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Type 2 Diabetes Management for Geriatric Veterans

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This is to certify that the doctoral study by

Fachecia Fort

has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
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Walden University
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Abstract

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MSN, University of North Carolina at Greensboro, 2009

BSN, North Carolina Agricultural and Technical State University, 2004

Project Study Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Nursing Practice

Walden University

August 2018

Abstract

Managing diabetes in the geriatric long-term care population can be challenging, yet important because diabetes is a chronic, progressive disease. The purpose of this project was to identify clinical practice guidelines for managing Type 2 diabetes in geriatric veterans and to develop a class to educate providers on diabetes management in the geriatric long-term care population at a community living and rehabilitation center. The practice focused question asked if providing education to providers about the clinical practice guidelines for managing Type 2 diabetes in geriatric long-term care veterans would improve knowledge as measured by a pre- and posttest. The project was based on the stage theory of organizational change and focused on the goal of improving diabetes management in the long-term care geriatric population by using clinical practice guidelines. The American Medical Directors Association's and Diabetes Association's updated clinical practice guidelines and systematic review literature on diabetes provided the evidence to support the educational project. A pretest, posttest, and summative evaluation were used to evaluate the project. A paired *t* test was used to compare the pretest and posttest scores for all participants. Posttest results showed a significant improvement in provider knowledge compared to pretest scores ($t = -4.416$, $df = 12$, $p < .01$). Participant evaluation of the program showed that the goals and objectives were met, content was understandable, and presentation was professional. The findings of the project may be beneficial at the organizational level to promote positive social change by improved management of diabetes in the geriatric long-term care population, thus potentially decreasing unwanted side effects and improving geriatric veteran health.

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Dedication

I dedicate this doctoral project to my father, mother, husband, son, family, and friends who all believed in me and provided unconditional support and words of encouragement that helped me maintain my motivation and focus.

I would also like to dedicate this doctoral project to my grandmother Willie Mae Fort, who was an inspiration for me pursuing my Doctor of Nursing Practice degree. During my studies, she prayed for my success and she would always provide me with words of encouragement. Grandma, even though you are now in heaven, I know you are smiling down at me very proudly.

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I would like to thank Dr. Janice Long for her insightful recommendations and feedback with my coursework and doctoral project. Her dedication and encouragement to complete the doctoral program was grateful.

I would also like to thank Dr. Beverly Owens for being my preceptor during my practicum.

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Section 1: Nature of the Project

Introduction

Diabetes mellitus is a common chronic disease in the geriatric population and has a high prevalence in the geriatric long-term care population. Approximately 25% of older adults ages 65 years and older are living with diabetes in the United States (CDC, 2014). It is important to manage diabetes in the geriatric population due to the frailty of this population (Coggins, 2012). Diabetes is associated with high cost and significant disease burden. Managing diabetes in the geriatric long-term care veteran population is important because this disease poses a major public health burden resultant from increased mortality, morbidity, and cost (Umpierrez, Palacio, & Smiley, 2007). The risks of hyperglycemia and hypoglycemia are important factors when managing diabetes in the frail elderly population. Achieving a glycemic goal without catastrophic consequences is an important factor when managing diabetes in the geriatric long-term care population. The use of sliding scale insulin in the geriatric long-term care population should be avoided, and a structured insulin regimen is recommended. In this paper, I discuss implementation of clinical practice guidelines for managing diabetes in the geriatric long-term care population. Section 1 includes a summary of the evidence-based project comprising the introduction, problem statement, purpose statement, nature of the project, significance, and section summary.

Problem Statement

Research has shown that insulin is the most effective treatment for hyperglycemia and reducing the hemoglobin A1c by 1.5% to 3.5% (Kim et al., 2012). With age, the beta

cell function progressively declines, requiring the use of insulin therapy in geriatrics with type 2 diabetes (Kim et al., 2012). According to the American Geriatrics Society (2012), the use of sliding scale insulin in geriatrics is not recommended because this treatment increases complications and provides suboptimal management. Sliding scale insulin is a common regimen used in the nursing home population when compared to the use of a structured insulin regimen (Day, 2013). The continuing use of sliding scale insulin in the long-term care population indicates that there is a lack of knowledge about the clinical practice guidelines for managing geriatrics with type 2 diabetes in the long-term care population. It therefore represents a gap in practice at the local community living and rehabilitation center where I conducted this project. There are several burdens from using sliding scale insulin including multiple finger sticks, poor glycemic control, hypoglycemia, hyperglycemia, and poor quality of life. Researchers have shown great interest in diabetes management in the geriatric long-term care population, and have conducted interventional and observational studies indicating that sliding scale insulin has detrimental consequences (Lee et al., 2011). The American Diabetes Association (ADA) recommends a glycated hemoglobin less than 7% for healthy geriatrics with a life expectancy of greater than 10 years, and a glycated hemoglobin of less than 8% for frail geriatrics with a shorter life expectancy (Kirkman et al., 2012). Sliding scale insulin provides inappropriate coverage for hyperglycemia episodes. According to the ADA, sliding scale insulin is ineffective and is dangerous to the elderly population, including those who are served in the local long-term care facility where this project took place. The gap I identified in this project is the need for staff and provider education on the

most recent ADA and American Medical Directors Association (AMDA) guidelines for treatment of the geriatric population on insulin.

Purpose Statement

The purpose of this project was to identify clinical practice guidelines for managing geriatric veterans with type 2 diabetes and to develop a class to educate providers on diabetes management in the geriatric long-term care population at a community living and rehabilitation center to ensure optimized treatment. The gap-in-practice that I addressed in this project was the lack of knowledge that leads to suboptimal management of diabetes in the geriatric long-term care population. The project purpose aligns with Essential VI of the American Association of Colleges of Nursing's (2006) *Essentials of Doctor of Nursing Practice*, Interprofessional Collaboration for Improving Patient and Population Health Outcomes. Identifying clinical practice guidelines and educating providers to translate evidence into practice on managing type 2 diabetes will promote practice change and positive social change throughout the organization.

I used the problem, intervention, comparison, and outcome (PICO) format to develop the following practice-focused question for this doctoral project: Will educating providers about the clinical practice guidelines for managing type 2 diabetes in geriatric long-term care veterans result in increased clinical knowledge when evaluated by a pre- and posttest?

Sliding scale insulin does not provide individualized treatment for managing diabetes. This inadequate treatment is based on the individual's glucose level prior to

meals. Sliding scale insulin fail to incorporate the patient's metabolic needs, weight, food consumed, and other factors that may influence their insulin demand.

Sliding scale insulin requires an increase in pre-meal and bedtime insulin, using a calculated dose of insulin for administration determined by the patient's finger stick taken at that specific time. Finger stick blood glucose levels are usually taken every 6 hours, before meals and at bedtime (Coggins, 2012). Blood glucose levels that are obtained pre-meal do not accurately determine the insulin need; however, they reflect the metabolism of the insulin administered previously, possibly causing the patient to experience hyperglycemia for several hours (Coggins, 2012).

Best practice guidelines recommend incorporating an individualized treatment regimen for diabetes using a structured insulin regimen. A structured insulin regimen has been shown to improve quality of life by providing optimized diabetes management, decreasing hyperglycemia, decreasing hypoglycemia, and decreasing acute hospitalizations (Coggins, 2012). Basal insulin is a type of structured insulin regimen that is routinely administered to mimic the body's basal metabolic insulin requirements. Basal insulin regimen prevents the liver from producing too much glucose, leading to hyperglycemia. Long acting basal insulin is known to provide optimal glycemic control compared to sliding scale insulin, reducing the risk of hypoglycemia (Coggins, 2012).

Bolus insulin is another type of structured insulin regimen that is used at mealtime to prevent postprandial hyperglycemia by changing glucose into energy. Rapid acting insulin used to correct hyperglycemia and cover the nutritional intake. Basal bolus insulin is basal insulin plus a rapid acting insulin that is more effective with controlling

blood glucose and mimics the body's normal physiological insulin production more than any other structured insulin regimen (Coggins, 2012).

Nature of the Project

I conducted an extensive literature search using electronic databases including Cumulative Index to Nursing & Allied Health Literature (CINAHL), PubMed National Library of Medicine (Medline), Walden Database, PubMed, Google Scholar, Medline Simultaneous Search, Ovid Nursing Journal Full Text, ADA clinical practice guidelines, and AMDA clinical practice guidelines and systematic reviews. Search terms used included *diabetes in long-term care, sliding scale insulin, diabetes management in long-term care, sliding scale effectiveness, type 2 diabetes and sliding scale insulin, glycemic control, diabetes mellitus, basal insulin, diabetes and quality of life, sliding scale insulin and quality of life,* and *hypoglycemia*. Boolean search strings that were helpful in the database search included *diabetes and geriatrics, diabetes clinical guidelines, sliding scale insulin and long-term care patients, diabetes best practices, sliding scale insulin or basal insulin, diabetes management and hypoglycemia, sliding scale insulin and hypoglycemia, glycemic control and sliding scale insulin, sliding scale insulin and inpatients, sliding scale insulin and diabetes management,* and *sliding scale insulin and older adults*. I reviewed literature published within the past 5 years; however, I included classic studies of the topic that were greater than 5 years old. I organized the relevant literature using the Walden University *Literature Review Matrix*.

Best practice guidelines recommend incorporating an individualized treatment regimen for diabetes using a structured insulin regimen. Researchers have shown that

structured insulin regimens improve quality of life by providing optimized diabetes management, decreasing hyperglycemia, decreasing hypoglycemia, and decreasing acute hospitalizations (Coggins, 2012). I used clinical practice guidelines from published guidelines, including ADA, AMDA, Centers for Disease Control and Prevention, American Geriatrics Society, World Health Organization, International Association of Gerontology and Geriatrics, Healthy People 2020, European Diabetes Working Party for Older People, American College of Endocrine, and National Diabetes Educational Program, to develop and conduct classes on the ADA and AMDA guidelines with the providers in the community living and rehabilitation center where this project took place.

Significance of the Project

Diabetes management for the older adult requires the provider to prevent short term and long-term complications associated with the chronic disease. Over a period of time, inadequate blood glucose control can cause long-term complications that have an effect on the organs. These long-term complications cause a reduction in quality of life, increased morbidity, and increased mortality. Short-term complications from poor glycemic control that can affect the older adult include hyperglycemia and hypoglycemia, which, if left untreated, can lead seizures, unconsciousness, coma, or death. Appropriately managing diabetes in the older long-term care adult is important to prevent long-term and short-term complications that can compromise the individual's quality of life.

According to Walden University (2016), social change is defined as "the deliberate, process of creating and applying ideas, strategies and actions to promote the

worth, dignity, and development of individuals, communities, organizations, institutions, cultures, and societies" (p. 20). Educating providers on the updated guidelines for geriatric diabetes management will improve patients' quality of life and provide optimal diabetes management. A multidisciplinary approach is necessary for emphasizing the importance of refraining from sliding scale insulin use. Utilizing the healthcare team—including nurses, geriatricians, nurse practitioners, a clinical pharmacist, a nurse educator, and clinical nurse specialist—to help design and implement best practices for diabetes management in the geriatric population has help promote the use of structured insulin regimen. Providing education on the updated clinical practice guidelines for providers to use in long-term care for implementing an individualized structured insulin regimen can successfully decrease the burden diabetes has on the community living center, while improving the patient's quality of life by avoiding hypoglycemia and adverse outcomes (Coggins, 2012).

Summary

Diabetes management in geriatrics is complex, with many barriers affecting quality of life and clinical outcomes. Glycemic control affects the geriatric patient's functional status, quality of life, and life expectancy. Having a collaborative approach to diabetes management can help address the complexity of problems long-term care geriatrics may face. Providers should prescribe individualized treatment for the patient with the goal of better managing diabetes by improving glycemic control and quality of life for this challenging yet vulnerable population. Educating providers on clinical practice guidelines for diabetes management in the geriatric long-term care population at

the community living and rehabilitation center will aid providers with improving diabetes management and outcomes. In Section 2, I discuss the background and context of this doctor of nursing practice project.

Section 2: Background and Context

Introduction

The practice problem I identified in this doctor of nursing practice (DNP) project is the inappropriate management of diabetes using sliding scale insulin for managing diabetes in geriatric long-term care residents. The American Geriatrics Society (2012) does not recommend the use of sliding scale insulin in geriatrics because this treatment increases complications and provides suboptimal management. Sliding scale insulin is a common regimen used in the nursing home population where I conducted this project (see Day, 2013). There are several burdens from using sliding scale insulin including multiple finger sticks, poor glycemic control, hypoglycemia, hyperglycemia, and poor quality of life. The practice-focused question for this doctoral project was: Will educating providers about the clinical practice guidelines for managing type 2 diabetes in geriatric long-term care veterans result in increased clinical knowledge when evaluated by a pre-and posttest?

The purpose of this project was to identify clinical practice guidelines for managing geriatric veterans with type 2 diabetes and to develop a class to educate providers on diabetes management in the geriatric long-term care population at a community living and rehabilitation center to ensure optimized treatment. I designed this class to ensure optimized treatment of diabetes by decreasing undesired outcomes such as hypoglycemia and hyperglycemia in geriatric long-term care veterans at the center. In Section 2, I discuss (a) the background and context of the project including the concepts,

models, and theories that guided it; (b) its relevance to nursing practice; (c) the local background and context; (d) my role as a DNP student; and (e) a summary.

Theoretical Framework

I used the stage theory of organizational change to guide this study. The American Geriatrics Society (2012) advised against using sliding scale insulin because of the increase complications and inadequate diabetes management. Instead, it recommends managing diabetes in the long-term care geriatric population by implementing a structured insulin regimen. I applied the stage theory of organizational change to the practice problem because it offers an improved method for managing diabetes in the target population. In order to apply the stage theory to the population problem, I included the appropriate stake-holders to help assess the problem. There are four stages of organizational change including the definition of the problem (awareness), initiation of action (adoption), implementation, and institutionalization (Glanz & Rimer, 2005). The health problem is identified as the inappropriate management of diabetes in geriatric long-term care residents. Major stake-holders for the project included nurses, nursing managers, providers, dieticians, and pharmacists. These stakeholders provided me aid in the needs assessment. For the initiation stage, I used clinical guidelines from professional organizations including AMDA, American Geriatric Society, ADA, and Centers for Disease Control and Prevention. The implementation stage of the project included evaluating providers, via a pre- and posttest, on the knowledge they gained from the recommended clinical practice guidelines provided in classes. The

institutionalization phase involved applying the recommendations and clinical practice guidelines throughout the organization (see Hodges & Videto, 2011).

Definition of Terms

I used the following terms used in this DNP project:

Quality of life: An overall assessment of a person's well-being, which may include physical, emotional, and social dimensions, as well as stress level, sexual function, and self-perceived health status (Farlex, 2012). For this paper, quality of life refers to patients' experiences with hypoglycemia, hyperglycemia, and glycemic control.

Sliding scale insulin: A treatment that provide insulin coverage to patients with a short acting insulin four to six times a day, based on the blood glucose level obtained by a finger stick prior to insulin injections (American Geriatrics Society, 2012). In this paper, I discuss how sliding scale insulin does not provide optimal treatment of diabetes for the geriatric long-term care population and leads to complications.

Structured insulin regimen: A regimen that combines basal insulin, nutritional insulin, and correctional insulin (Coggins, 2012). In this paper, I discuss how each type of insulin is considered a best practice treatment compared to sliding scale insulin.

Clinical practice guidelines: Recommendations for optimal patient care developed through a systematic review of evidence and an evaluation of risk and benefits of other care options (National Guideline Clearinghouse, 2016).

Hypoglycemia: A condition resulting from blood sugar levels that are less than 70 mg/dl (ADA, 2017).

Hyperglycemia: A condition resulting from high blood sugar levels (ADA, 2017).

Relevance to Nursing Practice

This evidence-based practice project is aligned with the DNP essentials of the AACN (2006). I focused on a relevant issue on an organizational level with the plan to provide education for appropriately managing diabetes in the geriatric long-term care population to enhance advance nursing practice knowledge and improve quality of life.

Diabetes is a prevalent illness within the nursing home population that requires complex nursing care. Nurses play an important role in diabetes management, given their position at the forefront in providing care to the nursing home population. Nurses provide patient and family education and are able to determine the signs and symptoms of diabetes complications through their assessment skills. Nurses have an important role in managing diabetes not only in the geriatric population, but also throughout the healthcare field. To have successful interventions and improved outcomes for individuals with diabetes, nurses need quality education and the best evidence-based practice for management of this complex illness.

The use of sliding scale insulin is a reactive way of managing hyperglycemia in the geriatric long-term care population. Sliding scale insulin is not effective in meeting the body's physiological need for insulin, making the treatment inefficient. The use of sliding scale insulin can cause patient discomfort resulting from more frequent finger sticks for monitoring blood glucose and possible increased insulin injections, thus leading to an increase in nursing time. Researchers have shown that sliding scale insulin increases hyperglycemia and places the patient at risk for hypoglycemia and suboptimal management (Pandya et al., 2013).

Best practices and clinical practice guidelines that I used for this project included those from the ADA, AMDA, American Geriatrics Society, and similar organizations. These were based on evidence for the diabetes management in the geriatric population. Resident-centered care and individualized goals are key for providing optimal care to the geriatric long-term care population. Clinicians, including nurses, should formulate specific goals, outcomes, and a plan of care for individuals incorporating the veteran, family and caregivers to address the veteran holistically and comprehensively.

Local Background and Context

The community living and rehabilitation center where I conducted the project serves the veteran population in the northeastern part of the United States. The center has a total of 120 beds, consisting of 78 long-term care, 20 skilled nursing, 10 acute rehabilitation, and 12 hospice beds. There were several veterans with diabetes, 65 years of age and older, in the long-term care center who were at risk for adverse effects from inappropriate management using sliding scale insulin rather than the recommended guidelines for diabetes management. The inappropriate management of these residents' diabetes warranted education for providers on best practices for managing diabetes in the department.

Diabetes is a target of national, state, and local initiatives for health promotion and disease prevention (Healthy People 2020, 2011). Diabetes is prevalent in the geriatric long-term care population, and due to its frailty, diabetes management has great risk and challenges. Patients with type 2 diabetes may require insulin and this project addressed the providers knowledge gained from education provided on the clinical

practice guidelines for managing veterans with diabetes. The use of sliding scale insulin in the geriatric long-term care population places the veterans at risk for unwanted outcomes.

Researchers have shown that quality of life decreases when sliding scale insulin is used and there is poor glycemic control, which puts patients at risk for functional decline (Pandya et al., 2013). Goals of care for managing diabetes in the geriatric population are similar to those for the younger adult population, including decrease mortality and morbidity from long-term effects from diabetes, improvement in quality of life, prevention of acute metabolic events, and appropriate diabetes management. Using a resident-centered, evidence-based approach has help promote disease management and improve the outcomes with goal setting (see Day, 2013).

Role of the DNP Student

This evidence-based quality improvement project grew from my work as a nurse practitioner at a community living and rehabilitation center. There I have noticed several unwanted outcomes from suboptimal diabetes management, especially from the use of sliding scale insulin. As a nurse practitioner with a focus in geriatrics, I have been able to see the impact of inappropriately managed diabetes, which has led to hospitalizations, sever hyperglycemia, sever hypoglycemia, falls, and even death. Identifying the standard of practice with clinical practice guidelines from nationally recognized organizations can be beneficial in providing optimal diabetes management. As a DNP prepared nurse, critically evaluating the gap, engaging in evidence-based practice, and conducting a project on this gap has improved quality of care through translation of evidence using

best practice. As the leader of this evidence-based project, collaboration with the inter-professional team was important for improved patient outcomes and transforming healthcare within the diabetic geriatric long-term care population. My goal was to provide education to the providers on the clinical practice guidelines for diabetes using appropriate resources for optimal diabetes management in the geriatric long-term care population.

Summary

The DNP evidence-based project addressed the gaps in provider education for managing diabetes in the frail geriatric long-term care population. I used evidence-based literature outlining best practices and clinical practice guidelines from scholarly research and diabetes organizations standards of practice for guidance. In Section 3, I discuss sources of evidence, published outcomes and research, archival and operational data evidence generated for the doctoral project, and analysis and synthesis.

Section 3: Collection and Analysis of Evidence

Introduction

Managing diabetes in the geriatric long-term care population is an important factor in promoting quality of life. Sliding scale insulin for the geriatric long-term care patient can cause unwanted side effects such as hypoglycemia, multiple finger sticks, hyperglycemia, poor glycemic control, and poor quality of life. There are several diabetes management guidelines that provide many different interventions; however, there are a few that are specifically tailored to the geriatric population. The purpose of this project was to identify clinical practice guidelines for managing geriatric veterans with type 2 diabetes and to develop a class to educate providers on diabetes management in the geriatric long-term care population at a community living and rehabilitation center to ensure optimized treatment. Individualized diabetes management using clinical practice guidelines can promote effective management and optimal outcomes. In Section 3, I present the practice-focused question, discuss sources of evidence, analyze and synthesize that evidence, and offer a summary.

Practice-focused Questions

Sliding scale insulin is commonly used for type 2 diabetes management in long-term care facilities (Pandya et al., 2013) and is used in the facility where I conducted this project. The ADA and AMDA guidelines do not promote the use of sliding scale insulin regimens as this form of management is not effective in meeting the physiological needs of the patient (Pandya et al., 2013). There have not been any standardized clinical protocols developed for the use of sliding scale insulin regimens; however, there have

been several clinical practice guidelines developed to aid in managing diabetes for geriatrics. Sliding scale insulin has been shown to increase the risk of hypoglycemia and has a 3 times greater risk for developing hyperglycemia than any other diabetes treatment, indicating suboptimal glycemic control (Pandya et al., 2013). The practice-focused question for this doctoral project was: Will educating providers about the clinical practice guidelines for managing type 2 diabetes in geriatric long-term care veterans result in increased clinical knowledge when evaluated by a pre-and posttest?

The purpose of this project was to identify clinical practice guidelines for managing geriatric veterans with type 2 diabetes and to develop a class to educate providers on diabetes management in the geriatric long-term care population at a community living and rehabilitation center to ensure optimized treatment. The project purpose aligned with the practice focus question through collaboration with the interprofessional team for improving patient and population health outcomes by identifying clinical practice guidelines and educating providers about the importance of translating evidence into practice, giving the best care and reducing comorbidities for inappropriate management. Identifying appropriate clinical guidelines that promote individualized management for the geriatric population is important. These clinical guidelines should address the needs of the geriatric population with regards to quality of life and other risk factors that sliding scale insulin can cause. Managing diabetes in the geriatric long-term care population can benefit from an individualized treatment plan using a structured insulin regimen and generalized goals guided by appropriate clinical practice guidelines. Providing a class to the nurses, geriatricians, nurse practitioners,

clinical pharmacists, nurse educators, and clinical nurse specialists at the facility on the clinical guidelines for managing diabetes in the geriatric population improved provider knowledge and the use of clinical guidelines for proper management.

Sources of Evidence

Prior to beginning the project, I requested approval from the Walden University Institutional Review Board (IRB) 10-26-17-0546945. After the DNP project was approved by the IRB, I began identifying the evidence practice guidelines. I began with the clinical guidelines from the ADA and AMDA. Using the guidelines developed by the professional organizations, I developed an education class that consisted of educational materials. I then presented the education class to nurses, geriatricians, nurse practitioners, and the clinical pharmacist from a community living and rehabilitation center. I used a pretest posttest design to evaluate the effectiveness of the education class, which was administered to each individual to determine how much was known about diabetes management prior to the class, and how much knowledge was gained from completing the class. The pretest and posttest was developed based on the content of the ADA and AMDA guidelines and included 10 true-false questions (Appendix A and Appendix B). An evaluation of my performance and the education class was also given to each individual after the class was completed to evaluate my teaching and the materials provided such as updated clinical guidelines from the ADA and AMDA (Appendix C). My goal for the class was that providers would be able to apply gained knowledge in their clinical practice through individualized management to promote optimal outcomes and quality of care. All data collected were anonymous, using a paper and pencil

questionnaire, including the evaluation. I used aggregate results and a *t* test to compare the results of the pretest to the posttest.

Published Outcomes and Research

I used scholarly journals articles published after January 1, 2012 to identify the most recent clinical guidelines for diabetes management in the geriatric population. The goal was to identity up-to-date clinical guidelines for the management of diabetes in the geriatric population, develop an education class based on these guidelines, and determine the knowledge providers gained from the class in service of the larger goal of improving diabetes management and thus veterans' quality of life. To gather materials, I used electronic databases such as CINAHL, PubMed National Library of Medicine (Medline), Walden Database, PubMed, Google Scholars, Medline Simultaneous Search, Ovid Nursing Journal Full Text, ADA clinical practice guidelines, AMDA clinical practice guidelines and systematic reviews. Search terms used included *diabetes in long-term care, sliding scale insulin, diabetes management in long-term care, sliding scale effectiveness, type 2 diabetes and sliding scale insulin, glycemic control, diabetes mellitus, basal insulin, diabetes and quality of life, sliding scale insulin and quality of life,* and *hypoglycemia*. Boolean search strings that were helpful in the database search included *diabetes and geriatrics, diabetes clinical guidelines, sliding scale insulin and long-term care patients, diabetes best practices, sliding scale insulin or basal insulin, diabetes management and hypoglycemia, sliding scale insulin and hypoglycemia, glycemic control and sliding scale insulin, sliding scale insulin and inpatients, sliding scale insulin and diabetes management,* and *sliding scale insulin and older adults*.

Evidence Generated for the Doctoral Project

The class consisted of a PowerPoint presentation on the AMDA and ADA's most recent guidelines on diabetes management in the geriatric long-term care population. I also provided printed handouts on these guidelines. Further, I provided participants a pretest, a posttest, and an evaluation. On the tests, participants were asked to provide their title and number of years of practice/experience. Each pretest, posttest and evaluation was numbered, ensuring that Participant 1 had the same number on the pretest, posttest, and evaluation to ensure that data collection, analysis, and synthesis was organized. The individuals who participated in the class were those who were available during the time that the class was held. The class was administered to reach the morning, evening, and night shift employees who were available. It was important to have participants from each listed discipline in the class because these individuals provided direct patient care for the veterans, or were educators for the facility to both nurses and providers.

Participants in the classes were measured using a knowledge test administered prior to the education class. A posttest was administered after completion of the education class. The pre- and posttests included the same topics that were covered in the education class and were recommended by the clinical practice guidelines. The pretest consisted of 10 questions about diabetes management in the geriatric population. Instructions were included for each individual to complete the pretest entirely without any identifying information except title and years of experience. When the pretest was completed, participants placed the test in a folder identified with a pretest label. The

posttest consisted of the same 10 questions as the pretest. The posttest was distributed to each individual in the class after the education class was completed. Instructions were included for each individual to complete the posttest entirely without any identifying information except title and years of experience. When the posttest was completed, participants placed the test in a folder identified with a posttest label.

I administered an evaluation using a paper and pencil format after the class had been completed and the posttest. A summative evaluation of my performance as instructor and the effectiveness of the education class was provided after the class. A summative evaluation can determine the overall success of an education class (Hodges & Videto, 2011). Each individual who participated in the class completed a summative evaluation to rate my leadership skills, the education class, teaching, and materials using a Likert scale. The Likert scale consisted of ratings from 1-5, with 1 equaling *strongly disagree*, 2 equaling *disagree*, 3 equaling *neither agree nor disagree*, 4 equaling *agree*, and 5 equaling *strongly agree*. The evaluation document included instructions for the participants to place the evaluation in a folder labeled *evaluation*. I collected the pretest, posttest, and evaluation after the course had been completed for data analysis.

To ensure ethical protection of the participants for this DNP quality improvement project, I completed Walden University's required coursework on research and protection of human subjects. I contacted both the government facility's IRB and Walden University's IRB for approval of this quality improvement project. Participants of the project were voluntary. Participants were selected based on their availability to participate in the class and their expertise. The quality improvement project participants

were not given incentives for their participation and were allowed to withdraw from participation in the project at any time. I will securely store all data collected from this DNP project for a minimum of 5 years after completion of the project. I have disclosed results from the project in all honesty to benefit the agency and nursing practice (see Zaccagnini & White, 2011). I conducted and completed the project ensuring privacy for each participant, and acting ethically and with integrity (see Zaccagnini & White, 2011).

Analysis and Synthesis

I entered quantitative data from the pretest and posttest into SPSS. The information was anonymous and had unique identifiers present to maintain privacy. After all data were entered, including title of participants and scores from their test, I determined the frequency distribution. I conducted a *t* test of the difference between the pre- and posttest scores to determine significance of the findings. The results would be significant if the *t* test was less than .05.

Summary

In this section, I discussed the practice focused question, sources of evidence, and analysis and synthesis of the evidence. The gap-in-practice this quality improvement project addressed was the lack of knowledge that leads to suboptimal diabetes management in the geriatric long-term care population. The practice focused question was related to providing education on the updated long-term care AMDA and ADA clinical guidelines to providers at a community living and rehabilitation center with the goal of improving the quality of care for the long-term care diabetic population. A

pretest and posttest was administered to educational class participants, and all quantitative data and scores were entered in SPSS.

Section 4: Findings and Recommendations

Introduction

Sliding scale insulin for managing diabetes in geriatric long-term care residents may have serious consequences (American Geriatrics Society, 2012). According to the American Geriatrics Society, the use of sliding scale insulin in geriatrics is not recommended as this treatment increases complications and provides suboptimal management. Sliding scale insulin is a common regimen used in the nursing home population when compared to the use of a structured insulin regimen (Day, 2013). There are several burdens from using sliding scale insulin including multiple finger sticks, poor glycemic control, hypoglycemia, hyperglycemia, and poor quality of life. The gap-in-practice that I addressed in this project was the lack of knowledge that leads to suboptimal diabetes management in the geriatric long-term care population. The practice-focused question for this doctoral project was: Will educating providers about the clinical practice guidelines for managing type 2 diabetes in geriatric long-term care veterans result in increased clinical knowledge when evaluated by a pre-and posttest? The purpose of this project was to identify clinical practice guidelines for managing geriatric veterans with type 2 diabetes and to develop a class to educate providers on diabetes management in the geriatric long-term care population at a community living and rehabilitation center to ensure optimized treatment. The long-term goal of the project were to ensure optimized treatment of diabetes by decreasing undesired outcomes such as hypoglycemia and hyperglycemia in the geriatric long-term care veterans at a community

living and rehabilitation center. The long-term goals are not within the scope of this project, but will continue after this project ends.

I conducted an extensive literature search using electronic databases including CINAHL, PubMed National Library of Medicine (Medline), Walden Database, PubMed, Google Scholar, Medline Simultaneous Search, Ovid Nursing Journal Full Text, ADA clinical practice guidelines, and AMDA clinical practice guidelines and systematic reviews. I developed the education class (Appendix F) to provide education to providers, including the nursing and medical staff, using the content from the ADA and AMDA standards of practice and clinical practice guidelines (ADA, 2018; AMDA, 2015). The guidelines were the most recent updates provided. The facility's hypoglycemia protocol was reviewed and provided as a reference. A pretest was provided to determine providers' knowledge of diabetes management in the geriatric population prior to the class. A posttest provided after the class was completed to determine the knowledge participants gained about the standards of practice for managing diabetes in the geriatric long-term care population and the effectiveness of the teaching and materials provided. All participants completed a summative evaluation on my performance and leadership. Details are included in the next section. Data from the pretest, posttest, paired *t* test, descriptive statistics, and a totaling the evaluation completed by the participants made up the results of this project. In the following sections, I discuss the findings, implications, recommendations, strengths, and limitations of the project.

Findings and Implications

I designed this project to identify clinical practice guidelines and to develop an education class to educate providers on diabetes management in the geriatric long-term care population at a community living and rehabilitation center to ensure optimized treatment. Using the guidelines developed by the ADA and AMDA, I developed an education class that consisted of educational materials (Appendix F). Classes were held at the community living and rehabilitation center on three different occasions to reach available providers during the day, evening, and night shifts. I provided participants information prior to the beginning of the class informing them that their participation was voluntary, all data collected was anonymous, and a pretest and posttest would be used to evaluate their knowledge and the effectiveness of education provided. The participants were also informed that an evaluation of my performance and education class would be administered at the end of the class. There were 13 participants ($N = 13$) who volunteered to participate in the class, completing the pretest, posttest and evaluation. Participants included a clinical pharmacist, licensed practical nurses, nurse practitioners, physicians, and registered nurses. Years of experience for the participants ranged from 2 years to 35 years.

Each class consisted of a 35-minute lecture using a PowerPoint presentation on the most recent AMDA and ADA guidelines on diabetes management in the geriatric long-term care population. Contents of the PowerPoint presentation consisted of information on the systematic approach for managing diabetes in long-term care, expected outcomes using clinical guidelines, AMDA's 11 steps for managing diabetes in

long-term care, and the ADA older adult standards of medical care in diabetes. Other information included risks of hypoglycemic and hyperglycemic complications, and pharmacologic and non-pharmacologic interventions used to manage diabetes in the geriatric population. Printed handouts were provided on the most recent guidelines from AMDA and ADA (Appendix F). Other materials I provided to the participants included an algorithm for treatment of hypoglycemia (Appendix D). All information from the materials I handed out to the participants was covered during each class. There were no questions asked during the classes; however, there were positive comments about how the classes were conducted and that the materials provided were useful.

Analysis and Synthesis

Evidence I collected for analysis and synthesis included data from the pretest and posttest scores, the paired *t* test results, descriptive statistics of the participants, and the results of the evaluation completed by each participant of the class. Of the 13 participants, 75% were physicians and registered nurses. I conducted a paired *t* test to compare the pre- and posttest scores for all participants. Significance was set at .05 with a 95% confidence interval. Results indicated a strong significant difference between the pretest and posttest scores ($t = -4.416$, $df = 12$, $p < .01$). The total mean score for the pretest was 83.07%, with a standard deviation of 11.8%. The total mean score for the post-test was 93.07%, with a standard deviation of 10.3%.

A summative evaluation was completed by the 13 participants in the class. According to Hodges and Videto (2011), evaluation is an important part of a project and provides feedback about the project to determine its effectiveness. A Likert scale

(Appendix C) was used to rate my leadership skills, the education class, my teaching, and course materials. The Likert scale consist of ratings from 1-5, with 1 equaling *strongly disagree*, 2 equaling *disagree*, 3 equaling *neither agree nor disagree*, 4 equaling *agree*, and 5 equaling *strongly agree*. Table1indicates the evaluation statements and outcomes that were presented in the summative evaluation.

Table 1

Results of Summative Evaluation

Evaluation Statement	Agree	Strongly Agree
1. The purpose of the education class was addressed.	16.67%	83.33%
2. The stated goals and objectives of the education class were met.	16.67%	83.33%
3. Communication was effective.	33.33%	66.67%
4. The DNP student was professional.	16.67%	83.33%
5. The DNP student demonstrated leadership.	33.33%	66.67%
6. The content of the class was understandable.	16.67%	83.33%

There are four stages of the stage theory of organizational change, including the definition of the problem (awareness), initiation of action (adoption), implementation, and institutionalization (Glanz & Rimer, 2005). I addressed the health problem, lack of knowledge about diabetes management in geriatric long-term care residents, by providing an education class to providers at the facility. Major stakeholders for the project included registered nurses, licensed practical nurses, physicians, nurse practitioners, and pharmacists. For the initiation stage, I used clinical guidelines from professional organizations including American Medical Directors Association, American Geriatric

Society and American Diabetes Association. The implementation stage of the project included evaluating providers, via a pre- and posttest, on the knowledge they gained from the recommended clinical practice guidelines provided in classes. The institutionalization phase involved applying the recommendations and clinical practice guidelines throughout the organization and within their practices (see Hodges & Videto, 2011).

Of the 13 participants in the class, 11 responded *strongly agree* to all six evaluation statements. Table 1 represent the total of percentages from each participant for the evaluation statements. Overall, the summative evaluation showed that the goals and objectives were met, the content of the class was understandable, and I was professional and demonstrated leadership.

Unanticipated Limitations

The participants were receptive of the information provided during each class, however there were unanticipated limitations. One unanticipated limitation that had an impact on the findings included a small number of participants. Even though the education classes were voluntary, the number of providers attending the class was less than expected. It was noted that the facility has a shortage of staff in all disciplines including nursing. As providing education to the front-line staff is important with diabetes management in the geriatric population, the guidelines and materials will be readily available for the staff to review as needed.

During each class, the participants were interested about the information provided and verbalized their appreciation for the education. Two participants were happy that the

content addressed diabetes management in the geriatric palliative population. Even though the content to address diabetes management in the geriatric palliative population was minimal, it was noted that this information is valuable yet important because there are several patients who are at end of life in long-term care and their medical management is focused on comfort care and quality of life.

Implications

Implications resulting from the findings of having the education class in terms of on an organization level include how the providers will change practice of diabetes management in the geriatric long-term care population. Providing education to the direct care staff, the providers have gained new knowledge on the ADA and AMDA guidelines for geriatric diabetes management, and results may improve patient care outcomes in long-term care. Managing diabetes as a systematic approach, including collaborating with the interdisciplinary team, reviewing residents blood glucose levels and treatment regimens, providing health maintenance such as eye consults, podiatry consults, dental consults and skin assessments, and involving the resident's family for diabetes management will allow each provider to holistically treat the resident and improve diabetes management (AMDA, 2015).

Positive Social Change

The DNP project intent was to provide education to providers on the ADA and AMDA clinical practice guidelines and standards of practice for managing type 2 diabetes in the long-term care population. Positive social change implications include educating the nursing and medical provider staff to improve resident outcomes and

optimize diabetes management in the geriatric long-term care population. Expected outcomes with managing diabetes in the geriatric long-term care population include improved individualized care, improved diabetes management, improved treatment of diabetes, less hypoglycemia and hyperglycemia complications, less acute hospitalizations, improved staff knowledge and satisfaction with the resident and their family (AMDA, 2015). Overall, following the clinical practice guidelines that were provided in the education class will promote a positive social change and improve resident outcomes which may lead to a better quality of life.

Recommendations

The American Diabetes Association and the American Medical Directors Association's clinical practice guidelines are the standard of care process in long-term care. These guidelines have been known to improve resident's outcomes and safety of residents, facility and staff (AMDA, 2015). Both ADA and AMDA resources are evidence based and the Centers for Medicare & Medicaid Services references these guidelines. These standards of care tools use the medical care process of recognition, assessment, treatment and monitoring ensuring improved quality of care for residents. It is important that providers, both nursing and medical, use the protocol, clinical practice guidelines and standards of care as provided in the education class to ensure positive outcomes. The nursing protocol for management of the patient with hypoglycemia (Appendix D) was provided for reference and guidance with managing hypoglycemia and improve patient outcomes. The algorithm consists of treatment for mild hypoglycemia, moderate hypoglycemia, sever hyperglycemia awake and unconscious with severe

hypoglycemia. This tool is very useful for the nursing staff as it provides steps for managing hypoglycemia when the resident's blood glucose level is less than 70 mg/dL (Appendix D). This protocol applies throughout the facility across the continuum of care.

Continuation of education to providers at the facility is recommended to improve resident's outcomes, quality of life, and functional status, provide optimal management and prevent unwanted outcomes from inappropriately managing diabetes. Providers at the facility will have access to materials provided in the education class. Re-administering the education class at the facility as needed will also be available. Receiving feedback from nursing leadership and medical leadership on monitoring the facility's diabetes management, practices and outcomes can be beneficial with determining the facility's success with implementation of the clinical practice guidelines and standards of practice to determine the success of the education provided.

Strengths and Limitations of the Project

The DNP project was successful with the learning outcomes as indicated by the pre-test and post-test results, and results of the evaluations completed by each participant. This is a strength because there was knowledge gained from the education class, which will lead the providers to implement the practice guidelines into practice, improving patient outcomes. It would be beneficial if the facility could evaluate this by tracking how many patients are on sliding scale insulin and monitoring for sliding scale insulin decrease overtime. Current literature on diabetes management in the long-term care population indicate that several organizations have developed guidelines for managing diabetes, emphasizing the necessity to individualize goals and treatments, avoid sliding

scale insulin, and the importance of providing training, education and protocols to the staff involved in the resident's care (Munshi, 2016). Multiple disciplines were present in the education classes including registered nurses, licensed practical nurses, physicians, and pharmacist. Having an interprofessional approach is an advantage as this possess successful integration of diabetes management into practice at the long-term care facility, leading to improved outcomes (Munshi, 2016).

Limitations of the project include a small number of participants (N=13). Having a larger number of participants in the class with more disciplines involved would have been beneficial as these individuals could have improved their knowledge on diabetes management in the geriatric long-term care population, leading to a vast number of individuals at the facility with education on the clinical practice guidelines and standards of care. Another limitation of the project include education was provided to one community living and rehabilitation center within the organization. The organization has two community living and rehabilitation centers. Because of the convenience of the community living and rehabilitation center in which the education was provided, this represents a limitation. Knowledge on diabetes management in the geriatric long-term care population using clinical practice guidelines and standards of care is important in community living and rehabilitation centers within the organization as this will help provide continuity of care and improve patient outcomes throughout the organization. Evidence-based guidelines are considered gold standards in managing medical problems (Grove, Burns & Gray, 2013). Future education classes will need to be conducted at both

long-term care facilities and include more disciplines including dieticians and nursing assistants for a complete interdisciplinary approach.

Summary

The findings of the DNP project indicate a strong significance difference between the pre-test and post-test. This indicates the participants experienced gained knowledge from the education class. Positive social change with managing diabetes in the geriatric long-term care population may include the improvement of quality of life and quality of care. Strengths of the project include successful outcomes and multiple disciplines participating. Limitations of the project include a small number of participants and using only one of the organizations community living and rehabilitation centers for data collection. In Section 5, I discuss the dissemination plan and analysis of self.

Section 5: Dissemination Plan

Dissemination Plan

To successfully disseminate this evidence-based project on managing diabetes in the geriatric long-term care population using clinical practice guidelines and standards of care, a poster presentation would be appropriate. Having a poster presentation will allow interaction and networking with stakeholders (see Hand, 2010). I will present a poster at the medical center to interact with interested professionals including the stakeholders and other health care professionals. These stakeholders include physicians, nurse practitioners, registered nurses, license practical nurses, certified nursing assistants, nurse managers, nurse administrators, clinical pharmacists, dieticians, patients, and family members. When disseminating an evidence-based project, it is important to synthesis existing evidence (Forsyth et al., 2010). According to Stevens (2005), there are two stages for disseminating evidence-based practice. The first stage includes translation of evidence into practice. This would be information provided on the poster including ADA and AMDA guidelines for managing diabetes in the long-term care geriatric population. The second stage includes integration of the recommendations from these guidelines into practice. For an example, providing an individualized treatment regimen and avoiding sliding scale insulin is a recommended intervention for geriatrics with diabetes who reside in long-term care. The poster presented would address these two stages, translation of evidence and integration of evidence. The poster would include a concise message to educate the public and stakeholders (see Forsyth et al., 2010). Keeping communication flowing and ensuring lay-person understanding are important for

dissemination of an evidence-based project. The poster would not only be on display in the community living center, but would also be presented during conferences and during the geriatric clinical meetings to help improve diabetes management outcomes. Other information provided on the poster would include, (a) nature of the project; (b) background and content; (c) collection and analysis of evidence; and (d) findings and recommendations. I would display the poster at the facility where the staff could see and review it and the significance of the evidence-based project. Handouts would be available with the facility's hypoglycemia protocol for the staff to review and keep for their reference.

Analysis of Self

As an advanced practice registered nurse practitioner, I have gained an abundance of knowledge via this DNP project and have become more competent with managing diabetes in the geriatric long-term care population. From completing the premise to conducting the data collection, the complete process has been a successful experience. As a nurse practitioner in the geriatric long-term care population, I managed my resident's diabetes well, but did not completely follow the ADA and AMDA standards of care. This project has allowed me to gain an abundance of knowledge about the diabetes management in the long-term care geriatric population, apply the knowledge gained to practice, and share the information. I can honestly say that being aware of the ADA and AMDA clinical practice guidelines and standards of care, I am able to reference these documents and manage my residents by these guidelines, ensuring optimal management and improved quality of care. Now that I have had first-hand experience with conducting

a successful DNP capstone project, I am now confident that the information was well understood.

My long-term professional goals as a DNP-prepared advanced-practice registered nurse practitioner include continuing to improve patient care in the long-term care population. I plan to continue to work in the clinical practice setting and advancing my career in leadership. I would like to focus on health policy and executive nursing. It is important for DNP-prepared nurses to participate in these roles to improve the clinical environment which will also lead to improved patient care and patient outcomes. With the excellent education provided by Walden University, I plan to actively function as an expert to improve quality outcomes in the geriatric population in a leadership role. I will continue to collaborate professionally amongst the interdisciplinary team in geriatrics, disseminate my evidence-based practice education project on diabetes management in the geriatric long-term care, and translate evidence into practice. I will continue to apply my skills and knowledge to everyday practice to ensure attainment of optimized management of diabetes in the geriatric long-term care population.

Conducting this scholarly project has been more rewarding than challenging. One of the challenges I experienced include becoming a leader and publically educating staff about diabetes management in the long-term care geriatric population. In the past, I have not felt confident with public speaking or having a large audience. During the data collection process of this project, I prepared myself to speak publically in front of participants, ensuring that I would be able to deliver the lesson professionally and confidently. I can admit that by the scores of the pretest, posttest, and evaluation, I was

professional and the content was understandable. Even though this was a challenge, it became a strength by allowing me to be confident with future presentations and education classes.

Summary

The purpose of this project was to identify clinical practice guidelines for managing geriatric veterans with type 2 diabetes and to develop a class to educate providers on diabetes management in the geriatric long-term care population at a community living and rehabilitation center to ensure optimized treatment. This DNP project validated the importance of educating providers about diabetes management in the vulnerable geriatric population as evidence by pre- and posttest scores. Providing education to providers, both medical and nursing, is important because residents with diabetes can have a better quality of life with individualized diabetes treatment plans and goals using ADA and AMDA standards of care. Managing diabetes using ADA and AMDA clinical practice guidelines and standards of care will decrease unwanted outcomes and optimize management, which leads to improved quality of life.

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Appendix A: Pretest

Date:

Title:
Years of Experience:
Test Number:

MANAGEMENT OF DIABETES IN LONG-TERM CARE
PRE-TEST

Instructions: For each of the following questions, choose if the statement is TRUE or FALSE. In order for an answer to be TRUE, ALL parts of the statement must be true.

1. The AMDA standards of care, recommends that the glycemic goals should be tailored according to the long-term care patient's risk of hypoglycemia.
(A) TRUE (B) FALSE

2. AMDA and ADA recommends the use of sliding scale insulin as a monotherapy in older adults.
(A) TRUE (B) FALSE

3. Sliding scale insulin places the long-term care older adult at risk for hypoglycemia.
(A) TRUE (B) FALSE

4. Glycemic goals for the older adults can be relaxed when compared to the younger adult, however, hyperglycemia and hypoglycemia should be avoided in all patients.
(A) TRUE (B) FALSE

5. The goal Hgb A1c for the older adult is 6.
(A) TRUE (B) FALSE

6. Both hyperglycemia and hypoglycemia are reactions to sliding scale insulin.
(A) TRUE (B) FALSE

7. There is a VA Protocol for managing hypoglycemia and an order is not necessary from a provider to initiate the hypoglycemia protocol.
(A) TRUE (B) FALSE

8. For long-term care patients to have successful outcomes with the management of their diabetes, integration of the interdisciplinary team including the dietician and pharmacist is important.
(A) TRUE (B) FALSE

9. Having the long-term care patient on a strict therapeutic diet is important to avoid weight loss, dehydration and decrease food intake.
(A) TRUE (B) FALSE

10. Managing diabetes is challenging in the long-term care population and different treatment approaches are recommended.
(A) TRUE (B) FALSE

Appendix B: Posttest

Date:

Title:
Years of Experience:
Test Number:

MANAGEMENT OF DIABETES IN LONG-TERM CARE
POST-TEST

Instructions: For each of the following questions, choose if the statement is TRUE or FALSE. In order for an answer to be TRUE, ALL parts of the statement must be true.

1. The AMDA standards of care, recommends that the glycemic goals should be tailored according to the long-term care patient's risk of hypoglycemia.
(A) TRUE (B) FALSE

2. AMDA and ADA recommends the use of sliding scale insulin as a monotherapy in older adults.
(A) TRUE (B) FALSE

3. Sliding scale insulin places the long-term care older adult at risk for hypoglycemia.
(A) TRUE (B) FALSE

4. Glycemic goals for the older adults can be relaxed when compared to the younger adult, however, hyperglycemia and hypoglycemia should be avoided in all patients.
(A) TRUE (B) FALSE

5. The goal Hgb A1c for the older adult is 6.
(A) TRUE (B) FALSE

6. Both hyperglycemia and hypoglycemia are reactions to sliding scale insulin.
(A) TRUE (B) FALSE

7. There is a VA Protocol for managing hypoglycemia and an order is not necessary from a provider to initiate the hypoglycemia protocol.
(A) TRUE (B) FALSE

8. For long-term care patients to have successful outcomes with the management of their diabetes, integration of the interdisciplinary team including the dietician and pharmacist is important.
(A) TRUE (B) FALSE

9. Having the long-term care patient on a strict therapeutic diet is important to avoid weight loss, dehydration and decrease food intake.
(A) TRUE (B) FALSE

10. Managing diabetes is challenging in the long-term care population and different treatment approaches are recommended.
(A) TRUE (B) FALSE

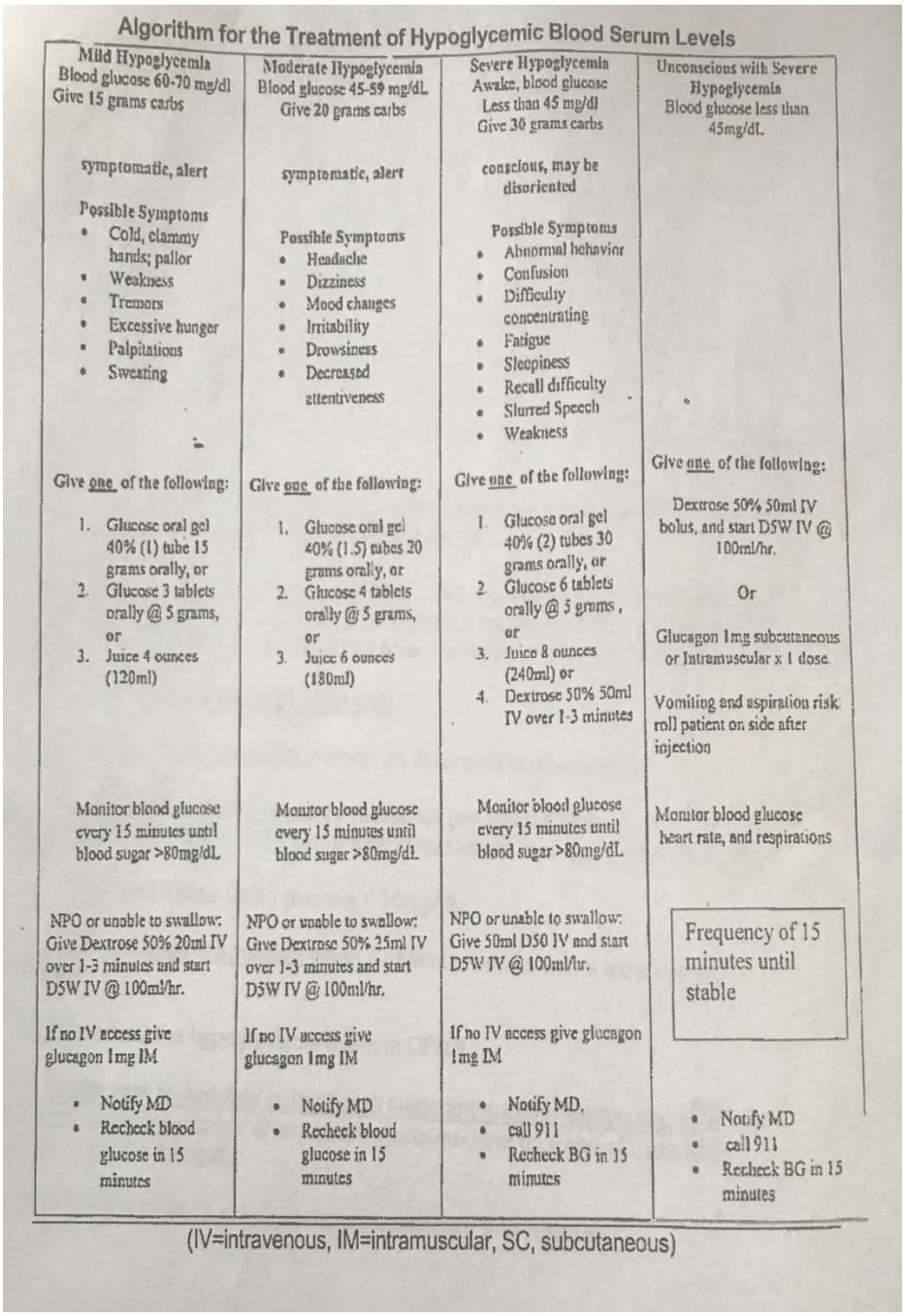
Appendix C: Summative Evaluation

SUMMATIVE EVALUATION

	Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree
Circle the number that best relates to your response to the question					
1. The purpose of the education class was addressed.	1	2	3	4	5
2. The stated goals and objectives of the education class were met.	1	2	3	4	5
3. Communication was effective.	1	2	3	4	5
4. The DNP student was professional	1	2	3	4	5
5. The DNP student demonstrated leadership.	1	2	3	4	5
6. The content of the class was understandable.	1	2	3	4	5

Appendix D: Algorithm for the Treatment of Hypoglycemic Blood Serum Levels

Nursing Protocol 512-118-PTL-015



Algorithm for the Treatment of Hypoglycemic Blood Serum Levels

Mild Hypoglycemia Blood glucose 60-70 mg/dl Give 15 grams carbs	Moderate Hypoglycemia Blood glucose 45-59 mg/dL Give 20 grams carbs	Severe Hypoglycemia Awake, blood glucose Less than 45 mg/dl Give 30 grams carbs	Unconscious with Severe Hypoglycemia Blood glucose less than 45mg/dL
symptomatic, alert	symptomatic, alert	conscious, may be disoriented	
Possible Symptoms • Cold, clammy hands; pallor • Weakness • Tremors • Excessive hunger • Palpitations • Sweating	Possible Symptoms • Headache • Dizziness • Mood changes • Irritability • Drowsiness • Decreased attentiveness	Possible Symptoms • Abnormal behavior • Confusion • Difficulty concentrating • Fatigue • Sleepiness • Recall difficulty • Slurred Speech • Weakness	
Give one of the following: 1. Glucose oral gel 40% (1) tube 15 grams orally, or 2. Glucose 3 tablets orally @ 5 grams, or 3. Juice 4 ounces (120ml)	Give one of the following: 1. Glucose oral gel 40% (1.5) tubes 20 grams orally, or 2. Glucose 4 tablets orally @ 5 grams, or 3. Juice 6 ounces (180ml)	Give one of the following: 1. Glucose oral gel 40% (2) tubes 30 grams orally, or 2. Glucose 6 tablets orally @ 5 grams, or 3. Juice 8 ounces (240ml) or 4. Dextrose 50% 50ml IV over 1-3 minutes	Give one of the following: Dextrose 50% 50ml IV bolus, and start D5W IV @ 100ml/hr. Or Glucagon 1mg subcutaneous or Intramuscular x 1 dose. Vomiting and aspiration risk: roll patient on side after injection
Monitor blood glucose every 15 minutes until blood sugar >80mg/dL	Monitor blood glucose every 15 minutes until blood sugar >80mg/dL	Monitor blood glucose every 15 minutes until blood sugar >80mg/dL	Monitor blood glucose heart rate, and respirations
NPO or unable to swallow: Give Dextrose 50% 20ml IV over 1-3 minutes and start D5W IV @ 100ml/hr. If no IV access give glucagon 1mg IM • Notify MD • Recheck blood glucose in 15 minutes	NPO or unable to swallow: Give Dextrose 50% 25ml IV over 1-3 minutes and start D5W IV @ 100ml/hr. If no IV access give glucagon 1mg IM • Notify MD • Recheck blood glucose in 15 minutes	NPO or unable to swallow: Give 50ml D50 IV and start D5W IV @ 100ml/hr. If no IV access give glucagon 1mg IM • Notify MD, • call 911 • Recheck BG in 15 minutes	Frequency of 15 minutes until stable • Notify MD • call 911 • Recheck BG in 15 minutes

(IV=intravenous, IM=intramuscular, SC, subcutaneous)

Appendix E: Lesson Plan

LESSON PLAN	**Type 2 Diabetes Management for Geriatric Veterans** **Fachecia Fort, CRNP March 2018**
American Association of Colleges of Nursing's (2006) Essential of Doctor of Nursing Practice	Interprofessional Collaboration for Improving Patient and Population Health Outcomes
Content Objectives	•Identify the American Medical Directors Association (AMDA) and American Diabetes Association (ADA) most recent standards of care recommendations for managing diabetes in long-term care to improve geriatric veteran's quality of life and provide optimal diabetes management. •Identify the risks of hypoglycemic and hyperglycemic complications that can compromise veteran's quality of life. •Identify pharmacologic and non pharmacologic interventions used to manage diabetes in the geriatric population.
Procedure	Power Point Presentation • Systematic Approach for Managing Diabetes in Long-term Care • Expected Outcomes from Using Clinical Guidelines • 11 Steps for Managing Diabetes in LTC (AMDA) • ADA Older Adults Standards of Medical Care in Diabetes Handout provided on the Algorithm for the Treatment of Hypoglycemic Blood Serum Levels
Assessment	• Pre-test and Post-test on Knowledge • Evaluation

Appendix F: Education Program PowerPoint Presentation

- Type 2 Diabetes Management for Geriatric Veterans
- Fachecia Fort, MSN, ANP-C
- Nurse Practitioner
- Objectives

After attending this activity, the participants will demonstrate the ability to:

- Identify the American Medical Directors Association (AMDA) and American Diabetes Association (ADA) most recent standards of care recommendations for managing diabetes in long-term care to improve geriatric veteran's quality of life and provide optimal diabetes management.
- Identify the risks of hypoglycemic and hyperglycemic complications that can compromise veteran's quality of life.
- Identify pharmacologic and non pharmacologic interventions used to manage diabetes in the geriatric population.

- Problem
- Diabetes is an important condition in the geriatric population, as approximately one quarter of individuals over the age of 65 have diabetes and one half of the older adults have prediabetes (ADA, 2018).
- According to the American Geriatrics Society (2012), the use of sliding scale insulin in geriatrics is not recommended as this treatment increases complications, provides suboptimal management and causes multiple burdens such as multiple finger sticks, poor glycemic control, hypoglycemia, hyperglycemia, and poor quality of life.
- Purpose & Goal of Project
- To identify clinical practice guidelines for managing geriatric veterans with type 2 diabetes and educate providers on diabetes management in the geriatric long-term care population at a community living and rehabilitation center to ensure optimized treatment.
- Practice-focused Question
- Will educating providers about the clinical practice guidelines for managing type 2 diabetes in geriatric long-term care veterans result in increased clinical knowledge when evaluated by a pre-and posttest?
- Introduction
- Managing diabetes in the geriatric long-term care population can be challenging, yet important, as this is a chronic, progressive disease.
- Diabetes is important to manage in the geriatric population due to their frailty

(Coggins, 2012).

- The risk of hyperglycemia and hypoglycemia are important factors when managing diabetes in the frail elderly long-term care population, leading to the importance of managing diabetes using clinical practice guidelines.
- AMDA and ADA Criteria for Diagnosis of Diabetes
- A1c 6.5% or higher
- Fasting Plasma Glucose 126 mg/dL or higher
- 2-hour plasma glucose 200 mg/dL or higher
- Symptoms of hyperglycemia or hyperglycemia crisis with a random blood glucose of 200 mg/dL or higher (AMDA, 2015 & ADA, 2018)

- Signs and Symptoms of Hyperglycemia and Hypoglycemia
- AMDA Clinical Practice Guidelines for Managing Type 2 Diabetes in Long-Term Care
- Systematic Approach
- Interprofessional approach
- Education of staff who provide direct care
- Reviewing blood glucose levels and patterns for possible reduction of medications or changing regimen
- Collaborate with Clinical Pharmacist
- Regular health maintenance such as eye consults, podiatry consults, dental consults, and skin assessments.
- Provide carbohydrate consistent meals and snacks
- Involve resident's family for diabetes management

(AMDA, 2015)

- Expected Outcomes From Using Clinical Guidelines
- Improved individualized care
- Earlier diagnosis of diabetes
- Improved documentation including resident's personal goals
- Less hypo/hyperglycemia events
- Less complications including infections, dehydration and electrolyte imbalance
- Less acute hospitalizations

- Improved monitoring and treatment
- Improved staff knowledge of diabetes management
- Satisfaction with residents and their families

(AMDA, 2015)

- 11 Steps for Managing Diabetes in Long-term Care (AMDA)

- RECOGNITION
  Step 1: Is diabetes present?
- Review medical records to determine if the diagnosis is present or if risk factors are present (blurred vision, dehydration, increase thirst, confusion, polydipsia, polyphagia, worsening incontinence, weight loss)
- Evaluate for evidence of hyperglycemia and problems or complications associated with diabetes
- Review lab results for indicators of diabetes or prediabetes (A1C 6.5% or higher OR FPG 126 mg/dL OR random plasma glucose 200 mg/dL or higher)
- Review current medications and previous medications that may have caused hyperglycemia

(AMDA, 2015)

- Step 2: Screen for possible diabetes in residents without a diagnosis.
- Acute change in condition
- Note of an elevated blood glucose level incidentally
- A notation of hyperglycemia in previous medical records
- Current use of antipsychotic medications

(AMDA, 2015)

- Step 3: Identify factors contributing to the resident's diabetes.
- Consider all factors that may result in abnormal glucose levels including medication, endocrine disorders, pancreas disorders, infections, etc.

(AMDA, 2015)

- Step 4: Evaluate the nature and severity of diabetic complications.
- Screening for complications should be individualized focusing on complications that could lead to impaired function. Assess for the following:

- Step 5: Identify the impact of diabetes on the resident and summarize the resident's condition.
- Within 14 days of admission or diagnosing diabetes, the provider and nurse should evaluate the resident's physical, functional and psychosocial effects of diabetes.
- Overall residents medical stability
- Impact of diabetes on their quality of life/functioning
- Conditions or problems contributing to hypo/hyperglycemia
- Individualized treatment plan with identified goals (resident centered)
- Documentation of the discussion with the resident and family or health care agent about the diagnosis, treatment plan, preferences and goals

(AMDA, 2015)

- TREATMENT
  Step 6: Develop an individualized care plan and define the goals of medical treatment.
- Treatment goals include:
  - Avoiding hypoglycemia
  - Controlling pain and neuropathic symptoms
  - Discussing and documenting advance directives and end of life care
  - Educating the resident and family about probable complications
  - Encourage appropriate nutritional intake
  - Establishing a target blood sugar range for blood glucose control
  - Establishing a target blood pressure range
  - Maximizing functional status and increasing physical activity
  - Obtaining appropriate eye care
  - Optimizing foot care
  - Reducing the risk of lower extremity infections, ulcers, and limb loss

  (AMDA, 2015)
- Step 7: Implement the care plan.

Lifestyle Modifications

- Provide a regular diet that has consistent carbohydrates for meals and snacks.
- Adjust oral agents/insulin
- Control portion size and total caloric consumption

- Increase fiber intake which helps control glucose and reduce GI problems
- Avoid excessively restrictions fat
- Talk with resident and family about meal/prescribed diet

(AMDA, 2015)

Pharmacotherapy

- Goal is to have a general approach to pharmacotherapy for diabetes to achieve optimal blood glucose control

(AMDA, 2015)

Insulin Therapy

- There are a wide variety of insulins including rapid acting, short acting, intermediate acting, long acting (basal, or premixed combinations)
- Insulin treatment must be individualized based on the resident's blood glucose levels, prognosis, and treatment goals

(AMDA, 2015)

Sliding Scale Insulin

- This is a reactive way of treating hyperglycemia
- Puts residents at risk for hyper/hypoglycemia
- Prolong use is not recommended for treatment of diabetes
- Increases residents discomfort due to frequent blood glucose monitoring

(AMDA, 2015)

Correctional Dose Insulin

- Use of rapid/short acting insulin scheduled for pre-prandial dose
- Acceptable to scheduled basal insulin and prandial insulin

(AMDA, 2015)

Hypoglycemia

- Common short-term complications that if becomes severe, may cause cognitive impairment or death.
- Blood glucose levels less than 70 mg/dL
- VA has a hypoglycemia protocol
- Symptoms of hypoglycemia of the elderly include: altered mental status, drowsiness,

lethargy, confusion, disorientation, falls, weakness, hunger, sweating, irritability, pallor, poor concentration, seizures, stroke
(AMDA, 2015)

Treating Hypoglycemia

- Avoid over treating
- "Rule of 15"= Give 15 g of glucose or carbohydrate which are equivalent to ½ cup of juice; ½ can of soda; ½ cup of apple sauce; 1 cup milk; 1 tablespoon of sugar or honey, 1 tube of glucose gel, 4 glucose tablets, 1 mini candy bar
- Wait 15 minutes, recheck and if levels are still low, give another 15 g of glucose.
- Contact provider for hypoglycemia and document
- Ensure that the VA hypoglycemia protocol is followed
- Provider should reassess resident's diabetes management

(AMDA, 2015)

- Prevention and Treatment of Diabetic Complications
- Foot care
- Oral care
- Control of hypertension
- Management of diabetic neuropathy
- Management of dyslipidemia
- Management of cardiovascular disease

(AMDA, 2015)

- Immunizations Recommended for Adults With Diabetes
- Influenza vaccination
- Pneumococcal vaccination (PCV-13, PPSV-23)
- Hepatitis B Vaccination
- Tetanus, Diphtheria, Pertussis (Td/Tdap)

(AMDA, 2015)

- Transitions of Care
- Ensure medical records are provided to receiving facility
- Ensure all records are reviewed upon arrival back to facility because treatment could

have changed according to the resident's illness
(AMDA, 2015)

- Tube Feeding Residents with Diabetes
- Glycemic control can be accomplished using oral agents via feeding tube or insulin
- Do not require special diabetic tube feeing formulas

(AMDA, 2015)

- Care of the Terminally Ill Resident with Diabetes
- Maintenance of comfort care
- Control any symptoms related to hyper/hypoglycemia
- Discuss goals of care with resident and family
- Document treatment plan
- Residents may be offered foods and fluids as tolerated (palliative)
- Blood glucose monitoring may be decreased or discontinued
- Insulin may be discontinued if poor oral intake

(AMDA, 2015)

- MONITORING
  Step 8: Re-evaluate the resident periodically.
- When medically necessary
- 30 days in recognition of diabetes
- 30 days of admission
- Overall medical stability
- Glycemic control
- Medication side effects
- Renal function
- Management of comorbidities
- Loss of skin integrity or development of wounds
- Results of any consultations or referrals

(AMDA, 2015)

- Step 9: Monitor the resident's blood glucose levels.
- Step 10: Monitor the residents who are at high risk for diabetes.
- Monitor for the onset or progression of comorbid conditions and other risk factors. Obtain annual FBG or A1c to screen for diabetes

(AMDA, 2015)

- Step 11: Monitor the facility's diabetes management.
- Systematic approaches and ongoing monitoring of practices, processes and outcomes facilitates successful implementation of diabetes care protocols to improve diabetes management, resident's functional status and quality of life.

(AMDA, 2015)

- ADA Older Adults Standards of Medical Care in Diabetes
- Healthy older adults A1c less than or equal to 7.5%
- Older adults with multiple coexisting chronic illnesses, cognition impairment, and function dependence should have a less stringent glycemic goal such as A1c 8.0%-8.5%.
- Glycemic goals can be relaxed and individualized, but avoiding symptomatic hyperglycemic complications.
- Treatment of hypertension and other cardiovascular risk factors should be individualized.
- Over treatment of diabetes should be avoided

(ADA, 2018)

- Treatment in Skilled Nursing Facilities and Nursing Homes
- Staff education is important to improve diabetes management.
- Need careful assessments to establish glycemic goals and make appropriate choices for glucose lowering agents based on their clinical and functional status.
- Follow the facility's hypoglycemia protocol.

(ADA, 2018)

- Nutritional Considerations
- Therapeutic diets may unintentionally lead to decreased food intake and contribute to unintentional weight loss and under nutrition.
- Diets that are individualized and addresses residents preferences may increase quality of life leading to satisfaction with meals and nutritional status.

(ADA, 2018)

- Hypoglycemia
- Older long-term care adults are at higher risk for hypoglycemia
- Sliding scale insulin is a reactive treatment and can cause hypoglycemia
- Comorbidities that can increase risk for hypoglycemia include: impaired cognitive function, impaired renal function, slowed hormonal regulation, suboptimal hydration, variable appetite, nutrition intake, polypharmacy, slowed intestinal absorption
- When a resident experiences hypoglycemia, treat per protocol and notify provider (ADA, 2018)
- End of Life Care
- Palliative care: strict blood pressure control may not be necessary or therapy can be withdrawn.
- Lipid management can be relaxed or therapy withdrawn
- Goal is to provide comfort and prevent stressful symptoms and honor quality of life, dignity at end of life
- Treatment interventions should reflect quality of life
- Involve resident, family, and caregivers with plan of care and goals of care (ADA, 2018)

QUESTIONS

- References

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