

University of Portland

Pilot Scholars

Nursing Graduate Publications and
Presentations

School of Nursing

12-6-2020

Use of the alphabet strategy to improve Diabetes care at a free chronic care clinic

Sandy Hanson

Follow this and additional works at: https://pilotscholars.up.edu/nrs_gradpubs



Part of the [Endocrinology, Diabetes, and Metabolism Commons](#), [Nursing Commons](#), and the [Public Health Commons](#)

Citation: Pilot Scholars Version (Modified MLA Style)

Hanson, Sandy, "Use of the alphabet strategy to improve Diabetes care at a free chronic care clinic" (2020). *Nursing Graduate Publications and Presentations*. 45.
https://pilotscholars.up.edu/nrs_gradpubs/45

This Doctoral Project is brought to you for free and open access by the School of Nursing at Pilot Scholars. It has been accepted for inclusion in Nursing Graduate Publications and Presentations by an authorized administrator of Pilot Scholars. For more information, please contact library@up.edu.

Use of the Alphabet Strategy to Improve Diabetes Care at a Free Chronic Care Clinic

Sandy Hanson

University of Portland School of Nursing

Abstract

Efficacious diabetes management in a free clinic setting is a challenging, costly, and labor-intensive process that requires established proficiencies to achieve American Diabetes Association (ADA) clinical guidelines. An electronic health record (EHR) template was created that includes a mnemonic based on the Alphabet Strategy to prompt providers to use the current diabetes clinical practice management guidelines. The alphabet strategy mnemonic is evidence-based for use in underserved populations and includes seven components based on the American Diabetes Association diabetic clinical practice guidelines: advice; blood pressure, cholesterol/creatinine; diabetes control; eye exam; foot exam; and guardian drugs. The implementation is based on the Chronic Care Model that aids individuals with chronic diseases to provide self-care, improves interactions between patient and provider, and facilitates data collection to improve care across community health systems, clinical practice, and the patient. Project outcomes measured include formal and informal assessment of provider template use, and feedback on the implementation process with descriptive and qualitative data analysis. The alphabet strategy EHR template showed improvement in cholesterol screening, creatinine screening, diabetic eye exam, and the foot exam including pulses and deep tendon reflexes. Overall the EHR template did not show significant improvement in the documentation of the seven facets, it did allow for a summarization of the core components of quality diabetic care. The Covid-19 pandemic caused significant barriers and contributed to less comprehensive diabetic visits.

Keywords: diabetes mellitus, uncompensated care, medically uninsured, checklists-utilization, quality improvement

Use of the Alphabet Strategy to Improve Diabetes Care at a Free Chronic Care Clinic

Introduction

A practice improvement project was designed to improve the quality of care to the diabetic patients of Battle Ground HealthCare (BGHC). BGHC is a free clinic and offers care for chronic conditions in Battle Ground, Washington. Efficacious diabetes management in a free clinic setting is a challenging, costly, and a labor-intensive process that requires established proficiencies to achieve American Diabetes Association (ADA) clinical guidelines. An electronic health record (EHR) template was created that includes a mnemonic based on the alphabet strategy developed by Patel & Morrissey (2002) to prompt providers to use the current diabetes clinical practice guidelines (American Diabetes Association, 2020). The seven EHR template components are all related to quality diabetes care and include advice, blood pressure, cholesterol/creatinine, diabetic control, eye exam, foot exam, and guardian drugs. Each subject was asked to use the EHR template when they saw patients with a diabetes diagnosis during regular clinic visits, and to document they discussed or monitored each of the seven components. To assess success of the EHR template, formal data collection on template use, completeness, and appropriateness were collected. Informal data collection included a survey of participants about the project improvement project.

Background and Significance

Diabetes Mellitus (DM) is expensive to treat and it creates a significant burden on the United States (U.S.) population (American Diabetes Association [ADA], 2018 & Centers for Disease Control and Prevention [CDC], 2017). In 2017, DM type 2 accounted for 27.27 to 28.785 of the 30.3 million people who have diabetes in the U.S. (CDC, 2017). The direct medical costs for diabetes mellitus types 1 and 2 accounts for 73% of the \$327 billion in total

estimated cost of care for those diagnosed with diabetes in the U.S. (ADA, 2018). From 2012 to 2017, the economic burden of diabetes increased by 26% due to an increase diabetes prevalence and the increased cost for care per person.

The American Diabetes Association (2020) publishes a set of comprehensive clinical guidelines to help reduce diabetic complication risk through the use of preventive care standards. Yet, many diabetic patients do not receive continual and consistent preventative diabetic care (Rushforth, McCrorie, Glidewell, Midgley, & Foy, 2016). Several patient and provider barriers may impede the patient's ability to receive preventative diabetic care.

In Washington state, Medicaid adopted the Medicaid expansion to cover adults and parents if their income is no more than 138% of the federal poverty line (FPL), even though 22% of the Washington population is low-income and falls under 200% FPL (The Henry J. Kaiser Family Foundation [KFF], 2019). The Medicaid expansion benefited patients with diabetes but still left a large population that made up to 300% FPL without access to regular preventative medical care. Many of these people seek care in emergency rooms and free health clinics, resulting in poor care continuity or limited resources for their diabetes care.

Many clinicians express a lack of knowledge about the clinical guidelines, cite deficient available resources, and report feeling rushed for time to address all aspects of quality diabetic care (Rushforth, McCrorie, Glidewell, Midgley, & Foy, 2016). If the above barriers are not addressed and patients do not receive appropriate diabetic care, complications frequency increases along with the economic disease burden. The purpose of this QI project was to implement and evaluate a care delivery model integrating the alphabet strategy based on the Chronic Care Model to improve compliance with the current diabetic clinical guidelines.

Problem Statement

A clinical problem identified at BGHC was failure to achieve ADA clinical guideline care for their diabetic patients. Low resources were identified as BGHC clinic's prevalent concern and included lack of continuity of care due to a rotating volunteer staff, limited funding, obsolete policies and procedures, and a deficiency in volunteer training. The following ADA clinical guidelines were not consistently ordered, performed accurately, or documented by the clinicians and support staff: blood pressure (BP), body mass index (BMI), diabetes self-care education or classes, interventions for complications (abnormal BP, elevated lab test, poor glycemic control), lab assessments (creatinine, eGFR, lipids, microalbuminuria, HbA1c), annual foot exams, eye exam referral, and use of guardian drugs (aspirin, statins, and ACE/ARBs).

Objective and Aims

The practice improvement project involved creating and implementing an electronic health record template based on the Alphabet Strategy mnemonic that providers used to help improve the care quality of their diabetic patients. The mnemonic is evidence-based for use in underserved populations (Robinson, Lang, & Clippinger, 2019) and is based on the ADA diabetic clinical practice guidelines (American Diabetes Association, 2020). Project outcomes measured included formal and informal assessment of provider template use and feedback on the implementation process.

Evidence for Practice Change

A literature review was initiated in order to design and implement a practice change to improve diabetic patient care at BGHC. The search terms "diabetes mellitus", "uncompensated care", and "guideline adherence" were used to find articles in the CINAHL and MEDLINE databases. The first search lead to three articles with studies discussing a mnemonic to help

achieve quality diabetes care. The first article found was *Quality of diabetes care worldwide and feasibility of implementation of the Alphabet Strategy: GAIA project (Global Alphabet Strategy Implementation Audit)* (Lee et al., 2014). The second article was *Alphabet Strategy for diabetes care: A multi-professional, evidence-based, outcome-directed approach to management* (Lee et al., 2015). The third article was *The DICE project: Diabetes inpatient care evaluation* (Varadhan et al., 2007). A second search was performed after determining the QI project's focus on a template to help improve diabetes care. The above search terms were used along with the addition of "checklists-utilization" in the CINAHL and MEDLINE databases. The second search found the article *Impact of the Alphabet Strategy on improving diabetes care at a free health clinic* (Robinson et al., 2019). This study is evidence-based and describes the use of a mnemonic with each letter of the alphabet representing an ADA recommendation. A literature review table with the above articles is found in Appendix A.

Implementation Plan

The Chronic Care Model (CCM) (figure 1) describes deficiencies common in the care of those with chronic diseases. These include hurried providers not providing recognized care guidelines, a lack of coordinated and planned care, lack of active follow-up warranting the best outcomes, and patients lacking a solid foundation to manage their illnesses (Improving Chronic Illness Care, 2020). Transformation of both community and health systems aids in overcoming the deficiencies which lead to improved outcomes.

The CCM expands the existing resources of the health system, creates new resources, and encourages collaboration between patients and providers and patients to be proactive in their health and healthcare. The CCM aims to improve and enhance crucial interrelated elements of the health system: organization of healthcare, self-management support, decision support,

delivery system design, clinical information systems, and community resources and policies (Baptista et al., 2016 & Improving Chronic Illness Care, 2020).

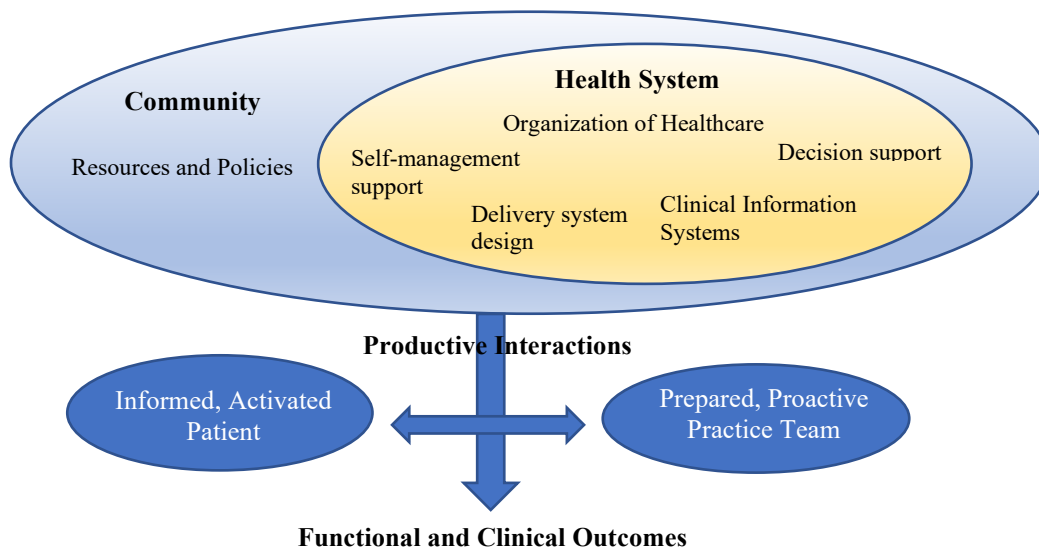


Figure 1. The Chronic Care Model

The organization of healthcare aims to “create a culture, organization and mechanisms that promote safe, high quality care” (Improving Chronic Illness Care, 2020, para. 1). Leadership must promote quality improvement principles and strategies to comprehensively change the system through clear goals and incentives. Assurance of open and methodical management of errors and quality issues improve care (Improving Chronic Illness Care, 2020). Developing and supporting care coordination agreements across organizations help aid communication and data sharing to improve patient access across healthcare settings.

Delivery system design promotes successful, organized clinical care and self-management support through the use of evidence-based care. Team member roles are defined and distributed to best meet the needs of patients with complex needs through case management, regular follow-up, and offering culturally competent care (Improving Chronic Illness Care,

2020). Ensuring patient's understanding of their healthcare needs through monitoring health literacy and through planned interactions improve health outcomes.

Decision support tools and evidence-based guidelines help promote quality clinical care in daily practice. Patient education regarding the current evidence-based guidelines for their chronic disease boosts participation and mutual decision-making in their care management (Improving Chronic Illness Care, 2020). Ongoing training for providers ensures that those who care for patients with chronic diseases are up to date on the latest guidelines and incorporate the most current scientific evidence in practice.

Clinical information systems are a key resource in providing efficient and effective care. Providing care to patients with chronic illnesses requires the ability to set reminders for needed care services, the ability to access patient data efficiently, and to monitor population data to help plan care (Improving Chronic Illness Care, 2020). Clinical information systems help coordinate care by sharing information regarding individual patients or populations to improve care planning. Examination of quality improvement efforts and performance metrics are made simpler through clinical information systems.

Self-management support encourages patients to actively manage their health. Patients are educated on ways to manage their disease through assessment, action planning, goal setting, problem solving, and follow-up (Improving Chronic Illness Care, 2020). Using a collaborative approach, providers and patients work together to help patients accept the responsibility for their decisions and behaviors by recognizing the patient's central role in their health outcomes.

Community resources and policies are essential in helping patients manage their chronic illnesses. Health systems must recognize they cannot offer all needed resources to manage all chronic disease aspects. Looking outside the health system for available evidence-based

community programs can enhance care for their patients without doubling the effort (Improving Chronic Illness Care, 2020). Creating a resource list for the available resources in your community from senior centers, health insurance companies, state departments, and other health agencies will improve patient care and outcomes. Patient referral to other medical, state, or federal organizations improves the available resources for them to help manage their chronic illness (Improving Chronic Illness Care, 2020).

The CCM was applied in the BGHC to impact the process improvement project with the aim of improving care to diabetic patients. BGHC has a robust self-management support system, community resources and policy systems in place. The comprehensive care model engages the use of evidence-based healthcare system changes to meet the needs of their patients through partnerships between patients, community, and the health system.

The alphabet strategy template aims at improving diabetic care in any setting and is based on the CCM. The alphabet strategy aims to optimize health care organization, diabetes self-management support, decision support, delivery system design, clinical information systems, and community resources and policies through the following process of implementation.

Implementing the CCM improves health outcomes for chronic diseases through improving the health system, community, and collaboration. Understanding the potential barriers and facilitators when implementing the CCM helps improve the transition. Understanding the deficiencies within the health system allows communication and collaboration to make changes that work for all involved.

Methodology

Setting

The 501(c)3 free clinic in Battle Ground, Washington serves adult populations (age 18 or older) with chronic conditions who are at 300% or below of the FPL. The clinic staff is made up of volunteers and has consistent turnover. Due to the Covid-19 pandemic, an in-person clinic happens twice a month, once a week for three hours with up to six spots for scheduled appointments and a virtual clinic is offered twice a month for two hours once a week. Patients often do not see the same volunteer clinical provider which leads to a lack of continuity of care.

Participants and Participant Recruitment

There were a total of four physicians that were participants in this QI project. The subjects (described above) were recruited for participation if they volunteered at BGHC during the project period. The participants had the opportunity to opt out of project participation, as participation was voluntary. The QI project was conducted over a six-week period.

Project Interventions

The main project intervention was the implementation of an EHR template to help providers meet the ADA clinical care guidelines. The template was based on the alphabet strategy for diabetic complication reduction. The template was imbedded into the clinics EHR system, accessed by typing in the dot phrase (Text Macro) .DMAAlphabetStrategy in the assessment and plan section, and is found in Appendix B. Pocket ADA guides were placed at each provider desk in the exam rooms. A PowerPoint was used educate providers on how to follow the alphabet strategy. The PowerPoint was printed and placed at the provider desk and sent electronically to each provider by the clinic's office manager. At the end of the six-week

project implementation, the clinicians were asked to participate in an anonymous survey about the project improvement project (Appendix C).

Benefits/Risks

The possible benefits for the quality improvement project fall into two distinct areas. The physical well-being of patients, and the psychological/emotional well-being of participants. The physical well-being of patients might improve due to improved quality diabetic care. The psychological and emotional well-being of participants might improve due to the ease of use of the alphabet strategy template and patient outcomes improvement.

The risk to human subjects was low as the implementation of an EHR template falls in line with clinical care, documentation, and processes they currently execute in their practice. It was possible using the new template would lengthen patient encounter times or cause mild annoyance to participants. No adverse outcomes occurred during project implementation.

Consent Procedures

Informed consent was obtained through a written information sheet according to Title 45 Part 46 Section 116 of the federal office of Human Research Protection regulations. A copy of the written information sheet is in Appendix D. The written information sheet was emailed to each participant a week prior to the quality improvement project initiation. Participants had one week to respond to the email opting out of participation in the project improvement process.

Resources Needed/Economic Considerations

Economic and resource considerations for the quality improvement project included printed materials and lamination of the printed materials. The startup costs for the project included printed materials and the cost of lamination totaling \$152.07.

Evaluation Plan

Data was collected via chart review and included de-identified and aggregate data only for pre-implementation and post-implementation. During the project implementation, the principal investigator collected informal data from providers regarding usability and clinical relevance of the template. This data was recorded in aggregate and no identifying information was recorded. The Gantt chart outlining the timeline of the QI project can be found in Appendix E.

Results

The alphabet strategy EHR template was used 60% of the time during the implementation period. A comparison between the six-week period prior to implementation of the alphabet strategy EHR template and the six-week QI project period did not show considerable improvement in documentation of the seven facets of quality diabetic care based on the ADA clinical care guidelines (Table 1). Improvements were noted in the documentation and screening in the following areas: cholesterol screening, creatinine screening, diabetic eye exam, and the foot exam including pulses and deep tendon reflexes. Aggregate data collection for pre-intervention can be found in Appendix F and post-intervention can be found in Appendix G.

Table 1. Pre- and Post-Implementation Comparison

	Pre-Intervention Totals (%) *	Post-Intervention Totals (%) **
Advice		
<i>Smoking</i>	11%	20%
<i>Diet</i>	78%	40%
<i>Ideal Weight</i>	67%	40%
<i>Exercise</i>	78%	40%
<i>Diabetic Education</i>	33%	20%
Blood Pressure		
<i>BP documented</i>	78%	40%
Cholesterol/Creatinine		
<i>Cholesterol screening</i>	33%	40%
<i>Creatinine screening</i>	11%	40%
Diabetic Control		
<i>HbA1c screening</i>	100%	80%

<i>Home CGB checks</i>	78%	60%
<i>Episodes of hypoglycemia or hyperglycemia</i>	78%	60%
Eye Exam		
<i>Diabetic eye exam ≤ 1 year</i>	0%	20%
<i>If > 1-year, referral placed</i>	0%	0%
Foot Exam		
<i>Monofilament</i>	0%	0%
<i>Foot exam (pulses/reflexes)</i>	0%	20%
Guardian Drugs		
<i>Assessment</i>	89%	40%

*majority of visits in-person; **majority of visits by telehealth

A single participant survey was returned by the end of the six-week QI project implementation. The following is the results of the returned survey (Table 2):

Table 2. Participant Survey Results

Survey Question	Response
1. How often did you implement the EHR template based on the alphabet Strategy mnemonic for your diabetic patients?	Always
2. How often did you discuss or address each of the seven facets of the EHR template with your diabetic patients?	0 – 24% of the time
3. Do you feel the diabetic quality measures and clinical processes provided to your diabetic patients improved since using the EHR template?	Yes, “eventually will”
4. Do you feel your knowledge of the American Diabetes Association diabetic clinical care guidelines has improved since the implementation of the EHR template?	Yes
5. Do you feel the EHR template improved your documentation of diabetic quality measures and clinical processes provided to your diabetic patients?	Yes, “Work in progress. These were more limited encounters, less comprehensive.”

Informal data collection was completed through individual conversations between the PI and the participant during each of the clinic days (Table 3).

Table 3. Informal Data Collection

Date	EHR Template Used	Appropriateness of EHR Template	Clinical Relevance	Comments
09/08/2020	N/A	N/A	N/A	No diabetic patients
09/15/2020	Y	Y	Y	May not remember to use if I have to use a dot phrase. Can there be a way to auto populate the template in all diabetic patient's charts?
09/22/2020	N/A	N/A	N/A	No diabetic patients
09/29/2020	N/A	N/A	N/A	No diabetic patients
10/06/2020	Y	N/A	N/A	No comment
10/13/2020	N	N/A	N/A	No comment

After receiving feedback on September 15, 2020 from one participant, a second pathway was created to include the EHR template into a diabetic patient's visit prior to the patient seeing the provider. During the nurse intake process, the phrase "Diabetes Mellitus" or Follow up: Diabetes Mellitus" was typed in under the reason for the visit for the EHR template to automatically populate the template. This secondary access was available starting on September 22, 2020. The addition of a second pathway to populate the EHR template into the patient's visit lessened the need of the participant to remember to manually enter to the EHR template.

Discussion

The quality improvement project was not able to achieve significant results with the use of the alphabet strategy EHR template. The alphabet strategy EHR template was implemented 60% of the time during the six-week implementation period. Improvement was seen in three of

the seven facets covered in the alphabet strategy mnemonic EHR template. The six-week pre-implementation data was collected from primarily in-person visits and five out of six visits completed during the project implementation were performed by telehealth. Telehealth visits were less comprehensive compared to the in-person visits. When asked through the survey, “Do you feel the EHR template improved your documentation of diabetic quality measures and clinical processes provided to your diabetic patients?” one participant stated, “Work in progress. These were more limited encounters, less comprehensive”.

Provider education was provided through a PowerPoint presentation that was emailed a week prior to the start of the QI project implementation. This author is unsure if the participants read the email and/or read through the PowerPoint education for using the alphabet strategy EHR template. The PI was available by telephone, email, and was present at the site on each clinic, although the participants typically were not present as they were performing the telehealth visits from their homes. No time during the six-week implementation process did the PI have questions, thoughts or concerns expressed by the participants on the education provided.

The goal of the alphabet strategy EHR template was to aid the participants to remember the seven facets of quality diabetic care according to the American Diabetes Association’s clinical guidelines. The EHR template summarized important information in caring for diabetic patients into a concise paragraph rather than requiring providers to search throughout the patient’s chart as done previously. The alphabet strategy EHR template is sustainable through continued process analyses, improved designs, and adjustments of the process.

Limitations and Recommendations

Limitations in a quality improvement project can arise due to many issues associated with sample size, education, and processes. This project had a small sample size due to telehealth

clinics and Covid-19 pandemic (patients were not wanting to have in-person visits). Education provided through a PowerPoint emailed to the participants was not adequate in covering the facets of the template and current ADA diabetic care guidelines. Email fatigue was a barrier in the participants opening the email containing the educational PowerPoint and/or reading the PowerPoint. Telehealth visits complicated the ability to meet certain needed point of care testing, physical exams, and limited patient advising. Recommendations for future work include implementing the alphabet strategy EHR template in a larger clinic, with in-person visits, providing more formalized education to participants, and ensuring documentation standards are consistent with clinics that bill to insurance companies for their services.

Conclusions

This quality improvement project revealed the use of the pneumonic alphabet strategy EHR template to help improve quality diabetic care at a free clinic may have overwhelmed the volunteer providers as they switched to telehealth. The COVID-19 induced switch to telehealth was a new concept for some of the providers. The change to telemedicine required learning how to use a video system to gather data and document on the patient. Unfortunately, the telehealth visits did not offer as comprehensive a visit as face to face visits offered prior to the start of the pandemic. The data from this QI project will be shared with the clinic director, the medical director and other staff and volunteer members as deemed appropriate by the clinic and medical director.

This author suggests the clinic provide an in-person or Zoom education to all providers and nurses to help educate on the EHR template and the current American Diabetes Association clinical guidelines. Although the telehealth visits are not as comprehensive as in-person visits, continued use of the alphabet strategy EHR template is recommended. Use of the EHR template

should be considered for use by the care management nurses in observing the seven components of quality diabetic care.

References

- American Diabetes Association. (2018). Economic costs of diabetes in the U.S. in 2017. *Diabetes Care*, 41(5), 917–928. <https://doi.org/10.2337/dci18-0007>
- American Diabetes Association. (2020). Standards of medical care in diabetes: 2020 abridged for primary care providers. *Clinical Diabetes Journal*, 38(1), 10–38. <https://doi.org/10.2337/cd20-as01>
- Baptista, D. R., Wiens, A., Pontarolo, R., Regis, L., Torelli Reis, W. C., & Correr, C. J. (2016). The chronic care model for type 2 diabetes: A systematic review. *Diabetology & Metabolic Syndrome*, 8(7). <https://doi.org/10.1186/s13098-015-0119-z>
- Centers for Disease Control and Prevention. (2017). *National diabetes statistics report, 2017: Estimates of diabetes and its burden in the United States* (CDC No C5279910-A). Centers for Disease Control and Prevention, U.S. Dept of Health and Human Services. <https://www.cdc.gov/diabetes/pdfs/data/statistics/national-diabetes-statistics-report.pdf>
- Improving Chronic Illness Care. (2020). *The chronic care model*. http://www.improvingchroniccare.org/index.php?p=The_Chronic_Care_Model&s=2
- Lee, J. D., Saravanan, P., & Patel, V. (2015). Alphabet strategy for diabetes care: A multi-professional, evidence-based, outcome-directed approach to management. *World Journal of Diabetes*, 6(6), 874–879. <https://doi.org/10.4239/wjd.v6.i6.874>
- Lee, J. D., Saravanan, P., Varadhan, L., Morrissey, J. R., & Patel, V. (2014). Quality of diabetes care worldwide and feasibility of implementation of the alphabet strategy: GAIA project (global alphabet strategy implementation audit). *BMC Health Services Research*, 14(467). www.biomedcentral.com

- Patel, V., & Morrissey, J. (2002). The alphabet strategy: The ABC of reducing diabetes complications. *British Journal of Diabetes & Vascular Disease*, 2(1), 58–59.
<https://doi.org/10.1177/14746514020020010701>
- Robinson, J., Lang, B., & Clippinger, D. (2019). Impact of the alphabet strategy on improving diabetes care at a free health clinic. *Journal of Community Health Nursing*, 36(4), 157–164. <https://doi.org/10.1080/07370016.2019.1665323>
- Rushforth, B., McCrorie, C., Glidewell, L., Midgley, E., & Foy, R. (2016). Barriers to effective management of type 2 diabetes in primary care. *British Journal of General Practice*, 66(643), e114–e127. <https://doi.org/10.3399/bjgp16X683509>
- Stellefson, M., Dipnarine, K., & Stopka, C. (2013). The chronic care model and diabetes management in US primary care settings: A systematic review. *Preventing Chronic Disease*, 10(E26). <https://doi.org/10.5888/pcd10.120180>
- The Henry J. Kaiser Family Foundation. (2019). *Medicaid in Washington*.
<http://files.kff.org/attachment/fact-sheet-medicare-state-WA>
- Varadhan, L., Sear, P., Wilson, J., Gopinath, A., Morrissey, J., & Patel, V. (2007). The DICE project: Diabetes inpatient care evaluation. *Journal of Diabetes Nursing*, 11(2), 68–72.
[Gale Academic Onefile](#)

Appendix A

Evaluation Table

Citation (Author, Year, Title)	Study Purpose, Design, and Method	Sampling Method Sample Size & Characteristics	Major Variables (and their definitions)	Measurement (+ Reliability/Validity of those measures)	Data analysis, results, findings	Strengths & Limitations Regarding Validity	Appraisal: Worth to Practice
<p>Lee, Saravanan, & Patel (2015) Alphabet Strategy for diabetes care: A multi-professional, evidence-based, outcome-directed approach to management</p>	<p><u>Purpose:</u> To see if checklist based on diabetic care processes improve diabetic care.</p> <p><u>Design:</u> The study design was to look at pre and post implementation audits in an outpatient setting with type 2 diabetes patients.</p> <p><u>Method:</u> Implementation of a template checklist at a diabetes clinic.</p>	<p><u>Sampling method:</u> Consecutive</p> <p><u>Sample Size:</u> 420 patients attending an outpatient diabetic clinic.</p> <p><u>Characteristics:</u> Average age – 58 years old. Mean duration of diabetes – 5 years. Male – 54% Ethnicity: White/Caucasian – 87% South Asian (Indo-Asian) – 11%</p>	<p><u>Independent variable:</u> AS</p> <p><u>Dependent variables:</u> A-SMK B C-TC LDL HDL Cr D-HbA1c E F G-ASA ACEI/ARB Statin</p>	<p><u>Measurements:</u> The 7 factors in the AS checklist are adapted from the components of the National Service Framework for diabetes care.</p>	<p><u>Data analysis:</u> Pre and post-test with the intervention of the AS on the dependent variables. Multiple audits were performed with two in the same clinic as a continuation of the first study. The first two audits were then compared to a clinical trial and then a third study was conducted in low-resource diabetes clinic.</p> <p><u>Results:</u> Audit 1 showed: SMK: not statistically significant. B: Reduction of systolic and diastolic blood pressure by 6 points. TC: reduced by 0.6 mmol/L.</p>	<p><u>Strengths</u> include long term audits in the same clinic with the first over 5 years and the second over 2 years. Comparison to clinical trial standards using evidence-based medicine strategies.</p> <p><u>Weaknesses</u> include no real data on how the AS was implemented in each of the clinics, no reports on the use of an EHR or how the</p>	<p>Shows the use of a checklist type strategy that touches on the 7 criteria of the diabetic target care processes can improve outcomes for diabetic patients and help prevent future morbidity and mortality along with costly complications. The use of a checklist to help guide diabetic care to adhere to the ADA</p>

		<p>African-Caribbean – 2% Secondary audits 2 years after completing the first audit included a sample size of 1,071 subjects at the same clinic.</p>			<p>HbA1c: a significant deterioration in diabetes control with a 0.4% increase. E: increased by 10.5%. F: increased by 13.7%. Guardian drugs- ASA: improved by 54.5%. ACEI/ARB: increased by 41%. Statin: Increased by 38.2%.</p> <p><u>Findings:</u> Audit 1: Found the AS resulted in statistically significant (P value \leq 0.001) change in average B, mean total and HDL cholesterol, performance of eye and foot exams and use of guardian drugs. Audit 2: Found continued improvement in a continuation study with statistically significant changes in TC and LDL, performance of foot exams, and use of statins. Audit 3: Found Audit 1 and 2 had statistically</p>	<p>implementation was completed.</p>	<p>diabetic guidelines can improve portions of the 7 components.</p>
--	--	---	--	--	---	--------------------------------------	--

					<p>significant change when compared to clinical trial (Steno-2) in TC, use of guardian drugs (ASA, ARB), and UKKPDS in B (systolic and diastolic), and HbA1c.</p> <p>Audit 4: Pre and post implementation of the AD at a low-resource clinic showed statistically significant change in TC, lipid profile, creatinine, proteinuria, and guardian drugs (ASA, ACEI/ARB, statin, or all three).</p>		
<p>Lee, Saravanan, Varadhan, Morrissey, & Patel (2014) Quality of diabetes care worldwide and feasibility of implementation of the Alphabet Strategy: GAIA project (Global Alphabet Strategy)</p>	<p><u>Purpose:</u> To assess the practicality of the AS in a low socioeconomic setting.</p> <p><u>Design:</u> A pilot study implementing the AS in a low-resource setting with pre and post data collection was implemented in</p>	<p><u>Sampling Method:</u> Random for pre-test. Consecutive post-test</p> <p><u>Sample Size:</u> 100 consecutive patients.</p> <p><u>Characteristics:</u> Low-income Diabetic</p>	<p><u>Independent variable:</u> AS</p> <p><u>Dependent variables:</u> A- SMK BMI WT B- TC LP Cr- PU D-</p>	<p><u>Measurements:</u> The 7 factors in the AS checklist are adapted from the components of the National Service Framework for diabetes care. Substitutions were made for HbA1c to FBG/PPG, Eye exam was changed to a fundus examination, and PU was substituted for MU.</p>	<p><u>Data analysis:</u> A paired t-test of the pre and post implementation comparison of the AS template checklist components and comparing QOF scores using a chi-squared test.</p> <p><u>Results:</u> Advice: -BMI: no change Smoking status: no change SMK: No change. B: no change TC: 39% improvement</p>	<p><u>Strengths:</u> use of AS checklist template in low-resource country that was adapted to local resource availability.</p> <p><u>Weaknesses:</u> The study was performed in a strictly diabetic clinic where patients are seen only for</p>	<p>The use of the AS template checklist was used in a low socioeconomic country that have few resources. Improvement was found in levels of cholesterol and guardian drugs. Certain aspects of the checklist were not followed</p>

<p>Implementation Audit)</p>	<p>a country with limited THE%. <u>Method:</u> An AS checklist template was implemented at a diabetic clinic that employed one diabetologist, a receptionist, a dietician, and a nurse.</p>		<p>FBG PPG E- F- G- ASA ACEI/ARB Statin QOF score</p>		<p>LP: 54% improvement Cr: 44% improvement. PU: 45% improvement FBG/PPG: 56% improvement. E: 2% improvement F: 5% improvement. Guardian drugs: ASA: 65% improvement ACEI/ARB: 50% improvement Statin: 33% improvement ASA+ACEI/ARB+Statin: 18% improvement. QOF: 16-point improvement <u>Findings:</u> Statistically significant change was made in C (TC, LP, Cr, PU), in G (ASA, ACEI/ARB, Statin therapy, & all three), and the QOF score. Advice, blood pressure, eye and feet examination did not show significant change.</p>	<p>their diabetes. The clinic typically sees 30 patients per day and only 100 patients were assessed.</p>	<p>as those services were not available. The AS checklist shows to be universally adventitious in adhering to the 7 components of the AS.</p>
<p>Robinson, Lang, & Clippinger (2019) Impact of the Alphabet Strategy on</p>	<p><u>Purpose:</u> To improve the number of uninsured patients with diabetes to</p>	<p><u>Sampling Method:</u> Convenience sample <u>Sample Size:</u></p>	<p><u>Independent variable:</u> AS checklist</p>	<p><u>Measurements:</u> Use of the AS checklist by the providers. Documentation of meeting the</p>	<p><u>Data analysis:</u> A paired-samples <i>t</i>-test and frequency statistics. <u>Results:</u></p>	<p><u>Strengths:</u> The study had high enrollment and participation rates. The</p>	<p>This study was performed at a smaller free clinic that is very similar to my project</p>

<p>improving diabetes care at a free health clinic</p>	<p>receive care according to the ADA guidelines.</p> <p><u>Design:</u> The study design was to look and pre and post implementation of the AS checklist for improvement in the 7 components of diabetic care in all included patients.</p> <p><u>Method:</u> Implement of an AS checklist for all patients that met inclusion criteria.</p>	<p>34 patients enrolled in the project that met inclusion criteria. A 91% enrollment rate.</p> <p><u>Characteristics:</u> Diabetic 18 years or older Speak English or Spanish</p>	<p><u>Dependent variables:</u> A- SMK BMI WT NU B- BPI C- TC Cr- PU D- HbA1c E- F- G- ASA ACEI/ARB Statin</p>	<p>components of the AS checklist as described in the dependent variables. The AS checklist is based off of the ADA diabetic care guidelines. The components of the AS checklist are common internationally.</p>	<p>Completion percentages for the following: HbA1c: 97.1% PU: 50% LP: 47.1% Not statistically significant Cr: 50% Not statistically significant Eye exam referral: 79% Eye exam complete: 32.4% F: 91.2%</p> <p>Completion of project goals:</p> <ol style="list-style-type: none"> 1. Implementation of AS checklist: 91% 2. Education documented 100%; DM education class and improved scored on SKILLD questionnaire-59% 3. Documented blood pressure with intervention if outside of goal: 100% 4. LP, Cr, PU done if not done in last year: LP-67.7%; Cr-73.5%; PU58.8% 5. HbA1c in the last 3-6 months documented in chart with lifestyle 	<p>study occurred over a 12-week period.</p> <p><u>Weaknesses:</u> There were only 3 clinicians and one nurse involved in the study, which questions whether the project would work in a clinic with a larger staff.</p>	<p>site. The study site had only three clinicians and was met with similar barriers such as transportation, lack of valid contact information for patients. Resources were low at the study clinic which altered the ability to offer point-of-care testing for some of the components.</p>
--	---	---	---	--	--	--	---

					<p>or medication interventions: 100%</p> <p>6. Eye exam referral (79%) with completion of the eye exam (32%)</p> <p>7. Foot exam documented: 91%</p> <p>8. Guardian drug prescribed if indicated: 100% had initiated on ASA and/or ACEI/ARB and 91% started on Statin when indicated.</p> <p><u>Findings:</u> Statistically significant findings were found in the implementation of the AS checklist, participation in DM education class, improved SKILLD scores, blood pressure and HbA1c measurement and intervention, eye exam referrals and completed exams, and appropriate use of guardian drugs. Foot examinations, LP, PU,</p>	
--	--	--	--	--	---	--

					and Cr testing goals were not statistically significant although improvements were seen across all components.		
<p>Varadhan, Sear, Wilson, Gopinath, Morrissey, & Patel (2007) The DICE project: Diabetes inpatient care evaluation</p>	<p><u>Purpose:</u> To evaluate the impact of the AS on the management of inpatient diabetics.</p> <p><u>Design:</u> To analyze retrospectively 100 diabetic patients based on the AS checklist and compare it to the first 100 people newly admitted to the hospital with diabetes that had the AS checklist implemented.</p> <p><u>Method:</u> A simple sticker was</p>	<p><u>Sampling Method:</u> Retrospective pre-intervention randomly selected. Prospective analysis completed on the first 100 patients admitted with diabetes</p> <p><u>Sample size:</u> Retrospective: 100 case notes Prospective: 100 diabetic patients.</p> <p><u>Characteristics:</u> Any admission diagnosis; admission across medical and surgical wards.</p>	<p><u>Independent variable:</u> AS checklist</p> <p><u>Dependent variables:</u> A- SMK status SMK advice BMI FLU B C- TC Cr PU D- HbA1c E- F- G- ASA ACEI/ARB Statin</p>	<p><u>Measurements:</u> The data was collected on the AS template showing documentation of the 18 quality measures associated within the 7 components of the AS checklist. The GMS score is based on the seven criteria of the AS and has a total possible score of 99 for diabetic care.</p>	<p><u>Data Analysis:</u> The results were analyzed by Student’s t-test and statistical significance assessed.</p> <p><u>Results:</u> Documentation of the following: BMI record increased from 0% to 78%. FLU documentation increased from 75% to 88%. Record of SMK status improved from 94% to 98% and cessation advice improved from 35% to 67%. Blood pressure documented stayed the same at 100%. TC documentation improved from 73% to 90%. PU documentation improved from 0% to</p>	<p><u>Strengths:</u> The use of the AS checklist in an inpatient setting allowed a structured approach to gathering all pertinent information needed for quality diabetic care. The study was performed over a 2-month period evenly spread out over both the surgical and medical wards. Responsibility for the AS checklist was spread over all clinicians involved in the patient’s care.</p>	<p>The AS checklist can be used in any type of setting, even inpatient to help achieve quality diabetic care. Time seems to be an issue in achieving quality measures with patients and brings to light to achieve areas in each of the 7 components of the AS checklist, more time may be needed with patients over multiple visits.</p>

	<p>placed on the 100 new admitted to the hospital diabetic patients to help remind the staff to complete the AS checklist with the assistance of the diabetes care team if needed.</p>				<p>38%. Cr stayed the same at 100%. HbA1c measurement and documentation improved from 70% to 94%. Eye exam dropped from 44% to 34%. Foot exam documentation rose from 43% to 76%.</p> <p><u>Findings:</u> Statistically significant improvement was found in BMI, FLU, SMK status & advice, PU, HbA1c, and F. The overall GMS score for diabetes increased from 62 to 85.7 which was statistically significant.</p>	<p><u>Weaknesses:</u> Inpatient care allows for a longer period of time than what is allowed in the outpatient setting. Often to make a positive achievement for the AS checklist in this study required documentation and did not document actual improvement in the 18 quality measures that are part of the seven components of the AS checklist.</p>	
--	--	--	--	--	--	---	--

Note: A: advice; ; ACEI/ARB: ACE Inhibitor/Angiotensin receptor blocker; AS: alphabet strategy; ASA: aspirin; B: blood pressure; BMI: Body Mass Index; BPI: blood pressure intervention; C: cholesterol and creatinine management; Cr: creatinine; D: diabetes control; DSCE: diabetes self-care education; E: eye exam; F: foot exam; FBG: fasting blood glucose; FLU: flu vaccine; G: guardian drugs; GDP: gross domestic product; GMS: General Medical Services; HbA1c: Hemoglobin A1c; HC: healthcare professionals; HDL: HDL cholesterol; LDL: LDL cholesterol; LP: lipid profile; MU: microalbuminuria; NU: nutrition; PPG: post-prandial glucose; PU:

proteinuria; QOF: quality and outcome framework; SMK: smoking; TC: total cholesterol; TG: triglycerides; THE%: total health expenditure percentage per capita; UKPDS: United Kingdom Prospective Diabetes Study; WT: weight.

Appendix B

Alphabet Strategy EHR Template Education

The template mnemonic will include the following prompts:

- A- Advice. Assess for and talk to patients about stopping smoking, knowing their cholesterol levels, selecting healthy foods, achieving their ideal weight, and regularly exercising at each visit. Documentation if diabetic education was previously completed, referral needed, or not indicated.
- B- Blood pressure. Monitoring blood pressure at each visit and set targets based on comorbid conditions and the patient's 10-year heart attack/stroke risk. Make sure patients know their own target blood pressure
- C- Cholesterol-. Monitor the patient's cholesterol levels at least once a year to ensure they are at the ADA targets. Also monitor Creatinine levels and assess for the presence of protein in the urine as these are signs of kidney damage from diabetes.
- D- Diabetes control. Monitor for the hemoglobin A1C at appropriate provider determined intervals. This is a marker for diabetic control. Assess patient monitoring for blood sugars which are too high (indicating not enough medication) or too low (sign that there is too much medication).
- E- Eye exam. Ensure patients get annual eye exams to look for changes that can happen from uncontrolled diabetes.
- F- Foot exam. Perform an annual screen to determine if patients have decreased foot sensation caused by nerve damage from uncontrolled diabetes. Providers should inspect patients' feet, without shoes or socks on, at each visit to see if foot ulcers or other conditions are present. This exam includes assessing foot pulses and reflexes.

Appendix C

Post Implementation Survey

1. How often did you implement the EHR template based on the alphabet strategy mnemonic for your diabetic patients?
 Never Sometimes Half the time More than half the time Always

2. How often did you discuss or address each of the seven facets of the EHR template with your diabetic patients?
 0 - 24% of the time 25 - 49% of the time 50 – 74% of the time 75 – 100% of the time

3. Do you feel the diabetic quality measures and clinical processes provided to your diabetic patients improved since using the EHR template?
 Yes No

4. Do you feel your knowledge of the American Diabetes Association diabetic clinical care guidelines has improved since the implementation of the EHR template?
 Yes No

5. Do you feel the EHR template improved your documentation of diabetic quality measures and clinical processes provided to your diabetic patients?
 Yes No

Appendix D

Written Information Sheet for Adults

You are invited to participate in a quality improvement project conducted by Sandra Hanson, from the UNIVERSITY OF PORTLAND, School of Nursing. I hope to learn how the implementation of an EHR template will improve care to meet the American Diabetes Association (ADA) clinical care guidelines for diabetes management.

This form includes detailed information about the quality improvement project to help you decide whether to participate. Please read it carefully and ask any questions you have before you agree to participate. Participation in this project is voluntary.

If you decide to participate, you will be requested to use a template in the EHR for any diabetic patients seen during the 8-week project. The template has seven facets of care matched to the 2020 ADA clinical care guidelines. This template will be used during each clinic visit with patients who have a diagnosis of diabetes. The purpose of the template is to improve the quality of diabetic care. The template will be accessible in the assessment and plan section of the patient's chart and will take no more than 15 minutes to complete.

Potential risks include loss of privacy and confidentiality related to collected and produced data. Inconveniences that are possible during the project include learning to use a new intervention and attending or participating in training to learn how to use the template. Mitigation of the potential risk of loss of privacy and confidentiality will be completed through encryption of any data containing identifying information, removal of identifying data, and proper storage of collected data on secure electronic devices located at the clinic. There are no costs associated to participating in this quality improvement project. Benefits to patients and

providers include improved quality of diabetic care of patients. You may not receive direct benefits from participating in this quality improvement project.

Any information obtained in connection with this study will remain confidential and will be disclosed only with your permission or as required by law. Only the principal investigator will see identifying information in the EHR review. Study codes will be used in place of identifying information to protect subject's data when data are stored. Data will be stored on the password protected computers at Battle Ground HealthCare and will be encrypted so it is only available to the principal investigator and the data manager. The data manager is Diane Drew, office manager of Battle Ground HealthCare.

Your participation is voluntary. Your decision whether or not to participate will not affect your relationship with Battle Ground HealthCare. If you decide to participate, you are free to withdraw your consent and discontinue participation at any time without penalty.

If you have any questions about the study, please feel free to contact Sandra Hanson at (360) 521-6402, sjoden21@up.edu, and 2209 G St., Vancouver, WA 98663 or Dawn Garzon Maaks, PhD, CPNP-PC, PHMS, FAANP, Advisor for Sandra Hanson, at (503) 943-7827. If you have questions regarding your rights as a research subject, please contact the University of Portland Institutional Research Board at irb@up.edu. You will be offered a copy of this form to keep.

Appendix F

Pre-Intervention Quality Data										
	Patient 1	Patient 2	Patient 3	Patient 4	Patient 5	Patient 6	Patient 7	Patient 8	Patient 9	Total (%)
Advice										
<i>Smoking</i>	No	No	No	Yes	No	No	No	No	No	11%
<i>Diet</i>	Yes	No	Yes	No	Yes	Yes	Yes	Yes	Yes	78%
<i>Ideal weight</i>	Yes	No	Yes	No	Yes	Yes	Yes	Yes	No	67%
<i>Exercise</i>	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No	78%
<i>Diabetic Education</i>	No	No	No	No	Yes	Yes	No	No	Yes	33%
Blood Pressure	Yes	Yes	Yes	Yes	Yes	No	Yes	No	Yes	78%
Cholesterol/ Creatinine										
<i>Cholesterol screening</i>	No	No	No	No	No	No	Yes	Yes	Yes	33%
<i>Creatinine screening</i>	No	No	No	Yes	No	No	No	No	No	11%
Diabetic Control										
<i>HbA1c screening</i>	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	100%
<i>Home CBG checks</i>	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No	78%
<i>Episodes of hyper/ hypoglycemia</i>	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No	78%
Eye Exam										
<i>Diabetic eye exam ≤1 year</i>	No	No	No	No	No	No	No	No	No	0%
<i>If >1 year, referral placed</i>	No	No	No	No	No	No	No	No	No	0%
Foot Exam										
<i>Monofilament testing</i>	No	No	No	No	No	No	No	No	No	0%
<i>Foot exam</i>	No	No	No	No	No	No	No	No	No	0%
Guardian Drugs										
<i>Assessment</i>	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	89%

Appendix G

Post-Intervention Quality Data						
	Patient 1	Patient 2	Patient 3	Patient 4	Patient 5	Total (%)
Template Used	Yes	Yes	No	Yes	No	60%
Advice						
<i>Smoking</i>	No	No	No	No	Yes	20%
<i>Diet</i>	Yes	Yes	No	No	No	40%
<i>Ideal weight</i>	Yes	No	No	Yes	No	40%
<i>Exercise</i>	No	Yes	No	Yes	No	40%
<i>Diabetic Education</i>	Yes	No	No	No	No	20%
Blood Pressure	Yes	No	No	Yes	No	40%
Cholesterol/ Creatinine						
<i>Cholesterol screening</i>	Yes	No	No	Yes	No	40%
<i>Creatinine screening</i>	Yes	No	No	Yes	No	40%
Diabetic Control						
<i>HbA1c screening</i>	Yes	Yes	No	Yes	Yes	80%
<i>Home CBG checks</i>	Yes	No	No	Yes	Yes	60%
<i>Episodes of hyper/ hypoglycemia</i>	Yes	No	No	Yes	Yes	60%
Eye Exam						
<i>Diabetic eye exam ≤ 1 year</i>	Yes	No	No	No	No	20%
<i>If >1 year, referral placed</i>	N/A	No	No	No	No	0%
Foot Exam						
<i>Monofilament testing</i>	No	No	No	No	No	0%
<i>Foot exam</i>	Yes	No	No	No	No	20%
Guardian Drugs						
<i>Assessment</i>	Yes	No	No	Yes	No	40%