checklist that monitors provider adherence to the annual diabetes guidelines set forth by the ADA.

Methods

Setting

This project occurred at a primary care clinic in a rural midwestern state. The clinic staff consists of one internal medicine physician, one medical assistant (MA), and two facility clerks. The clinic has three treatment rooms, a procedure room, and a lab. This facility is one of four primary care offices in the area and serves most of the surrounding patient population. The clinic is affiliated with a mid-size non-profit hospital that is part of a larger health care system.

Implementation Framework

The Lean Six Sigma model was identified as the implementation framework (Appendix C). The Lean Six Sigma model incorporates the Define, Measure, Analyze, Improve, and Control

(DMAIC) cycle, which helps organize the implementation process. It starts with define, which includes gathering a team, assessing the organization, and developing a plan. It describes the problems that need to be solved and the weight the problem has on the organization. The second element, measure, examines previous data collected in the organization. This baseline data helps narrow the project focus and exemplifies the need for implementation. The third phase, analyze, includes data collection and barriers to project success. The fourth stage, improve, tests the validity of the solution and is where improvements can be made to ensure success. Finally, the last stage, control, is where sustainability will occur. This stage can also be used to implement the process in other organizations facing the same problems.

Stakeholders

Key stakeholders identified for project facilitation included patients, leadership, clinicians, and support staff. Patients are the most critical stakeholders because the project is centered around decreasing comorbidities associated with diabetes. Within the healthcare organization, the directors, management (or leadership), clinicians, and support staff are also vital stakeholders. The directors and managers of the organization help identify current evidenced-based research to set policies and procedures that healthcare providers must follow. The clinicians are responsible for ordering tests, performing exams, and providing referrals for diabetes management, so they are directly involved in the adherence of quality measures. Finally, the support staff is required to update the health record and initiate the utilization of the checklist.

Intervention

Implementation strategies outlined by Powell et al. (2015) were aligned with the DMAIC components of the Lean Six Sigma model to facilitate project implementation (Appendix D).

These strategies helped determine facilitators and barriers, improve project workflow, and increase staff buy-in. The selected implementation strategies were evaluated during pre-and post-implementation along with system outcomes used to evaluate provider adherence and potential revenue. All patients above the age of 18 who had a diabetes diagnosis were included in the study.

Measures

The diabetes care checklist helps providers track the recommended annual diabetes guidelines (Appendix E). Checklist measures include at-home glucose readings, hemoglobin A1c, blood pressure, cholesterol, retinal eye exams, foot exams, influenza vaccinations, kidney function, urine microalbumin, and dental exams. These specific measures were chosen because they follow the guidelines provided by the ADA to limit comorbidities in the diabetic population and are part of comprehensive diabetes care recommended by the *National Committee for Quality Assurance* (*NCQA*). The NCQA tracks Healthcare Effectiveness Data and Information Set (HEDIS) measures within healthcare organizations. These measures are standardized and designed to gauge how patients are cared for. They focus on preventative care and provide incentives based on pre-set thresholds. The organization's HEDIS measures that relate to diabetes showed that at least two measures per month scored less than the 50th percentile in the last quarter. This directly affects Medicare payment incentives and contributes to poor health outcomes for diabetic patients.

Analysis

This project established a checklist to improve adherence to the ADA diabetic guidelines. The evaluation included if the checklist was or was not used during a diabetic patient exam. The frequency of the individual measures on the checklist (ex: foot exam, urine, a flu shot) was also

analyzed to evaluate adherence. The result of each measure is not relevant to this project but was added to the checklist as a quick reference tool for providers to trend lab results and for the future sustainability of the project. If a patient refused any items on the checklist (example-influenza vaccine), the provider recorded the date refused to verify that the measure was addressed. Manual chart reviews were completed to verify checklist validity and identify if checklists were missed. A bar chart was used to visually depict the change in process and variable frequency over time.

Ethical Considerations

The organization's institutional review board determined that this project did not constitute human research and could be considered quality improvement.

Results

During the implementation period, the clinic saw 247 patients for wellness exams, follow-up appointments, and acute care visits. Manual chart reviews revealed 62 patients that met inclusion criteria. 47 of those patients had a checklist completed, making the overall adherence to the checklist 76% (Appendix F). In addition, the use of ICD-10 codes, referrals, and data documentation was evaluated via manual chart reviews to verify that the checklist data was adequately documented.

The 47 patients were analyzed to identify the frequency of completion of each checklist measure (Appendix G, Figure G1). Every measure was assessed on all 47 checklists, except for urine microalbumin, which was only assessed on 43 of the 47 checklists making its frequency of completion 91.5%. Three of the measures were compared to pre-implementation data to determine if there was a change in adherence (Appendix G, Figure G2). These three measures were chosen because they were the most frequently monitored by the healthcare organization for

incentive reimbursement. Documentation of eye exams increased by 53%, completion of hemoglobin A1c increased by 23%, and completion of urine microalbumin increased by 71.5% with the implementation of the checklist. A Fischer's Exact test was completed for each of the three measures. The analysis yielded a p-value = <0.0001 for all three measures, a statistically significant increase.

The clinic tracks Healthcare Effectiveness Data and Information Set (HEDIS) measures that are set by the NCQA. HEDIS scores directly affect Medicare payment incentives and consumer quality. The same three measures and their HEDIS scores were compared during pre- and post-implementation (Appendix H). Prior to implementation, the organization's HEDIS measures show that at least two measures per month scored less than the 50^{th} percentile. Post-implementation scores put each measure in the 90^{th} percentile. This finding is clinically significant because it shows that the use of the checklist increased provider adherence to the diabetes guidelines which provided diabetic patients with enhanced monitoring to prevent the development of comorbidities.

Discussion

This quality improvement project aimed to improve provider adherence to the annual diabetes guidelines using a checklist. The project helped deliver an easily accessible tool to help providers identify what measures must be addressed to complete the required guidelines. The implementation of the checklist led to an increase in adherence to the diabetes guidelines, which is evidenced by the frequency of completion of the individual measures. The results were both statistically and clinically significant. Barriers to checklist adherence were identified. Common themes included that the patient was being seen for an acute visit (ex: influenza) or that they received diabetes care at another facility. The inclusion criteria must be redefined to address

these barriers and prevent erroneous samples from skewing further data collection.

The individual measures have varying times of assessment, as reported on the checklist. For example, a patient's eye exam only needs to be completed annually compared to their hemoglobin A1c which is completed every three to six months. If a test was previously completed in the allotted timeframe, it was recorded on the checklist to prevent overordering of tests. During the implementation period, the provider only addressed the checklist components needed to close the quality metric gaps for each patient.

Implications for Practice

Checklist implementation helps reduce disease related comorbidities through guideline adherence. The checklist helps providers easily identify what measures need to be addressed and serves as a quick reference tool during patient appointments. Checklist implementation leads to closure of quality gaps and provides patients with tests, referrals, and interventions to help recognize disease related comorbidities. Through early detection of comorbidities, proper treatment and patient education can be provided. This can help slow disease progression and increase the quality of life in diabetic patients through efficient and effective patient care.

Guideline adherence is also cost-effective. According to the CDC (2022), 48-64% of lifetime medical costs for patients diagnosed with diabetes are associated with disease-related complications. Indirect costs of these complications include higher rates of absenteeism, reduced productivity, and increased disability rates (ADA, 2018). Preventing the development of diabetes complications can help reduce healthcare spending and prevent patient disability.

It also directly impacts organizational revenue and financial incentives for providers. Revenue is generated into the organization by providing referrals for examinations such as retinal eye exams and utilizing the hospital laboratory. Health plans use this quality data to determine provider

reimbursement and generate quality scores for each organization. These quality scores are utilized by the Centers for Medicare and Medicaid Services to determine an organization's eligibility for reimbursement.

Limitations

Limitations were apparent during the completion of this quality improvement project. The project was completed at a small clinic with only one provider and one MA. The provider is a part of the project advisory team, which could have resulted in participant bias. To ensure validity, this project would need to be replicated throughout other clinics. Due to time constraints, the data collection process was limited to five weeks which shortened the sample size. Providers were found to be more likely to adhere to guidelines placed into a standardized flowsheet within the EHR versus on paper. During the implementation period, the clinic was preparing for EHR transition from Allscripts to Cerner. This caused the checklist to be based on a hard-copy document versus an electronic. Utilizing the EHR and paper documentation is considered over-processing and results in a loss of productivity. Untimely scanning of the document into the EHR or misplaced documents could result in missed guideline measures. Embedding the checklist into the EHR would help ensure standardization and sustainability throughout the hospital organization.

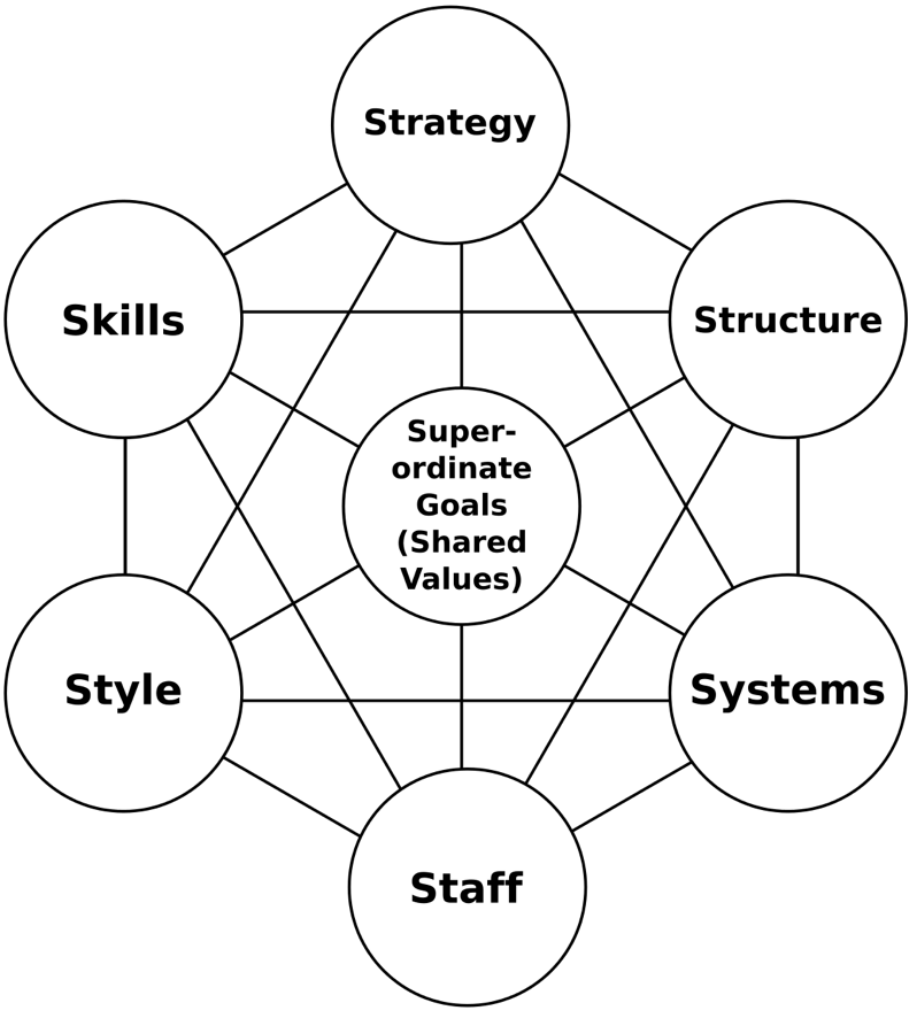
Conclusion

Adherence to diabetes guidelines is a cost-effective method to reduce comorbidities and ensure quality patient care; however, many providers still do not adhere to the recommended guidelines. Barriers to adherence to diabetes care guidelines included the inability to identify needed assessments and a lack of chart organization. Implementing a checklist that monitored the completion of the diabetes guidelines proved effective in increasing provider adherence.

Completion of each measure increased over the duration of this project. Ongoing quality improvement efforts are warranted to promote project sustainability and standardization throughout the healthcare organization.

Appendix A

McKinsey 7S Model

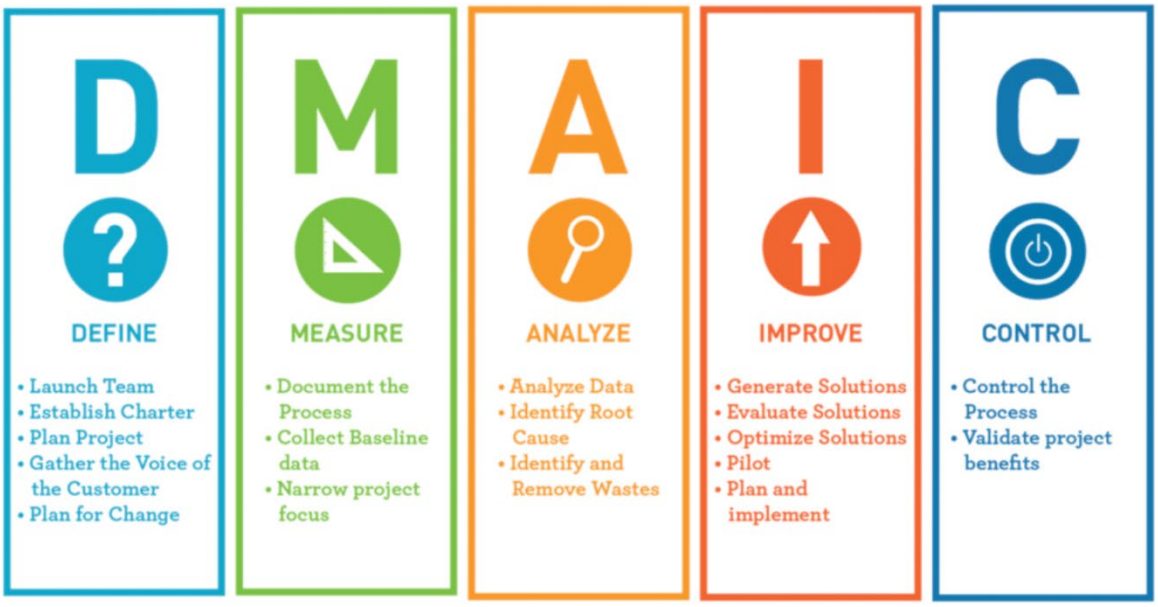


Appendix B

SWOT Analysis	
Internal	***External***
Strengths	***Opportunities***
• **As part of a large healthcare system in a rural midwestern state, the clinic has several external resources to support patient care** • Clearly defined vision, mission, and strategic plan with clear and concise goals • **Patients identify strong patient/provider communication** • Work climate and culture that is flexible and open to change. • **Committed employees who strive to help the underserved patient population, increase patient health outcomes, and decrease comorbidities**	• **Improved quality documentation increases opportunity to capture incentive dollars from payors** • Improved adherence leads to decreased comorbidities and mortality in patient population • Increased patient education to promote adherence • **A standardized tool will help to guide adherence to quality measures**
Weaknesses	***Threats***
• Lack of staff adherence to quality measures • **EMR utilized is not compatible with other medical organizations so patient reports must be scanned into system- often lost or never sent to clinic** • Ability to run reports and extract quality data from EMR is limited for analysis and interpretation. • **Does not have formal application to monitor progression of diabetes adherence** • Lack of internal resources to provide care for complex patient population • **High rates of non-adherence within the patient population**	• **Low perceived susceptibility of patient population** • Decreased adherence leads to decreased clinic reimbursement • **Increased time constraints due to high patient volume** • Payors are predominantly Medicare and Medicaid, many patients lack insurance • Pushback from staff due to change in workflow process. May view checklist as a burden

Appendix C

The Lean Six Sigma Model



Appendix D

Implementation Strategy	Description	Framework Alignment
Model and simulate change (Powell et al., 2015, p.9)	• Staff Interviews	Define Control
Purposely reexamine the implementation (Powell et al., 2015, p.10)	• Directly observe workflow • Assess efficiency of checklist	Measure Analyze
Identify and prepare champions (Powell et al., 2015, p.9)	• Organizational Assessment • Staff Interviews	Define
Revise professional roles (Powell et al., 2015, p.9)	• Interprofessional collaboration of intervention	Improve
Model and simulate change (Powell et al., 2015, p.9)	• Introduce use of checklist and integration into workflow	Improve
Purposely reexamine the implementation (Powell et al., 2015, p.10)	• Analyze data • Direct observation of workflow • Staff interviews	Analyze Improve Control
Identify and prepare champions (Powell et al., 2015, p.9)	• Support peers and provide guidance throughout implementation	Improve
Revise professional roles (Powell et al., 2015, p.9)	• Change workflow process	Improve

Appendix E

Annual Diabetes Management Checklist

(Patient Label)
Patient Name:
DOB:

Year: _____

Test	How Often	Date & Results	Date & Results	Date & Results	Date & Results
At Home Glucose Readings	Every Clinic Visit				
HgbA1C	Every 3 to 6 months				
Blood Pressure	Every Clinic Visit				
Cholesterol (Lipid Profile)	Annual				
Eye Exam	Annual				
Foot Exam	Every Clinic Visit				
Flu Shot	Annual				
Kidney Function	Annual				
Urine Microalbumin	Annual				
Dental Exam	Every 6 months				

Notes:
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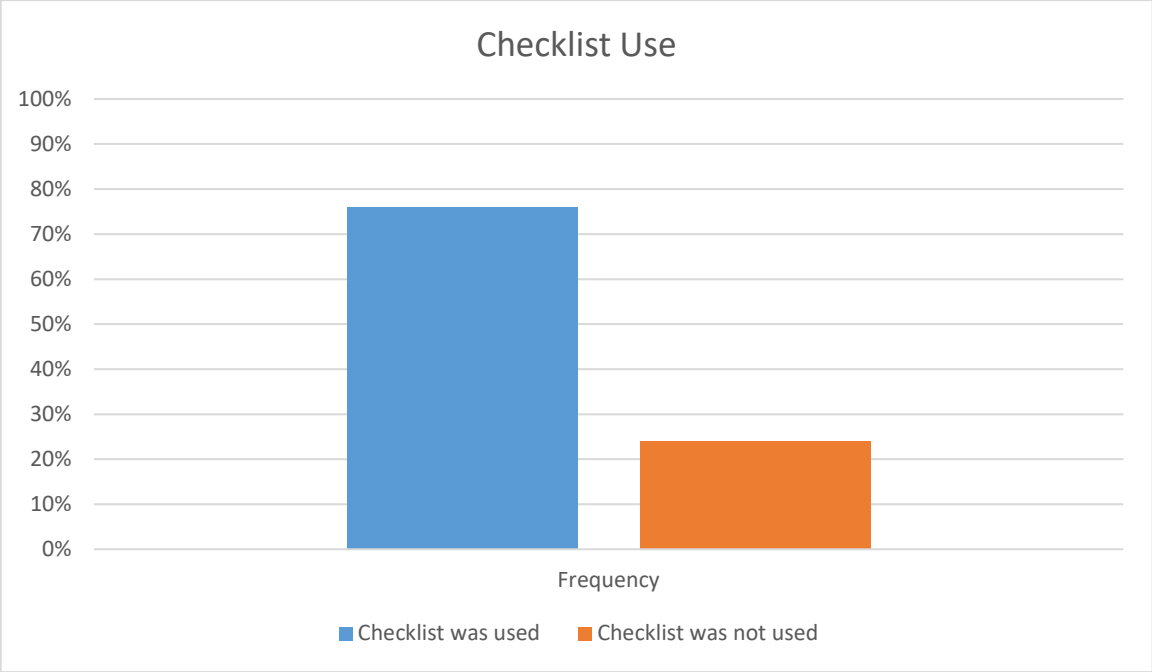
Appendix F



Note. Checklist adherence measures

Appendix G

Figure G1

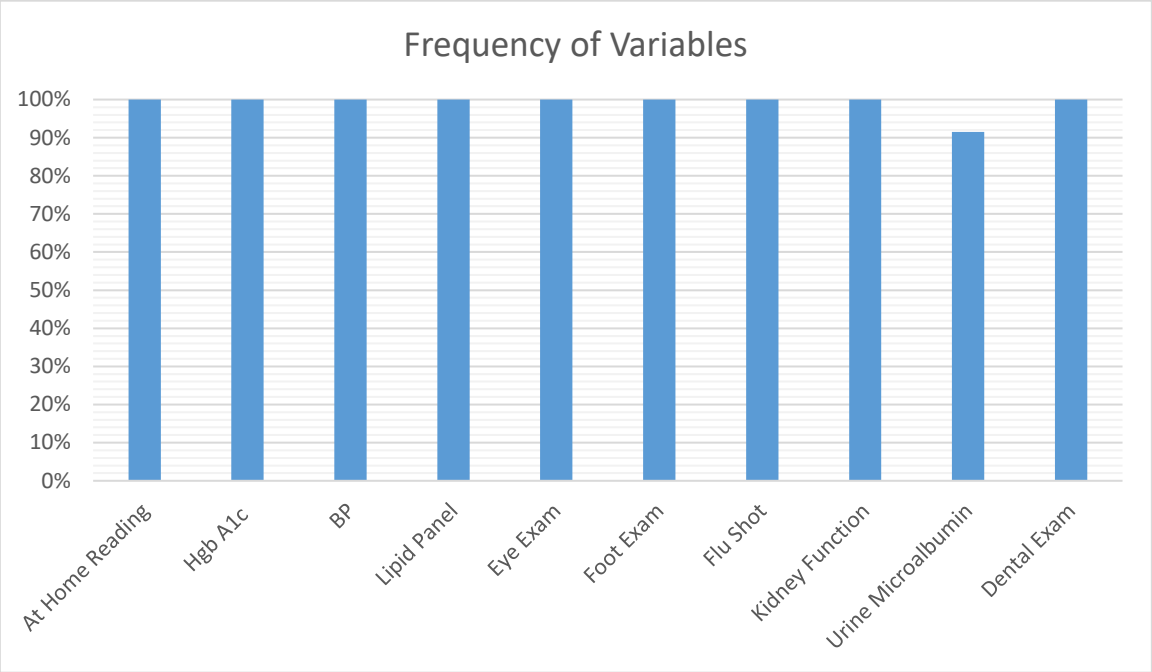
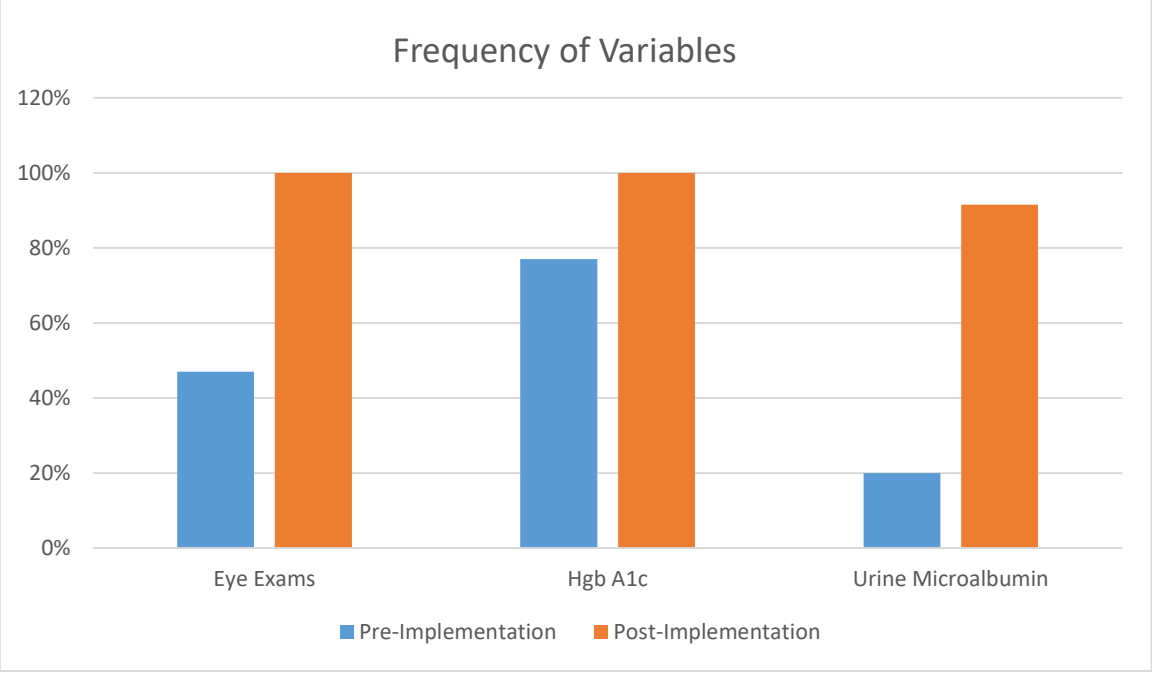
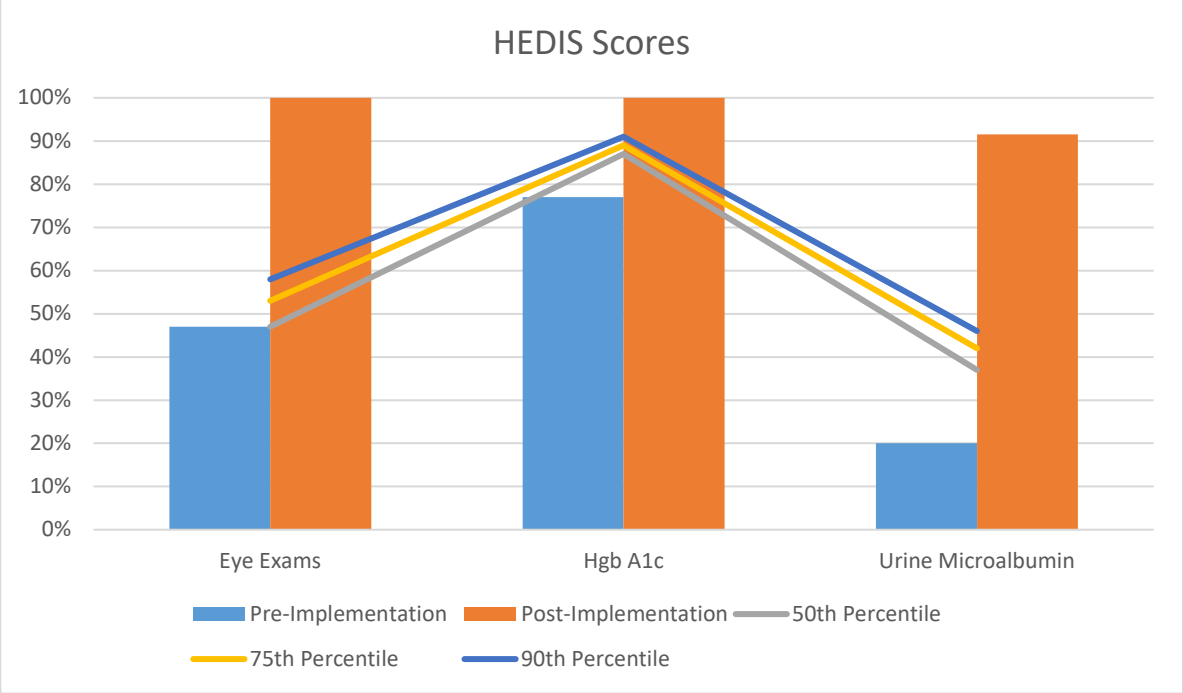


Figure G2



Note. The frequency of completion of individual variables on the checklist

Appendix H



Note. Comparison of pre and post implementation data with HEDIS score percentiles.

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Riordan, F., McHugh, S. M., O'Donovan, C., Mtshede, M. N., & Kearney, P. M. (2020). The role of physician and practice characteristics in the quality of diabetes management in

primary care: Systematic review and meta-analysis. *Journal of General Internal Medicine*, *35*(6), 1836–1848. https://doi.org/10.1007/s11606-020-05676-7

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Valencia, Y., & Dols, J. D. (2021). Facilitating adherence to evidence-based practices for adults with type 2 diabetes mellitus. *The Journal for Nurse Practitioners*, *17*(6), 744–748.

Improving Adherence to Annual Diabetes Guidelines In Rural Primary Care

Ashley Barney BSN, RN

DNP Project Defense

April 11, 2023

Grand Valley State University
Kirkhof College of Nursing

Acknowledgements

Advisory Team

- Dr. Christina Quick, DNP, APRN, CPNP-ACPC, CHSE
- Dr. Anne McKay DNP, ANP-BC
- Dr. Jason Whateley, DO

Objectives for Presentation

1. Explore the clinical problem of diabetes guideline adherence.
2. Identify the organizational needs and summarize the organizational assessment findings.
3. Review the literature support for promoting diabetes guideline adherence.
4. Discuss the checklist, measures, and implementation strategies.
5. Disseminate project results
6. Reflect on DNP essentials

IRB Approval

Research Integrity
Institutional Review Board
2701 Cambridge Ct., Suite 110
Auburn Hills, MI 48326
TEL: (248) 484-4950
FAX: (248) 276-9732

January 27, 2023

RE: IRB #: 2022-0074
REF #: 007239

Thank you for the Request for Determination of Non-Human Subject Research for your project titled "Improving Adherence to Annual Diabetes Guidelines In Rural Primary Care?". Based on the information you have provided, the IRB has determined that this project **DOES NOT** qualify as human subject research as outlined in 45 CFR 46.102(d) and (f) or 21 CRF 56.102(c) and (e) and **is not subject to oversight by the IRB**.

If this is a resident project submitted with a faculty member listed as the Principal Investigator, you must submit your project to the Scholarly Activity Review Committee (SARC).

Although this project does not fall under the oversight of the IRB, you still need to follow other institutional policies. **If your project involves access to medical records or PHI, you must contact your institutions' compliance / privacy officer.** It is also recommended that you consult with any departments that may be impacted by your project to ensure any departmental requirements are met.

Please be advised, it is your responsibility to consult with the IRB, in writing, if any changes are made in the project's current design, procedures, etc. Such changes may necessitate a new complete IRB submission.

If we can be of any further assistance or if you have any questions or concerns, please contact us at (248) 484-4950 or via e-mail at hrpp@mclaren.org.

Good luck with your project.

M. Ammar Hatahet, MD, MPH, FACP
Care IRB Chair

The Office of the IRB does not send a hard copy of documents which have been electronically transmitted. These are the only copies of the regulatory documents you will receive.

Introduction

- Diabetes is the seventh leading cause of death in the United States, affecting more than 37 million people (Centers for Disease Control and Prevention [CDC], 2021).

- 48-64% of lifetime medical costs for patients diagnosed with diabetes is associated with disease related complications (CDC, 2022).

- Diabetes is the most expensive chronic condition in the United States with an annual cost over $327 billion dollars (CDC, 2022).

- Adherence to diabetes guidelines relieves disease burden for patients and decreases the economic burden on society (Dai et al., 2018).

Annual Cost of Diabetes

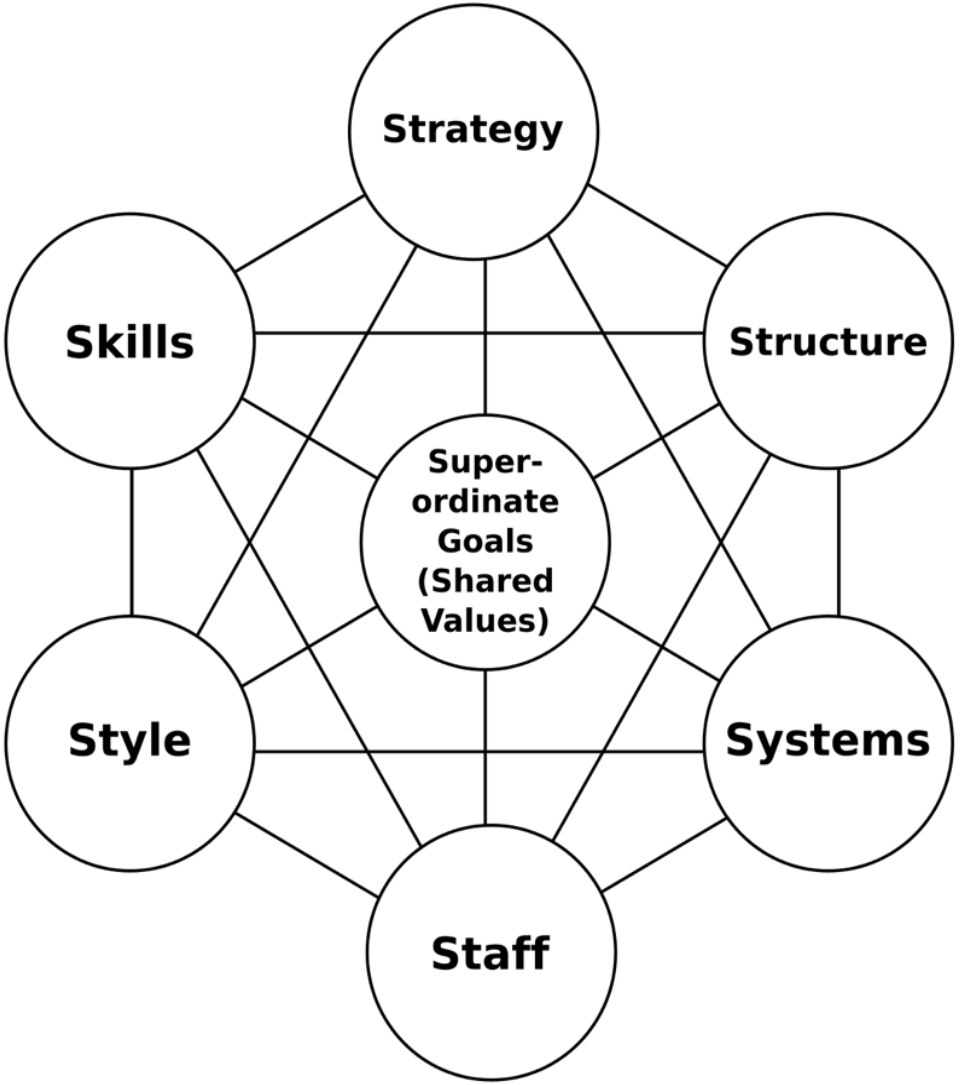
Cost Categories	Cost
Annual medical expenditures	$9,601 (per patient)
Increased absenteeism	$ 3.3 Billion
Reduced productivity (workforce)	$26.9 Billion
Reduced productivity (not in workforce)	$2.3 Billion
Inability to work due to diabetes related disability	$37.5 Billion
Loss of productivity due to early mortality	$19.9 Billion

(The American Diabetes Association, 2018).

SWOT Analysis

Strengths	Weaknesses
• **As part of a large healthcare system in a midwestern state, the clinic has several external resources to support patient care** • Clearly defined vision, mission, and strategic plan with clear and concise goals • **Patients identify strong patient/provider communication** • Work climate and culture that is flexible and open to change. • **Committed employees who strive to help the underserved patient population, increase patient health outcomes, and decrease comorbidities**	• Lack of staff adherence to quality measures • **EMR utilized is not compatible with other medical organizations so patient reports must be scanned into system-often lost or never sent to clinic** • Ability to run reports and extract quality data from EMR is limited for analysis and interpretation. • **Does not have formal application to monitor progression of diabetes adherence** • Lack of internal resources to provide care for complex patient population • **High rates of non-adherence within the patient population**
Opportunities	**Threats**
• **Improved quality documentation increases opportunity to capture incentive dollars from payors** • Improved adherence leads to decreased comorbidities and mortality in patient population • Increased patient education to promote adherence • **A standardized tool will help to guide adherence to quality measures**	• **Low perceived susceptibility of patient population** • Decreased adherence leads to decreased clinic reimbursement • **Increased time constraints due to high patient volume** • Payors are predominantly Medicare and Medicaid, many patients lack insurance • Pushback from staff due to change in workflow process. May view checklist as a burden

Current State of the Organization: The McKinsey 7s Model



Peters, T. J., & Waterman, R. H. (1982). *In search of excellence: Lessons from America's best-run companies*. New York: Harper & Row.

Available Knowledge: Purpose & Aim

Purpose: The purpose of the literature review was to evaluate current guidelines for the annual management of diabetes and associated comorbidities and to analyze the barriers and facilitators of provider and patient compliance to the recommended guidelines.

Aim: The aim of the review was to demonstrate the effects of implementing a diabetes care checklist to monitor provider adherence to the annual diabetes guidelines

PICO Question

For adult patients with diabetes, does utilizing a diabetes care checklist help providers adhere to the annual diabetes guidelines compared to not utilizing a diabetes care checklist?

PRISMA Figure

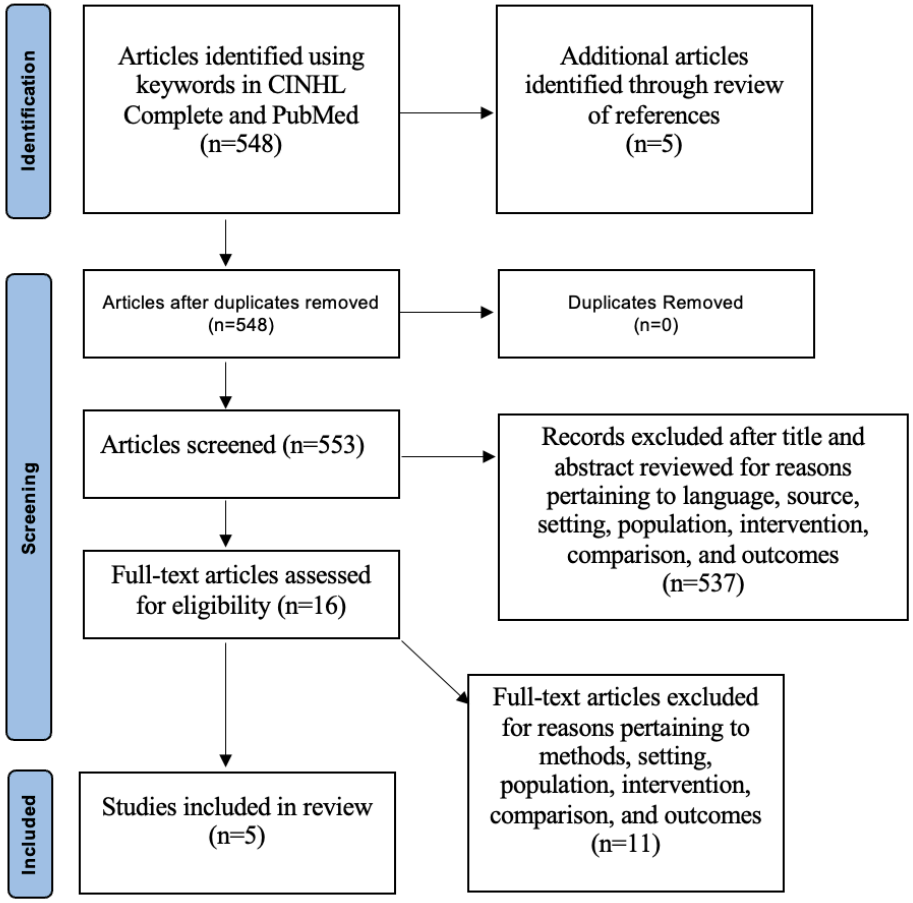
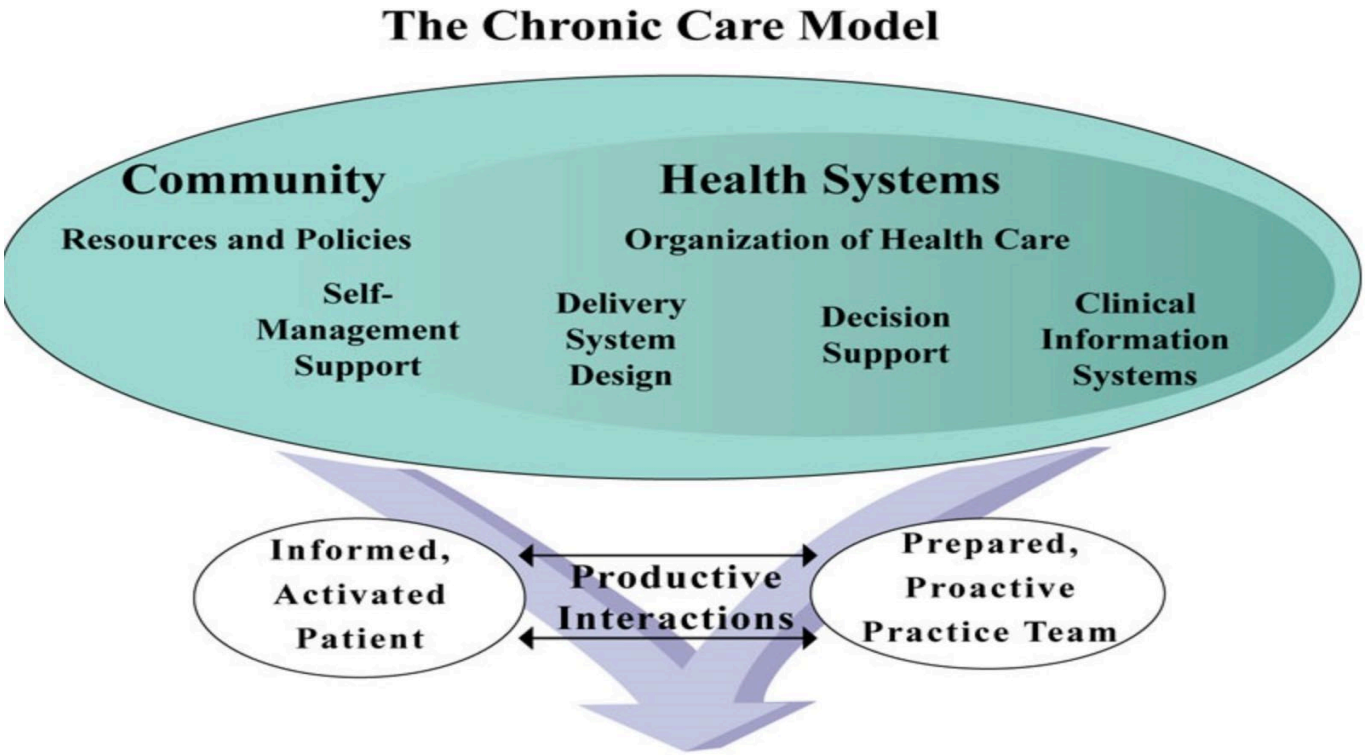


Figure. Flow diagram of search selection process. Adapted from "Preferred reporting items for systematic reviews and meta-analyses: The PRISMA statement," by D. Moher, A. Liberati, J. Tetzlaff, D. Altman, and The PRISMA Group. (2009). Copyright 2009 by PLoS Medicine.

Synthesis of Results

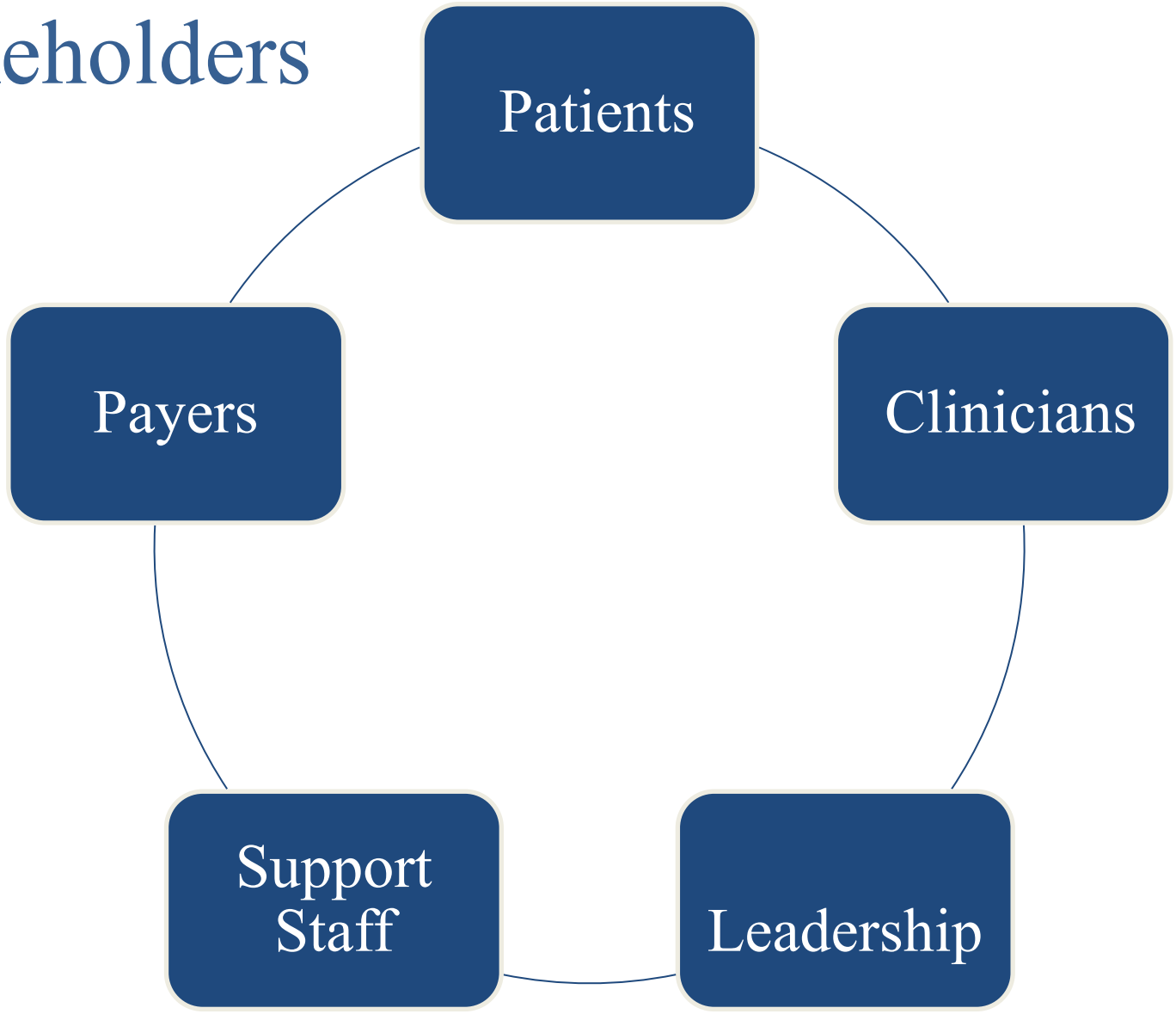
Theme	Literature Synthesis
Adherence	• Providers attitudes and beliefs and strong patient-provider relationship (Riordan et al., 2020; Dai et al., 2018). • Patient's satisfaction with care (Riordan et al., 2020). • Continuity of care/ frequent follow-ups (Valencia & Dols, 2021; Dai et al., 2018). • Provider education and thorough understanding of the guideline components (Valencia & Dols, 2021; Riordan et al., 2020; Dai et al., 2018). • More than 50% of patients were identified for anti-hypertensive, statin, or aspirin therapy using the guidelines (Valencia & Dols, 2021) • Implementation of a flowsheet helped providers monitor the completion of examinations and adhere to guidelines (Salinas et al., 2019).
Non-Adherence	• Less than 60% of diabetic patients received recommended monitoring for diabetes (Dai et al., 2018). • Increased patient demands and decreased consultation times (Salinas et al., 2019; Riordan et al., 2020). • Complications that can result from non-adherence includes, "blindness, kidney failure, heart disease, stroke, and peripheral neuropathy" (Valencia & Dols, 2021, p.746). • Providers lack a system to identify gaps and monitor the completion of the recommended guidelines (Valencia & Dols, 2021; Riordan et al., 2020; Salinas et al., 2019; Dai et al., 2018).

Framework/Conceptual Model for Phenomenon



Developed by the Center for Accelerating Care Transformation (ACT Center), formerly known as the MacColl Center for Health Care Innovation | www.act-center.org

Key Stakeholders



Clinical Practice Question

Will the implementation of a diabetes care checklist help providers identify gaps and adhere to the annual recommended diabetes guidelines at a rural midwestern clinic?

Purpose of project

The purpose of this quality improvement project was to implement a diabetes care checklist that monitors provider adherence to the annual diabetes guidelines set forth by the American Diabetes Association.

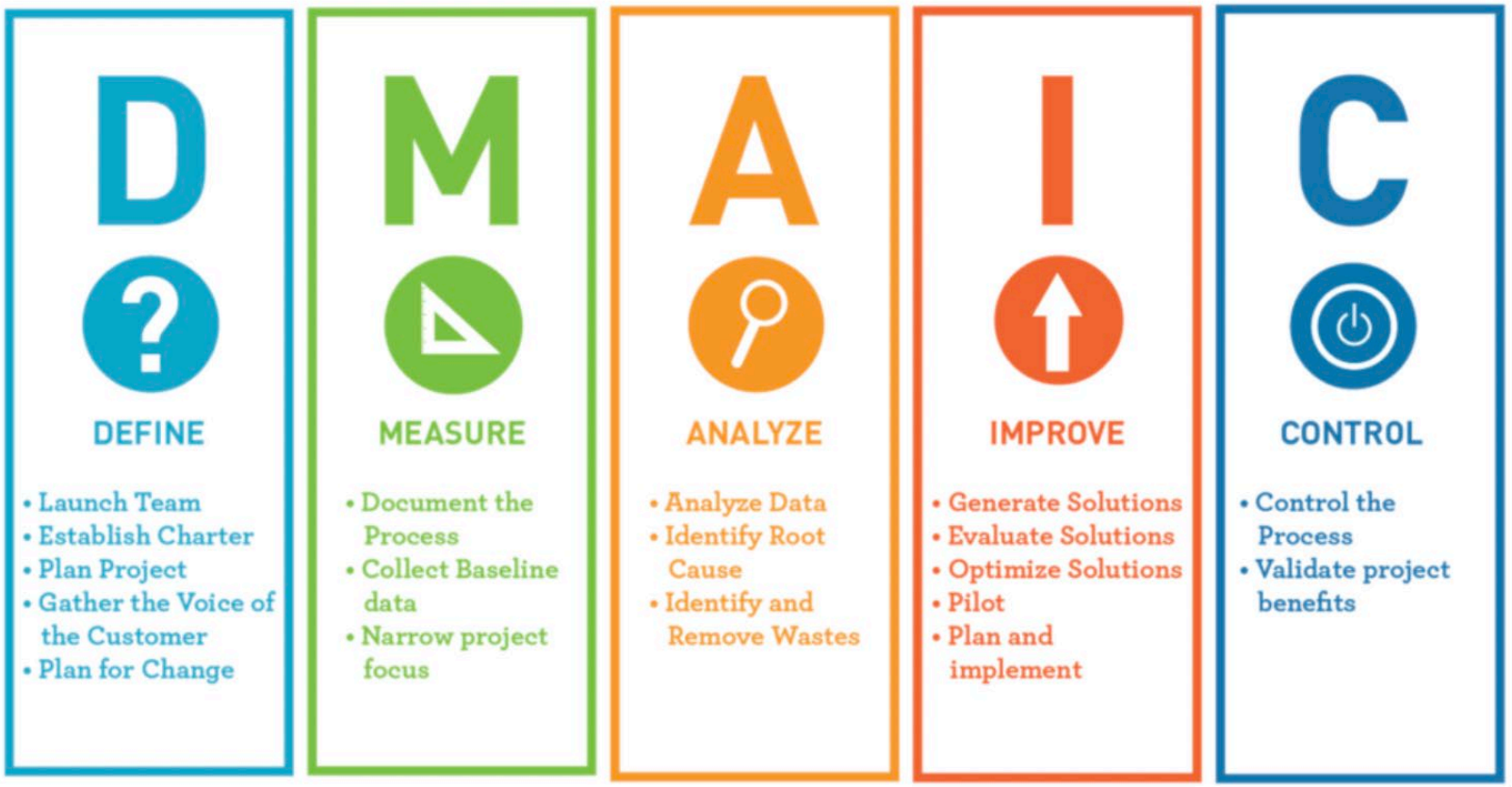
PROJECT PLAN

Setting & Project Design

Setting: Primary care clinic located in a rural, midwestern state

Quality Improvement: Improve annual diabetes guideline adherence rates for primary care providers by monitoring adherence through a diabetes care checklist

Implementation Framework: The Lean Six Sigma



Six Sigma Development Solutions. (2021). *DMAIC. what is it? what does it mean?* https://sixsigmadsi.com/dmaic-process/

Implementation Strategies & Elements

Implementation Strategy	Description	Framework Alignment
Assess for readiness and identify barriers and facilitators (Powell et al., 2015, p.8)	• Staff Interviews	Define Control
Audit and provide feedback (Powell et al., 2015, p.8)	• Directly observe workflow • Assess efficiency of checklist	Measure Analyze
Conduct local needs assessment (Powell et al., 2015, p.8)	• Organizational Assessment • Staff Interviews	Define
Facilitation (Powell et al., 2015, p.9)	• Interprofessional collaboration of intervention	Improve

Implementation Strategies & Elements

Implementation Strategy	Description	Framework Alignment
Model and simulate change (Powell et al., 2015, p.9)	• Introduce use of checklist and integration into workflow	Improve
Purposely reexamine the implementation (Powell et al., 2015, p.10)	• Analyze data • Direct observation of workflow • Staff interviews	Analyze Improve Control
Identify and prepare champions (Powell et al., 2015, p.9)	• Support peers and provide guidance throughout implementation	Improve
Revise professional roles (Powell et al., 2015, p.9)	• Change workflow process	Improve

Evaluation & Measures

Topic	Concept	How Measured	When Measured	Who Measures
Implementation Strategies	Assess for readiness and identify barriers and facilitators	• Staff interviews/observation • EHR audit	Pre-Implementation	Student
	Audit and provide feedback	• Staff observation • EHR audit	Pre-Implementation	Student
	Conduct local needs assessment	• Organizational Assessment • Staff interviews	Pre-Implementation	Student
	Facilitation	• Staff interviews	Pre-Implementation	Student
	Model and simulate change	• Staff observation	Pre-Implementation	Student
	Purposely reexamine the implementation	• Direct observation of workflow • Staff interviews	Post-Implementation	Student
	Identify and prepare champions	• Staff observation	Pre-Implementation	Student
	Revise professional roles	• Staff observation • Staff interviews	Pre-Implementation	Student

Evaluation & Measures (cont.)

Topic	Concept	How Measured	When Measured	Who Measures
System Outcomes	Provider used checklist during diabetes clinic visit	• Checklist Audit	Post implementation	Student
	Potential for Increased reimbursement	• Checklist Audit/EHR audit	Post implementation	Student

Measurement Tool

Annual Diabetes Management Checklist

(Patient Label)

Patient Name:

DOB:

Year: _____

Test	How Often	Date & Results	Date & Results	Date & Results	Date & Results
At Home Glucose Readings	Every Clinic Visit				
Hgb A1C	Every 3 to 6 months				
Blood Pressure	Every Clinic Visit				
Cholesterol (Lipid Profile)	Annual				
Eye Exam	Annual				
Foot Exam	Every Clinic Visit				
Flu Shot	Annual				
Kidney Function	Annual				
Urine Microalbumin	Annual				
Dental Exam	Every 6 months				

Notes:

_____
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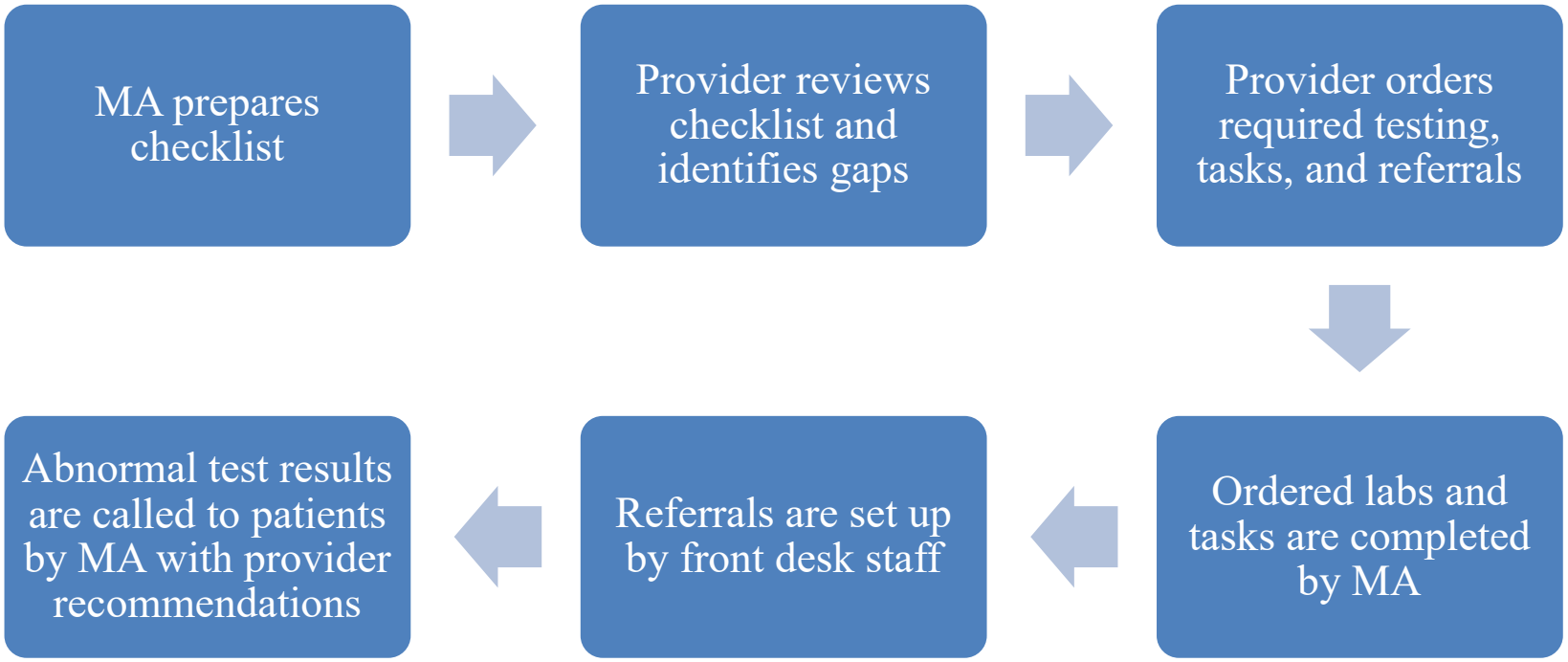
Staff Education

1. Diabetes Guideline Importance
2. Workflow Process
3. Billing Cheat Sheet
4. ICD-10 Cheat Sheet

Workflow Process



Billing Cheat Sheet

Test	CPT Code
Urine Microalbumin Creatine Ratio	82570
Foot Examination	2028F
Hgb A1c	83036
Retinal Eye Exam	N/A- must obtain ophthalmology report

(McLaren Physician Partners, 2022)

ICD-10 Code Cheat Sheet

Test	ICD-10 Code
T2D without complications	E11.9
T2D with hyperglycemia	E11.65
T2D with mild retinopathy	E11.329
T2D with diabetic chronic kidney disease	E11.22
T2D with polyneuropathy	E11.42
Influenza vaccine needed	Z23
Influenza vaccine declined	Z28.21
Encounter for foot exam	E11.9

Type 2 Diabetes (T2D)

(McLaren Physician Partners, 2022)

Analysis Plan

Measure	Measurement Plan
Checklist used for diabetic patients	Run Chart
Checklist not used for diabetic patients	Run Chart
Frequency of assessment of individual measures	Bar Chart

Annual Project Revenue

Estimated Generated Reimbursement	
Hgb A1c Test	$13.00 (average) x4
Urine Microalbumin	$8.30 (average)
Diabetic Foot Exam	$50.00 (average) x4

Total Revenue for 1 Patient	**$260.30**
Total Revenue for 1300 Patients	**$338,390**

(Centers for Medicare & Medicaid Services, 2022)

Ethical Considerations

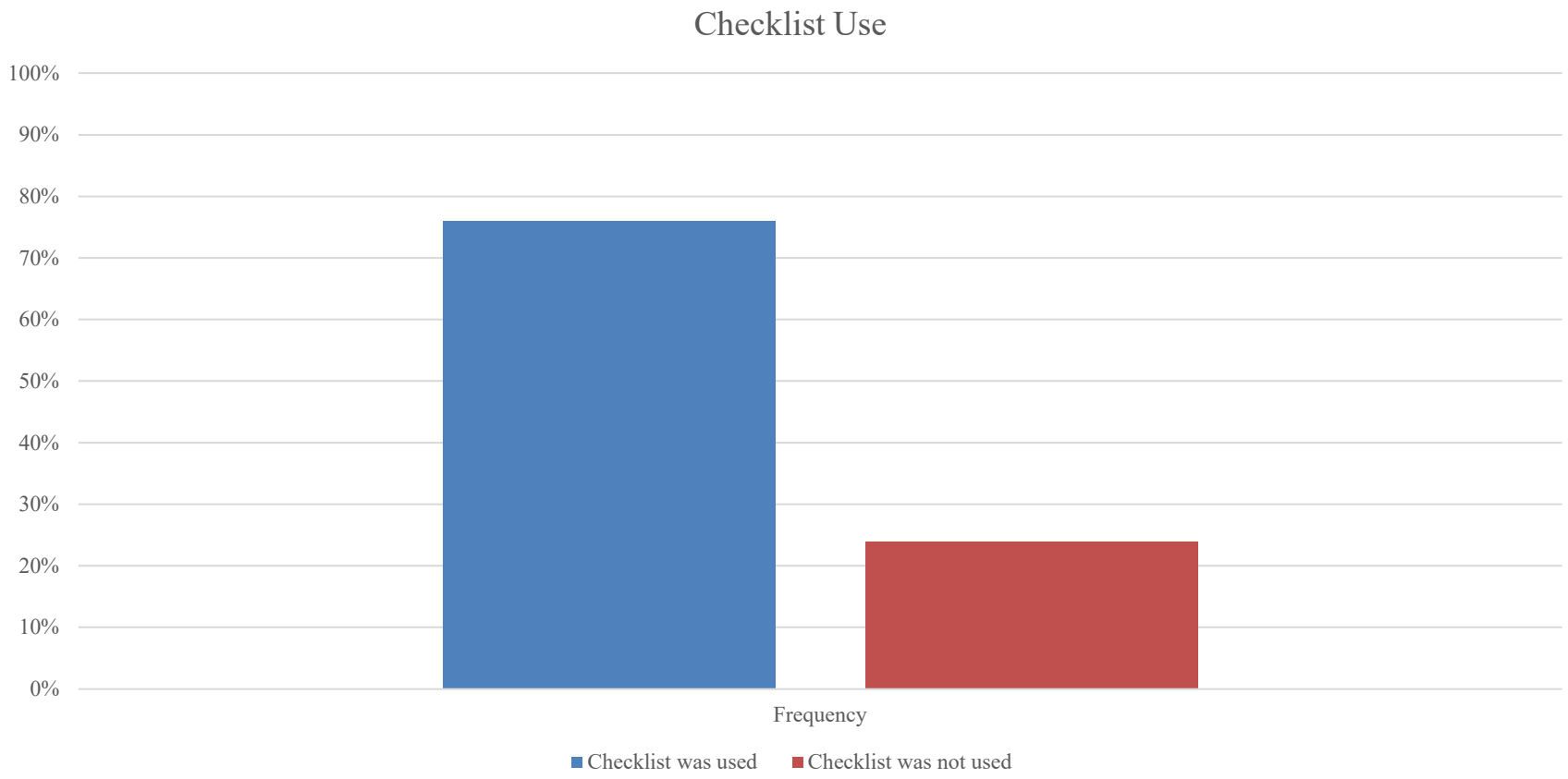
- Completion of CITI Training
- Compliant with HIPAA determined patient protected information.
- IRB Determination was completed by the organization's review board
- De-identified data collection through the removal of direct patient identifiers

Timeline

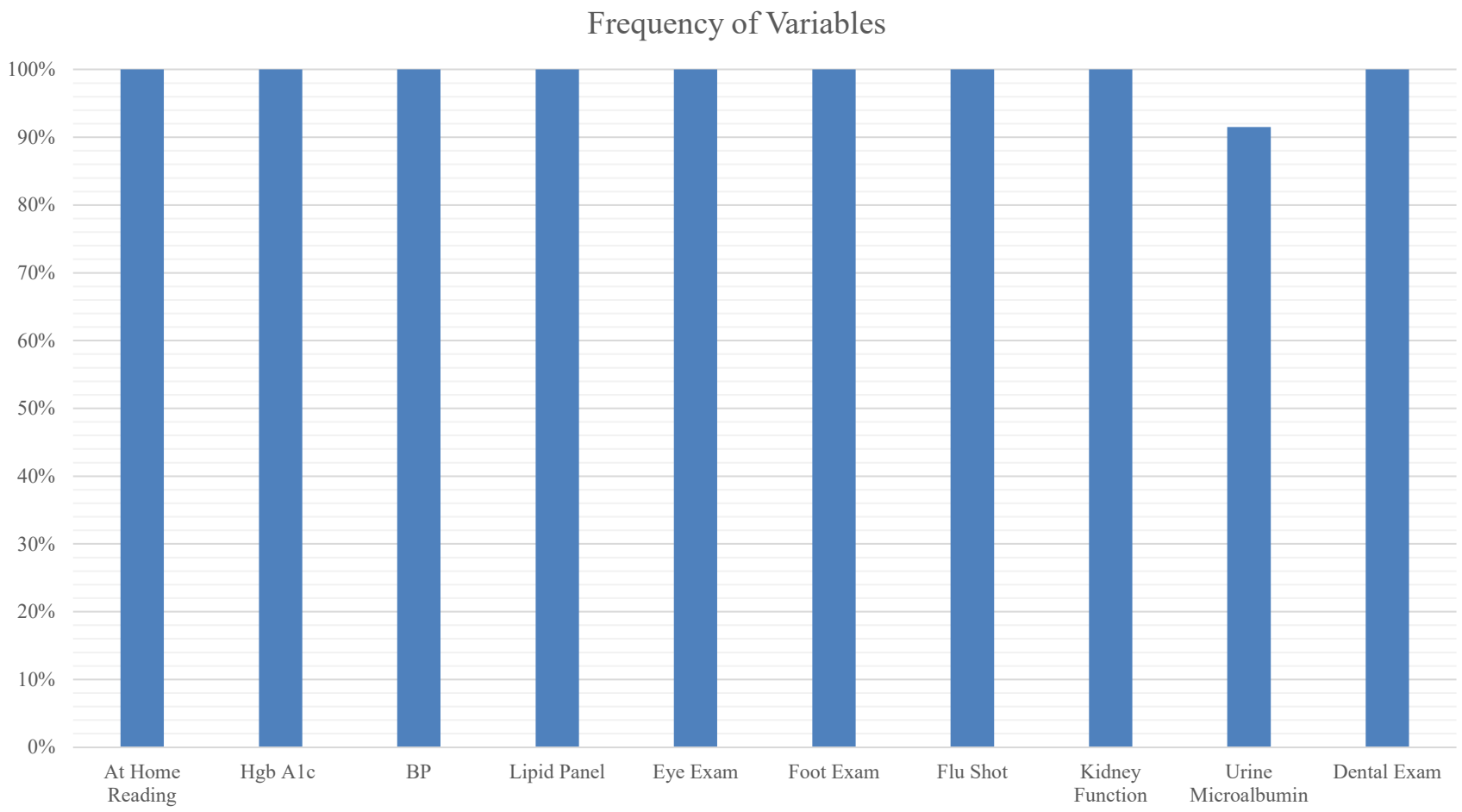
Activity	2022						2023			
	Previously Completed	Aug	Sep	Oct	Nov	Dec	Jan	Feb	March	Apr
Identification of project site needs	X									
Project mentor agreement	X									
Prospectus	X									
Organizational Assessment	X									
Literature Review	X									
IRB Application			X	X						
Project Proposal Defense					X					
Pre-Implementation						X	X			
Implementation								X	X	
Post-Implementation									X	
Final Project Defense										X

RESULTS

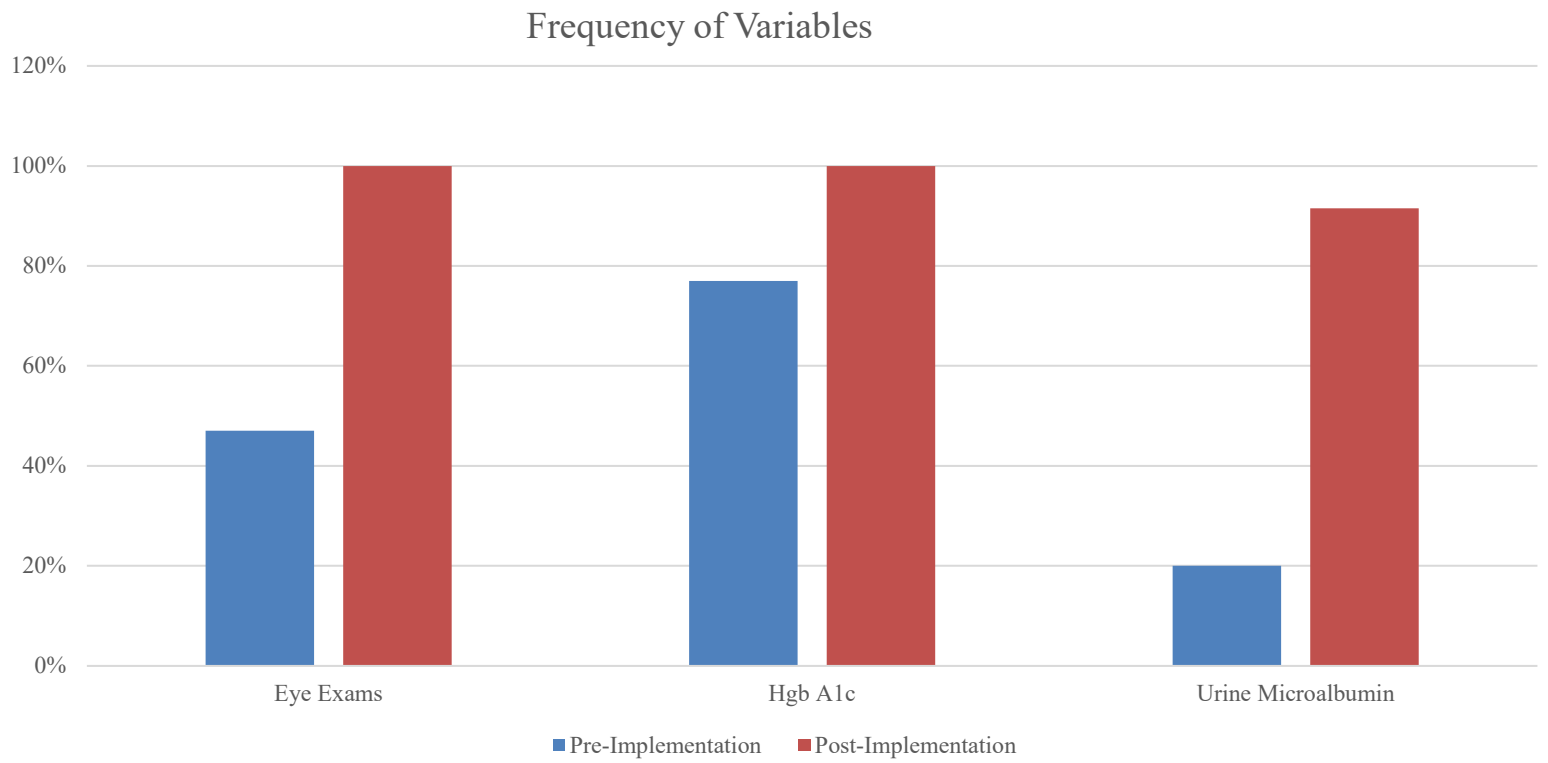
Checklist Adherence



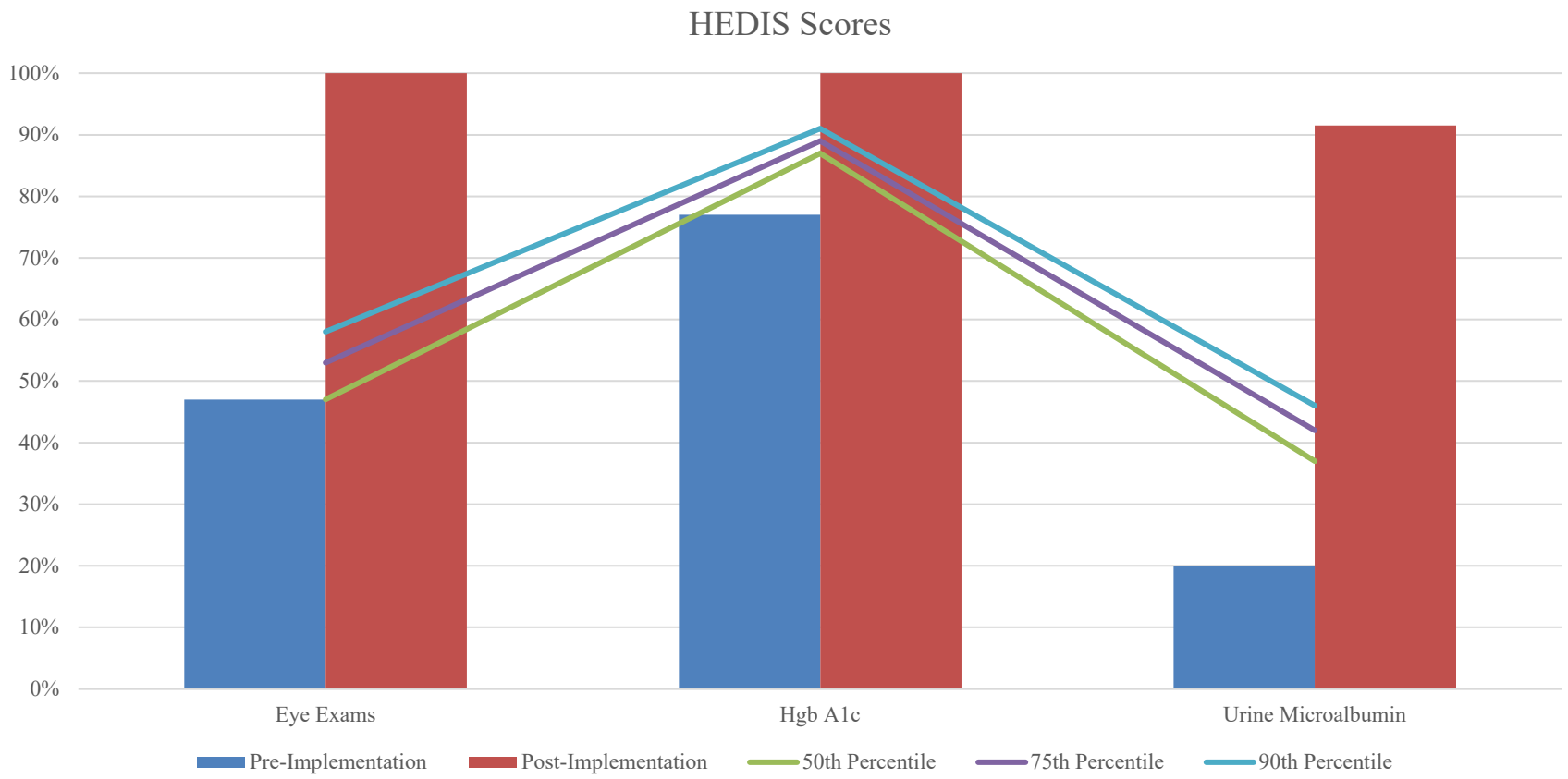
Frequency of Individual Variables



Frequency of Individual Variables Continued



HEDIS Measures



Budget & Resources

Doctor of Nursing Practice Project Financial Operating Plan	
Revenue	
Project Manager Time (in-kind donation) (Total Project)	12,000.00
Team Member Time:	
Site Mentor: Primary Care Physician	19,000.00
Medical Assistant	3,600.00
Consultations	
Statstician	100.00
MHC Director of Clinical Informatics (One Time Occurrence)	65.00
Labs/Precedures (Average per patient)	
Hemoglobin A1c x4	2,444.00
Urine mircoalbumin creatine ratio	356.90
Diabetic foot exam x4	9,400.00
TOTAL INCOME	46,965.90
Expenses	
Project Manager Time (in-kind donation) (Total Project)	12,000.00
Team Member Time:	
Site Mentor: Primary Care Physician	19,000.00
Medical Assistant	3,600.00
Consultations	
Statstician	100.00
MHC Director of Clinical Informatics (One Time Occurrence)	65.00
Equipment	
Cost of Space	0.00
Cost of Printing Materials	30.00
TOTAL EXPENSES	34,795.00
Net Operating Plan	12,170.90

Discussion

- Utilization of checklist
  - Standardized process
  - Easily accessible data
  - Increased provider adherence
- Redefine inclusion criteria
- Implications for practice
  - Early detection of disease related comorbidities
  - Increase organizational revenue

Limitations

- Small scale implementation
- Time constraints
- EHR transition

Sustainability Plan

- Approval and buy-in from organizational leadership and staff
- Continued project champion
- Embed checklist in EHR
- Further implementation

Conclusion

- A rural internal medicine clinic in a midwestern state identified care gaps for diabetes guideline adherence
- A quality improvement (QI) project was conducted to improve diabetes guideline adherence rates using a checklist
- Implementation of a checklist that monitored provider adherence to diabetes guidelines proved to be effective

Dissemination

- GVSU Final Defense
- Distribution of defense and manuscript to organizational stakeholders
- Submission of manuscript to Scholar Works

DNP Essentials Reflection

Essential I	Scientific Underpinnings for Practice	• OA • Literature Review
Essential II	Organizational and Systems Leadership for Quality Improvement and Systems Thinking	• Project leader • Stakeholder engagement
Essential III	Clinical Scholarship and Analytical Methods for Evidence-Based Practice	• Utilization of EBP strategies, frameworks, and measures
Essential IV	Information Systems/Technology and Patient Care Technology for the Improvement and Transformation of Heath Care	• Analyzation of current EHR/quality reporting system • Chart audits
Essential V	Health Care Policy for Advocacy in Health Care	• Advocated for new standardized practice to address diabetes guidelines
Essential VI	Interprofessional Collaboration for Improving Patient and Population Health Outcomes	• Meetings with faculty, clinical staff, and leadership
Essential VII	Clinical Prevention and Population Health for Improving the Nation's Health	• Decreasing comorbidities by increasing provider adherence • Disseminate findings to help lead further QI projects
Essential VIII	Advanced Nursing Practice	• Development, implementation, and analyzation of project

(American Association of Colleges of Nursing, 2006)

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