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Clinical Practice Guidelines for Home Management of Intravenous Immunoglobulin Therapy

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This is to certify that the doctoral study by

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has been found to be complete and satisfactory in all respects,
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by

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Abstract

The infusion of intravenous immunoglobulin therapy in the home setting requires a critical nursing assessment and interventions aimed at managing and preventing the escalation of adverse events. Some patients experience side effects that necessitate a rapid response by field nurses, requiring standing orders for nursing administration and the availability of essential medications to alleviate symptoms in the patient's home. The clinical practice issue was that the home health agency did not have a uniform clinical practice nursing guideline to assist field nurses in providing rapid responses for managing infusion-related reactions. The purpose of this project was to develop an evidence-based clinical practice guideline using standing orders for the comprehensive management of immunoglobulin side effects in the patient's home. The practice-focused question centered on whether the use of a nursing practice guideline based on interprofessional collaboration could manage the side effects of patients in the home by decreasing the use of emergent care and improved quality of care for those patients susceptible to significant side effects. An interdisciplinary expert panel experience in IVIG l used Newman's system theory and the reach, effectiveness, adoption, implementation, maintenance framework for interprofessional collaboration in developing a clinical nursing guideline with a standing order for rating side effects. Panelists used the appraisal of guidelines, research, and evaluation II tool to appraise evidence for the guideline. The use of clinical guideline with standing orders to address the needs of patients in the home setting may lead to positive social change by enabling more rapid management of symptoms, more effective care in the home, and improved patient outcomes.

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Dedication

I am dedicating this project to my wonderful husband and children who all stood by my side throughout this journey. The sacrifice that this wonderful family has made in providing an opportunity for the successful completion of this program is immeasurable. Together, they have demonstrated that love and family support are two of the most important values available to humanity.

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Section 1: Nature of the Project

Introduction

The home infusion of immunoglobulin therapy (IVIG) for the management of patients with autoimmune and other immune-related diseases has been in use since the early 1990s (Johnston & Hollingsworth, 2016). In the first years of IVIG use in the 1990s, only a small number of patients received the treatment, resulting in limited variation in patients and side effects reported. Limitations in patient variation gave the overall sense of minimal side effects, which researchers classified as transient side effects (Berger, McCallum, & Lin, 2013). Medical researchers at that time did not see the need to develop a formal guideline to assist in uniform side effect management but rather performed individual research to prove the effectiveness of specific side effect management. However, clinical advances in biotechnology science now indicate other uses for IVIG, which has made it available for a wider range of disease treatment and management such as Myasthenia Gravis, Chronic Demyelinating polyneuropathy, Guillain Barre Syndrome, primary immunodeficiency disease, and polyneuropathy to mention a few (Bonila, 2014).

The increase in demand and use of IVIG has also come with a reported rise in documented side effects among patients using the product (Thornby, Henneman, & Brown, 2015). Some of the reasons postulated as causing the side effects are associated with patient comorbidity, antigen-antibody effects, and familial history (Berger et al., 2013). The most common clinically documented side effects associated with IVIG are headaches, migraine, nausea and vomiting, thrombosis, elevated blood pressure, aplastic

meningitis, leg cramps, diarrhea, and rashes (Oaklander et al., 2017). Johnston and Hollingsworth (2016) noted that one third of patients receiving immune therapy have some documented side effects that require intervention both during and up to 48 hours post-infusion. The existing clinical guidelines and recommendations by specialty pharmacists and manufacturers for nurses when managing patients receiving home IVIG involve monitoring and assessing patients, noting any side effects, and understanding when to report side effects to physicians for further instruction and care (Vokey, 2013).

Although current field nursing interventions include assessing and documenting side effects experienced by patients and notifying ordering physicians of patients' experiences, they do not fully incorporate the knowledge available to nurses from evidence-based research articles. The limited use of evidence-based interventions lends credence to the criticism of nurses as passive observers in the health care system noted by the Institute of Medicine Report (IOM; 2010). Overcoming obstacles such as these requires policy influence by nurse leaders to put evidence into practice to provide high-quality care that improves patient outcomes and experiences through the provision of quick and rapid access to healthcare (Rose, Adams, & Johnson, 2016). Notifying the physician of the problems experienced by patients during infusion is only a part of the intervention because the physicians must, in turn, call in medications to a local pharmacy. These medications must then be picked up by already stressed caregivers or patients.

Amplifying the problem is the fact that most local pharmacies, unlike specialty pharmacies, do not carry the rapid response medications needed to manage the side effects of IVIG in their formulary (Bradford & Schulman,(2014). The only option

available to patients in this situation is the use of emergent care. In addition, field nurses are paid only for infusion and cannot wait indefinitely with patients for medication to be processed by the local pharmacy. All these factors prolong care delivery long after the nurse has terminated the infusion and left the patient's house. The result is an increase in emergent care visits as the home health agency patients seek relief from their side effects increasing cost of care and decreasing quality of patient care (McKinney, 2010). Although the cost associated with symptom management in the emergent care setting has not been fully researched because of a lack of association with diagnosis codes (Center for Medicare (C.M.S,2018), there is evidence showing that the use of emergent care can be avoided if a systematic approach and interprofessional collaboration for improved patient care are a part of the intervention process of care. Research studies have indicated that attention should be on high quality, lowered costs, and the removal of redundancy (Oberlander, 2016). The control of health care costs can increase access to health care and improve quality of care and should be part of patient management, according to Rosenbaum and Thorpe (2016), who noted that improvements in patient care were the basis for the establishment of the Affordable Care Act. Decreasing fragmentation can be a way to reduce health care costs (McKinney, 2010).

Research nurses must take an active role in leading change to address the issue of IVIG side effects and control the increased use of emergent care to manage side effects and other medical problems (IOM,2010). Leading change requires leadership through the use of evidence-based practices to influence policy (IOM,2010). The evidence-based practice must be grounded in research that targets patient and improves their health

outcomes as a metaparadigm of the nursing profession (McEwen & Wills, 2014). The role of the Doctor of Nursing Practice (DNP) student is to use education and knowledge gained in improving and promoting the use of the evidence-based practice in the clinical setting (Michael & Clochesy, 2016).

As noted in the evidence-based literature, there are interventions that can be implemented to alleviate patients' IVIG symptoms and improve outcomes (Canadian Agency for Drugs and Technologies in Health [CADTH], 2011). These interventions involve using a system of rapid response for the management of side effects in the home setting (CADTH, 2011). The system development should be done through a uniform standing order developed and approved through the interprofessional collaboration of nurses, physicians, and specialty pharmacy to ensure delivery of essential medications to the patient's home for availability to field nurses when the need arises to enable rapid response intervention of patients in need (CADTH,2011). Research studies have shown that symptom management requires making available rapid response medications in the patient's home (CADTH,2011)). The choice of essential medications to be delivered to patients' home is determined after the patient's history and physicals have been assessed (CADTH,2011). This must be done in addition to ensuring that patients have a good phone line and quick access to the home health agency and activation of emergent care (CADTH, 2011). The collaborative development and implementation of a clinical nursing practice guideline to address the management of side effects experienced by patients during and after infusion may improve patient outcomes, decrease emergent care visits, and improve the quality of care provided to patients.

Problem Statement

The local home health agency did not have a uniform clinical practice nursing guideline with standing orders to assist field nurses in providing rapid responses for managing infusion-related reactions if not ordered by the attending physicians in the patient's home. Not using evidence-based research in managing side effects of IVIG has resulted in a gap in nursing practice in that nurses are not able to respond rapidly to changes in the patient's condition. This gap in clinical care requires research on the use of an interdisciplinary standing order by the local agency that is based on evidence-based research and that anticipates side effects from IVIG. Research is also needed on available interventions to guide field nurses in rapid response intervention for the management of side effects during and after infusion in a patient's home.

An analysis of evidence-based articles shows that anticipating the needs of the patient by reviewing his or her past medical history can reduce side effects by making essential medications available in the patient's home for use (CADTH, 2011). Researchers such as Bonilla (2014) have noted that recommendations on managing the side effects of patients with a history of migraines should anticipate that these populations are more likely to have more headaches during infusion. One study indicated that thrombolytic events and pressure in the spinal column caused by increased viscosity of cerebrospinal fluids during and after infusion require intravenous hydration of the patient before, during, and after infusion to resolve the problem (Patel, Potu, & Sturm, 2017). Patients with a history of migraines are at an increased risk of aseptic meningitis if intervention is not initiated promptly.

Research has shown that a clinical guideline should match the needs of a variety of patients by anticipating treatment plans through a standing order protocol. Developing a standing order protocol for use before the initiation of infusion may facilitate a positive patient outcome (Berger et al., 2013). For instance, the use of standing orders with a physician's approval can assist field nurses in remote locations to address the health care needs of the patient when it comes to an infusion and rapid response management (CADTH,2011).) In addition, the use of standing orders will provide evidentiary documentation of interventions implemented and the patient's response to the intervention along with physician notification. The process of interprofessional cooperation involved in developing the standing orders for this project was in alignment with the DNP Essentials that calls for the use of interprofessional collaboration in managing and advocating for population health (American Association of College of Nursing [AACN], 2012).

Purpose

The purpose of the DNP project was to improve the quality of care provided to patients in the home setting by creating a clinical practice guideline with standing orders that incorporated evidence-based research findings. The gap in clinical nursing practice that this project addressed was a lack of planned anticipation at the project site of the need to manage side effects among patients receiving IVIG at home. The creation of a clinical nursing practice guideline would establish a protocol for field nurses and ensure delivery of medications before the nurses initiate infusion. In addition, the creation of the protocol may improve the safety and quality of nursing care because it will allow field

nurses to provide rapid intervention that efficiently addresses the side effects of patients receiving home IVIG. The practice-focused question was as follows: Can an interdisciplinary group of healthcare professionals develop clinical practice nursing guidelines to assist home health nurses in managing the side effects associated with intravenous infusion of immunoglobulin in the home setting?

The purpose of developing clinical nursing guidelines for home IVIG is to improve the quality of care provided to patients. To achieve this aim, I incorporated the DNP Essentials I, II, V, and VI (AACN, 2012). These DNP Essentials address the use of scientific underpinnings for practice, advocacy for population health through the implementation of health policy, the use of organizational and systems leadership to improve the quality of care provided to patients, and interprofessional collaboration for improving population health (AACN, 2012). I anticipate that the developed program will improve care and reduce the cost of the care provided to patients by offering a rapid response intervention to manage the side effects experienced by patients during and after infusion. I developed the clinical guidelines using an interprofessional collaboration approach that uses scientific knowledge.

The creation of clinical guidelines can help foster a nursing care concept that provides a holistic approach based on the best available practice evidence. Establishing clinical guidelines may also decrease nurses' time spent on phone calls and frustration from a lack of support while in the field or an isolated region. The development of these clinical guidelines may also promote social justice for the community by providing a

policy enabling quick access to health care, reduced health care costs, and advocacy for the needs of patients (IOM, 2010).

Nature of the Doctoral Project

I developed the standing orders for the project in collaboration with other professionals. To develop the project, I conducted a literature search using Cochrane Library, Google Bar, CINAHL, Medline, and Ovid. Other data sources were the guidelines developed by the Canadian Pharmaceutical Associations and the National Infusion Society, as well as the Intravenous Immunoglobulin Society.

To access a wide range of information, I used several key terms in my searches. The key terms were as follows: IVIG, IgG, side effects of immune therapy, adverse reaction top immune therapy, infusing IVIG, autoimmune treatment, and nursing management of immune therapy. I used quantitative and qualitative research studies that were peer-reviewed and published between 2010 and 2018. A final synthesis of various literature that supports different interventions for managing infusion reactions will then be itemized for presentation to an expert panel.

Significance

The development of clinical nursing guidelines with standing orders may benefit the home health agency by enabling the agency to demonstrate its ability to use research data to support practice, specifically the management of patients receiving their infusions at home. The patient experience is improved when nurses show their leadership and skills in managing side effects, using evidence based research findings and implementing policy changes in a timely and efficient manner (IOM,2011). Also, social change requires

that home health companies prepare for the future challenge of being key leaders in the cost control of IVIG therapy. Research studies have indicated that U.S. home health companies are growing at an increasingly faster rate, more than doubling their original expenditure growth by about 2% in 2017 (Reinke,2012). . Financial expenditures on home health will grow from 77.9 billion dollars in 2012 to an estimated 144 billion dollars in 2021 (Valdmanis et al., 2017). According to Mckinney (2010), there is an increasing need to drive health care spending down through interprofessional collaboration that promotes the use of home health companies in managing patients, which will help reduce emergent care and hospital visits.

Interprofessional collaboration for prevention and management of side effects is important as researchers have noted that hospital visits and emergency room visits in the United States are growing faster than the population (Baker, 2017). In their retrospective study, Barnum, Bohnenkamp, and Haas (2017) found that nurses have tension regarding possible patient response to IVIG; the authors indicated that nursing protocols to guide infusion of IVIG can reduce the stress felt by nurses and promoting patient safety. Home health companies are viewed as an alternative to hospitals when it comes to the reduction of costs associated with specialty pharmacies, especially for IVIG by the government in an effort to control the cost of healthcare (Reinke,2012). Home IVIG comes with cost savings, and there is a greater need now for health care cost control. Health care costs are continuously spiraling out of control, reaching 17% of the national gross domestic product (GDP) in 2018 (Globewire, 2018). Specialty drugs account for over 87 billion dollars in the United States today and are estimated to approach 400 billion dollars by

2020 (Globe Wire, 2018). IVIG-related costs for specialty pharmacies totaled 8.4 billion dollars in 2017 and is expected to increase by 8.5% from 2017 to 2024, reaching 14.9 billion dollars (Globe Wire, 2018).

The costs associated with home IVIG are $4,188 compared with $6,916 in the outpatient hospital setting, indicating a clear need to switch care to the home setting (Ye, Ito, Xiong, & Li-McLeod, 2014). Ye et al. (2014) noted that hospitals have a market share of over 80%. The Avalere report compiled on behalf of National Home Infusion Association for the Centers for Medicaid & Medicare Services (CMS) indicated a savings of almost 80 million dollars if IVIG is infused at home (CMS,2018). However, billing must be done by a specialty pharmacy (CMS, 2018) and not nurses. Reducing this cost means that home health agencies must be adequately prepared to take a leadership role through policy changes that promote patient safety and improved quality and stability of care.

Part of the hesitancy in the rapid development of home IVIG is a paucity of home health companies utilizing research evidence and their slow rapid response in managing symptoms. A research study noted that physicians were hesitant of high dose home IVIG based on the ability of home nurses to manage patient's side effects or any problems that develop during home infusion rapidly (Reinke, T. 2012). Another retrospective study by neuroimmunology physicians argued that premedication before, during and after the infusion was effective in managing side effects (Pahwa, Allan, Howard &Nizar, 2015). A trend is, however, developing in support of home health agencies as a better alternative when it comes to cost management (Ye et al., 2014). The Center for Medicare Services

(CMS, 2013) enacted a policy that now allows for the payment of home IVIG to home health agencies. Part of the reason behind the enactment is to determine the cost-effectiveness of home IVIG and the costs associated with managing side effects.

The DNP project will contribute to the practice of nursing in other home health agencies. Home health agencies get reimbursement on documented core measures that review process, outcome, and utilization measures (CMS, 2018). There will be an increase in the reimbursement rate for home health agencies because of a reduced utilization score on emergent care utilization by patients (CMS, 2018). The implementation of this project can improve both the process and outcome measures, thus increasing the quality of care provided by patients and the results of the Consumer Assessment of Health Care Providers (CAPS) survey, which is based on patient experience (CMS, 2018). Home health reimbursements and star ratings are done using questionnaires to ask patients about their experience with the agency. The home health agency will also benefit from patient retention, thus improving its bottom line. The ability to complete the care process means full reimbursement to the agency without a cut in cost. Implementation of the current evidence-based project using a standing order could be a great contribution to the skill levels of home health companies because evidence shows that the current project generalization to other home health agencies.

The DNP project provides an opportunity for a holistic approach toward patient care through the anticipation of associated side effects related to the treatment. The DNP project provides the home health agency the opportunity to solve the problem that prevents physicians from ordering IVIG because the home health agencies can now show

their skill in the use of evidence-based practices in developing a clinical standing order for a rapid response in patient management to improve the safety of care in a home setting.

The guidelines will support the home health agency and other home health agencies in anticipating the care of patients receiving IVIG at home, preventing frequent hospitalization and improving the quality of care. Home health agencies can also show that they are aware of issues regarding having a rapid response and that they are prepared to use evidence-based research to lead the way in affecting policy changes.

Summary

The development of a clinical nursing guideline for home IVIG is a quality improvement project that would allow nurses to implement a rapid response intervention to mitigate patients' symptoms and side effects without needing emergent care. The role of the nurse as an advocate for the patient includes using the nurse's training and professional practice to develop a policy that can bring about a positive change. The call for action includes creating a policy when there is a clear gap in knowledge. Developing a standing order that delineates instructions for the safe and rapid response to mitigate side effects is an important part of filling this knowledge gap.

The development of clinical nurse guidelines in the management of side effects is not only a safety issue but also a quality improvement one that advocates for the patient's safety and that uses the scholarship to promote efficient and cost-effective methods of care delivery. The use of practice guidelines improves the knowledge base of nurses because new nurses will have a teaching resource during their orientation and learning. It

will also show the growth of the nursing profession and its ability to collaborate among disciplines to promote a plan of care for patients instead of being passive bystanders in the management of the symptoms associated with home IVIG. Section two will discuss the concepts and theories, the relevance to nursing practice, the background and context, and the role of the DNP student and the development team.

Section 2: Background and Context

Introduction

The home infusion of IVIG remains a safety issue for the U.S. health care industry due to side effects associated with each infusion and inaccessibility of essential medications required for rapid response by nurses. For field nurses, ensuring quick access to care, which is a significant part of the patient safety goal (IOM,2010).and managing patients during and post-infusion remain problematic. There is a mandatory policy that requires EpiPen available in the homes of all patients receiving IVIG(CADTH,2011) However, other severe side effects have not received the same uniform health care policy for rapid response management (CADTH,2011). The safest option for patients seeking immediate relief is emergent care in the absence of an existing policy guideline targeting prevention which is in line with safe nursing practice and ethics to do no harm in accordance with American Nurses Association[ANA,2011].

The utilization of emergent care is, however, viewed in a negative light by the CMS as well as insurance companies due to the additional cost associated with such visits (CMS,2018). The local home health agency does not have a system in place for rapid response management of side effects but rather relies on hospitals for immediate care or until next infusion cycle to allow for orders to be processed by a specialty pharmacy. To improve patient outcomes, reduce utilization, and improve process measures, a system of quality improvement by the local agency needs to be in place.

The practice-focused question centered on whether the use of a nursing practice guideline based on an interprofessional collaboration could help nurses manage the side

effects of patients in the home setting thereby decreasing the use of emergent care and providing a better outcome for those patients susceptible to significant side effects. The main purpose of the DNP project was to develop a nursing practice guideline based on interprofessional collaboration to manage patients' side effects and thus prevent hospitalization while improving outcome and process measures, reducing utilization of high-cost resources, and decreasing the cost of care. The guideline will include a system of uniform standing orders that are signed by the physicians to allow for the processing and delivery of essential medications in the patient's home before the initiation of infusion therapy. The adoption of a clinical nursing practice guideline that focuses on anticipated side effects and allows such medications to be made available for nurses in the patient's home may reduce hospitalizations and improve patient safety and experience ((CADTH, 2011). The philosophical view of nursing as a profession that uses knowledge to guide practice (McEwen &Wills, 2015) lent credence to the project.

To answer the project question, I drew from the scholarship of explication, integration, and application, specifically Betty Neuman's (1988) theorizing and the RE-AIM framework (Holtrop, Rabin, & Glasgow, n.d.). Neuman's theory is in line with the propositivist and positivist philosophies of nursing, which support the use of knowledge to answer questions when the gap in knowledge exists (McEwen &Wills, 2015). Advocating for patients requires that nurses use knowledge of the patient en*vironment,* disease processes, past medical history, coping mechanisms, and treatment regimen to anticipate and plan quality care that restores patients to their optimal level of healthcare promptly ((McEwen &Wills, 2015).. The use of Betty Neuman theory in the project

works well as it takes into consideration the role of nurses as both an advocate and a planner in the management of patients. The RE-AIM framework evaluation matches the performance improvement and policy guideline of the home health agency as it assess the effectiveness, sustainability, reach and effectiveness of the program both in the organization and the population that they serve.

Concepts, Models, and Theories

I have used Newman's systems theory to support the importance of advocacy for patients through a multi-systems-centered approach. The theory views the patient as a whole system, with the nursing intervention aimed at providing the best possible care that can bring maximum satisfaction and outcomes for the patient (McEwen &Wills, 2015). In all professional interactions with nursing professionals, the patient must receive care that improves his or her experience and care (American Nurses Association, 2011). Nurses must plan care that anticipates the needs of the patients; as the American Nurses Association (2011) noted, caring for patients involves planning at each step of the nursing process and putting interventions in place to mitigate negative experiences. The planning of such care should involve a clear understanding of the variation in patient factors and associated side effects of the infusion and putting in place interventions to mitigate any potential side effects promptly ((McEwen &Wills, 2015). The nurse must assess the patient's environment and stressors to ensure that the patient receives the best possible care (McEwen & Willis, 2014).

RE-AIM is a framework that is used to evaluate the impact of clinical outcomes and their implementation not only in the targeted population but also in the organization

and community (Holtrop et al., n.d.). Use of t RE-AIM framework was therefore essential in proving the sustainability of the clinical practice guideline as it provides a foundation to measure the impact of the clinical nursing guideline, its effectiveness, the method used in adopting and sustaining the guideline, the implementation process, and its maintenance. The RE-Aim framework includes five different dimensions to review and assess the effectiveness of an outcome and its overall impact on the organization and community: reach, effectiveness, adoption, implementation, and maintenance (Jung et al., 2018).

I used the RE-AIM framework to assess the sustainability and maintenance of the guideline. Owners of the homehealth agency were able to assess the benefit of the guideline to their organization, how they can sustain it, and its benefit to the targeted population and the community. Use of the RE-AIM framework also provided a foundation for the review and transferability of the guideline to other home health agencies and the health care community. Jung et al. (2018) used the framework to evaluate the sustainability of a community based, practice-focused healthy weight initiative. In addition, Baba et al. (n.d.) used it to evaluate the impact of a walking program in a disadvantaged community. The quality improvement nurse uses documentation of positive patient outcomes to compare with previous outcomes to evaluate the successful implementation of the project (Jung et al. (2018).).

The current project supports the AACN (2012) guidelines on interprofessional collaboration, which promote sharing of professional communication and actively seeking to work across disciplines and communicate clinical skills among disciplines

(AACN, 2012). In this context, a practice guideline provided evidence of nursing as a science, which is based on the integration of evidence-based data in the practice of interventions provided to patients (Krom, Batten, & Bautista, 2010).

For the project, I used an interprofessional collaboration framework to develop a standing order for the utilization of the delivery of rescue medications to the patient's homes and the implementation of care by the nurses. The use of a standing order allows for collaboration among disciplines by using professional communication among experts to bring about a better outcome for patients (Dongen et al., 2016).

Relevance to Nursing Practice

The present health care system calls for the provision of high-quality care at a reduced cost, using the best available evidence-based practice(Mckinney,2010). The increasing cost of IVIG and its associated health care costs require policy implementation that targets cost-saving while promoting quality improvement that provides patients with the best possible nursing care. Efficiency and improved nursing care, Patient safety, and wellbeing depend on the provision of quick access to care (IOM,2011). Patients receive improved quality of care when a group of professionals works together to develop a shared professional communication and data that improve patient outcomes (Dongen et al., 2016). Health care professionals are challenged to provide the best possible outcome for patients at a reduced cost using the best available interventions that focuses on evidenced based research and practice. The purpose of providing home IVIG is to improve cost-savings and patient comfort (C.M.S,2018). Although immune treatment is effective in disease management, the pharmaceutical costs associated with it have

increased by up to 20%, accounting for over 87 billion dollars in government spending in 2012, and this is expected to top over 400 billion dollars by 2020 (Bradford, Balu, & Schulman, 2014). IVIG costs are part of these expenditures and have increased by 8% in 2018 alone, with an annual cost of 2.8 billion dollars in drug costs alone(Globe Wire,2018). The above-stated cost in dollars does not include the costs of treating side effects, miscoding side effects, undertreating side effects, emergent care, or underdiagnosing side effects, not to mention the actual nursing for the administration of the product.

Therefore, it is crucial that nurse leaders develop a quality improvement method that prevents additional cost associated with management in the patient's home by preventing the use of emergent care services. Rapid interventions for the management of symptoms during and after infusion have been shown to dissipate symptoms and reduce the need for emergency room visits (Pahwa et al. (2015). Successful and quick intervention requires the implementation of clinical nursing guidelines to manage symptoms immediately (CADTH, 2011). The implementation of clinical nursing practice guidelines will ensure that essential medications are available for a rapid response in the patient's home. The ability of the nurses to intervene quickly by administering rescue drugs allows them to complete IVIG treatment without interruption. Evidence-based research has shown that infusing patients in a home setting can save the government several hundreds of dollars per infusion episode; this is a significant saving in costs when calculating the number of patients receiving infusions at home (Dowell, Moss, & Odedra, 2018). The introduction of a clinical guideline will assure physicians of the safety of

patients and an indication of improved quality of care. Research studies have shown that because of the guidelines for the rapid management of blood transfusion reactions, the health care industry should also develop guidelines for the management of home IVIG(CADTH,2011). The DNP student must use a combination of integrative and application scholarship learned to promote the growth of the profession by implementing an evidence-based practice where a gap exists through the creation of a standing order-based nursing guideline. The American Nurses Association (2011) called on nurses to practice to the full extent of their profession and be advocates in influencing change for patients, and these policies fulfill the need for such change. The DNP essentials require that nurses use their scholarship to influence and improve the system organization where weakness occurs (AACN, 2012).

Local Background and Context

The setting for the DNP project is a natural setting of a home health agency located in a community of over 100,000 in the south-western United States. The agency specializes in IVIG therapy to adults with varied diseases. The home health agency cares for patients in a region of over 200 miles that has both urban and rural settings. The home health agency is well suited for the project because the agency is a member of the Immunoglobulin Society (IgNS). The patient census is routinely over 100 adults aged 18 years and older who are receiving intravenous immune therapy for various disorders. As part of the DNP clinical experience, interviews were conducted with the administrator, quality improvement coordinator, and the director of nursing to determine if the local agency is using evidence-based research information in planning and initiating infusion

therapy and managing the side effects; the interviews revealed a lack of evidence-based research studies in practice. The company still uses doctors' orders and does not make any effort to anticipate needs before sending field nurses to implement care. Nurses are required to document and report side effects. The clinical gap is that field nurses are instructed to abort infusion should side effects occur that available medications cannot control until further orders from physicians. Emergent care services can be activated for patients meeting the criteria until further orders from the physicians. Although a nursing intervention requires physician notifications for additional orders to manage symptoms, initiating contact with the physician does not resolve the problem in an expedited manner. The reason for this is because physicians must call orders into a local pharmacy for a dispensation and because the local pharmacy often does not have rapid response medications available. These delays lead to the worsening of symptoms, termination of infusions, and the patients needing urgent care. The use of this practice increases health care costs that could have been prevented through the establishment of a clear clinical nursing guideline for the timely management of potential side effects.

Role of the DNP Student

As a Clinical Nurse Specialist that manages infusion of specialty drugs in the local home health setting, I have a unique knowledge of the processes and complex health care specialization and fragmentation that gave rise to the knowledge gap. For over ten years, I have been in a position to observe the trend and rise in specialty drug pharmacy. The need to control the rising cost of specialty drug gave rise to shared benefit that ultimately left the control of drug dispensing and nursing reimbursement to

pharmaceuticals. The change that gave pharmaceuticals financial power over nursing changed the dynamic of autonomy of nursing in the specialty drug industry as nursing became relegated to that of direct patient care. Specialty drug companies, due to their lack of nursing experience, often give home health companies limited information and adequate time to plan and anticipate needs. As an insider in the process, I have the intimate knowledge of the problems facing field nurses in the patient's home setting. I have also noted the frustration faced by nurses as they manage patients with limited resources. I have, on numerous occasions, worked in coordination with field nurses to prevent escalation of patient conditions and bring about a positive outcome. My numerous experiences in triage calls and interaction with other disciplines and regulatory agencies gave me the experience needed to manipulate and effect a policy process through communication centered on the benefit to patients as our mutual goal. My position as a clinical nurse specialist in charge of infusion has provided an opportunity for interprofessional collaboration between the interdisciplinary team involved with the process of care delivery.

While the gap in knowledge has been an ongoing problem in the home health setting, my experience as a DNP student has given me the scholarship needed to use philosophical thinking of nursing to seek knowledge that answers the focus question in the research study. While I recognize the existence of health care challenges associated with the guideline, both at the micro level such as the organizations ability to maintain the guideline, nursing ability to document exact assessment associated with each intervention: and macro levels such as additional cost of documentation, cost to patients

and insurance companies, the current movement to use home health agencies to save cost have provided an opportunity to make the project a success. As required by the DNP essentials, I will utilize a leadership role in organizing and implementing the project. The DNP student is instrumental in promoting change by noting clinical problems and using education gained to close the gap in knowledge (Moran, Burson & Conrad, 2017). As future leaders, it is the DNP student's responsibility to continue to foster the growth of the nursing profession through the utilization of evidence-based research practice (Sherrod & Goda, 2016). Part of that leadership responsibility is developing a clinical nursing guideline that not only assists in the management of side effects but also the education and orientation of the future generation of nurses. It allows nursing to be viewed as a profession, not an occupation because DNP students can use theories to translate knowledge into evidence (Terry, 2018). The development of nurse-led guidelines will refocus the role of nurses as equal partners in managing patients.

Role of the Project Team

The panel of experts was be made up of five registered nurses trained in home health IVIG, a specialty pharmacist, and a physician specializing in IVIG. The office administrator was consulted to determine the effects of the guidelines on insurance reimbursement and the ability of the organization to effect changes implemented. The role of the panel was to determine the assessment and management of side effects from very mild to severe, nursing actions to be taken at each step to prevent escalation, standing medication orders according to protocol, and checklists for monitoring the results of interventions based on the Appraisal Guidelines Research and Evaluation 11

instrument (AGREE II). The project used clinical practice evidence that focuses on the use of the scientific method to support evidence. Based on this, the grading of evidence-based research utilized levels I to VI evidence. The use of high-quality evidence will make the guidelines transferable to other home health agencies. "

The practice focused question to be addressed was whether an inter-disciplinary group of healthcare practitioners can develop clinical practice nursing guidelines to assist home health nurses in managing the side effects associated with the intravenous infusion of immunoglobulin in a home setting?

Addressing the clinical question requires a team of experts instructed on the AGREE II (2017) guideline and the usefulness of the AGREE II guidelines in the development of a quality improvement project to assist the home health organization. I educated the panel on the AGREE II consortium guidelines (2017). The AGREE II (2017) guidelines use a set of 23 items with six domains that address quality improvement guideline development in an organization. The use of research evidence in establishing the guidelines will assist the team in deciding on the best medications for a rapid response and the rigors anticipated in the development of the guidelines. My leadership role involved analyzing the research evidence, grading, and presenting the evidence to the panel of experts. Part of the development of the guidelines is the identification of the stakeholders, who are not only the patients who can obtain a direct benefit from the intervention but also the insurance companies and the organization through cost reduction and cost-effectiveness. The team is responsible for making the decision on how clinical practice nursing guideline based on a uniform standing order

developed from the evidence-based research practice will be disseminated and the role of champions and leaders in marketing and diffusion of information.

The team worked together to ensure that the guidelines developed are within the regulations of the state for home health companies. The team of experts must review the details of the standing orders and add or remove data that are not within the scope of the practice of the company based on federal certification rules. After physician endorsement of the plan, the team worked together to develop a standing order that will guide the home health practice. The plan will start with one physicians' group of patients and then will be marketed to other physicians that order IVIG for patients.

Once approved by the administration and quality improvement committee, field nurses will be required to undergo training in the interventions and associated documentation to evaluate the effectiveness of the intervention. Future evaluation of the project will be done at the organizational level using a combination of formative and process evaluations (Hodges & Videto, 2011) along with the Re-AIM framework to see if positive patient experiences are present (Jauregui et al., 2015).

Summary

The use of nursing guidelines in the management of side effects is not only a safety issue but is also a quality improvement effort that can save on the unnecessary costs associated with the utilization of emergent care, improve the quality of care by allowing therapeutic management to continue, and allow for quick access to care. The use of practice guidelines improves the knowledge base of nurses because new nurses will have a formula for interventions and a way to document the symptoms exhibited by

patients. It also allows for collaboration among disciplines because nurses will become more involved in the plan of care instead of being passive bystanders in the management of symptoms. Section three will describe the sources of evidence and the process for analysis of data.

Section 3: Collection and Analysis of Evidence

Introduction

The need to control increases in U.S. health care spending led to federal approval of IVIG administration in the home setting (Ye et al., 2014). However, IVIG has numerous side effects such as nausea, vomiting, urticaria, headaches, migraines, and hypertension that require the establishment of a protocol for the safe management of patients in the home setting (Hachulla et al., 2018). Infusing IVIG in a home setting has the potential for adverse reactions, thereby jeopardizing patient safety if not managed promptly using the best available evidence (ANA,2011). Home health agencies and nurses face potential legal implications if the patient's safety is at risk because of a delay in quick access to care which is part of nursing ethics and code of conduct(ANA,2011). To mitigate the risk factors that occur with infusion, the pharmaceutical and medical community have suggested medical management using antihistamines, antipyretics, and Epi-Pens for all patients undergoing home IVIG (IgNS,2018).

In a home health setting, a problem arises, however, when field nurses encounter symptoms that require additional and immediate interventions other than a repeat of Benadryl and Tylenol or a lowering of the rate of infusions. Specific nursing guidelines are lacking that can improve the quality of care provided to patients should these(see Appendix (interventions fail to control side effects. The lack of guidelines has led to inconsistencies in the ways different home infusion agencies manage patients raising doubts about home health agency preparedness for home infusion (Reinke,2012). Some nurses use pumps to regulate the infusion while others free flow the infusion resulting in

a lack of consistency and guidelines. Patients are often sent to the emergency room when nurses are unable to manage the side effects with antihistamines and Tylenol for safety purposes and nursing professional ethics demand on malfeasance (ANA,2011). Health care leaders should be aware of the cost associated with frequent emergency care and the increasing attention on cost control and improved quality of care when planning care. The utilization of emergency care should be a last resort as it negates the reason for home infusion. The universal requirement for EPI-PEN in homes of all patients receiving IVIG in the home setting is for the management of anaphylactic reaction and does not assist in the management of side effects (CADTH,2011).

Due to the lack of the availability of rapid response drugs, patients and field nurses often resort to emergent care for the management of side effects; this practice further increases health care costs. It is therefore important to establish a clear clinical nursing guideline in local health care settings using a standing order system that allows for the delivery of essential rapid response drugs. The creation of clinical nursing guidelines based on interprofessional collaboration and high-level research evidence will ensure that specialty pharmacies can deliver the rapid response medications needed in the patient's home in anticipation of side effects (Krom et al., 2010).

Practice-Focused Question

The practice-focused question for this project was, Can an interdisciplinary group of healthcare professionals develop clinical practice nursing guidelines to assist home health nurses in managing the side effects associated with the intravenous infusion of immunoglobulin in a home setting?

Purpose

The purpose of the project was to determine if the use of clinical nursing guidelines will close the gap of knowledge that exists in managing the side effects of home IVIG and provide organized clinical practice guidelines for the management of side effects experienced by patients receiving home IVIG. If essential rescue medications are delivered to the patient's home for use by nurses, the cost of emergent care for symptom management may be reduced significantly. Anticipating the needs of patients improves quality and enables patients to receive the best care possible, which is a part of the nursing profession paradigm (McEwen & Ellis, 2014).

Sources of Evidence

I completed an evidence-based literature review using the following databases: Medline, CINAHL, ProQuest, Cochrane Database of Systematic Reviews, and Google Bar which I accessed via Walden University Library. I limited my searches to literature published from 2010 to 2018 and used key words to ensure all-inclusive criteria such as the common symptoms associated with the infusion of IVIG. The focus of the search was on collecting evidence that generalizes the management of side effects experienced by patients during IVIG. The side effects targeted during the search were the most common, as noted by research, and included headaches, nausea, vomiting, migraine, hypertension, fluid overload, renal insufficiency, and blood clots. In searching for evidence, I also reviewed literature that supports a rapid response and its significance to both patient safety and the promotion of the nursing profession. In addition, I reviewed literature to determine if there are any existing guidelines available.

In their meta-analysis of evidence-based articles, Markvardsen et al. (2015) noted that transient side effects occur in more than 50% of the population of patients receiving home IVIG. It is also a recommended requirement that the health care industry encourage patients receiving home IVIG to maintain an open phone line and an anaphylactic kit consisting of epinephrine, Benadryl, and Tylenol in case of a life-threatening anaphylactic reaction occurring during the infusion (CADTH, 2011). The reason is to promote quick access to care and promote high quality care.

In another meta-analysis of evidence-based research, the authors noted that over 60% of patients receiving IVIG manifest reactions such as nausea, headaches, flu-like symptoms, blood pressure, congestive heart failure, rash, spasms, and restless legs, despite the pretreatments given (Hachulla et al., 2018). Patients with a history of migraines have been shown to have a greater occurrence of aseptic meningitis with the infusion and should be monitored and treated promptly to avoid the escalation of symptoms (Markvardsen et al., 2015). Patients who have been known to suffer from blood viscosity are treated with hydration or blood thinners during the infusion (Bonila,2014).Hypertension and stroke patients have a risk of increased symptoms if adequate intervention is not performed and implemented rapidly (Markvardsen et al., 2015).

Hachulla et al. (2018) noted that side effects could be managed by decreasing the rate of infusion and medicating patients with essential drugs if these drugs are available in the patient's home. Patients can also exhibit elevated blood pressure, fluid overload, and a thrombolytic process (Berger et al., 2013). The present recommendation is for field

nurses to assess, document, and notify physicians of symptoms for management (Vokey, 2013). This recommendation, however, does not allow for the rapid intervention of symptoms in home settings or give nurses the ability to practice to the full extent of their professional education.

In its meta-analysis, CADTH (2011) noted that certain side effects are common among patients receiving intravenous IVIG and that the role of nurses should not only be based on physician notification but rather on policies that can create a rapid response in the home setting through interprofessional collaboration. Nurses must also use leadership to create guidelines through interprofessional collaboration that aims to reduce health care costs and improve the quality of care provided to patients (Price-Dowd, 2018). Although a nursing intervention requires physician notifications for additional orders to manage symptoms, initiating contact with the physician does not resolve the problem in an expedited manner because the orders must go to the local pharmacy, which generally does not have the rapid response medications in stock that is often carried by specialty pharmacy(Bradford &Schulman, (2014). These delays in the activation of care often lead to a worsening of symptoms, possible abortion of infusion, negative patient and family experiences, and sometimes the need to use emergent care indicating lack of quick access, increase in health care cost and delay in care (Mckinney, 2010).

The creation of a clinical nursing protocol may assist in the resolution of these problems by increasing the ability of a rapid response (see Barnum et al., 2017). Specifically, a clinical nursing practice guideline implemented based on interprofessional collaboration with a specialty pharmacy and the physicians while keeping the patient at

the center of care may ensure the availability of the essential quick response medications needed by home health field nurses. The availability of essential medications assists field nurses in performing interventions; it also improve the quality of care, allowing for the completion of infusion, reduction in emergent care visits, and improved patient experiences in compliance with the need of Affordable Care Act to reduce spending and improve quality of care at a reduced cost (Oberlander,2016). These guidelines can also reduce the stress encountered by nurses who are in a remote location and trying to manage symptoms because of a lack of the availability of rescue drugs. The project team developed the guidelines based on common symptom anticipation and quick action medications, here consisting of intravenous and oral medications. The availability of these drugs will reduce the anxiety associated with the lack of available medications in the home for the management of symptoms (Olson et.al, 2016). Cost savings may also occur because nurses can focus more on the management of patients and documentation of patient experiences.

Having nurses assess and notify physicians as the only intervention is a patient safety issue that goes against the recommendation of the IOM's report that called for nurses to use leadership skills in affecting changes in policy (IOM, 2010). This report also recommended that nurses should be allowed to practice to the full extent of their profession and education (IOM, 2010). Clinical nursing guidelines developed in the form of standing orders by the home health agency would work to improve the quality of care by reducing response time and improving the provision of timely interventions needed to

improve the quality of care provided to patients, as well as promoting the skill sets of the nurses involved.

Nursing assessments and interventions are crucial for patient safety, and it is therefore important that nurses anticipate interventions by establishing guidelines that make it possible for a specialty pharmacy to supply rapid intravenous response drugs in a patient's homes before initiating an infusion. The availability of these drugs will assist field nurses in the implementation of interventions and documentation for further evaluation and cost-effectiveness.

There is a clear correlation between the various research articles indicating that health care professionals should anticipate the needs of their patients and should, therefore, implement the use of anticipated interventions for the rapid management of side effects. A meta-analysis article based on a 20-year review of different brands of IVIG determined that there is a clear similarity in side effects such as headaches, nausea and flu-like symptoms (Saeedian & Randhawa, 2014). The study supported the premise that the knowledge of the most common side effects associated with the different brands of IVIG should form the basis for the planning and anticipation of the needs of patients in a home setting.

Depending on physicians for the complete management of IVIG related side effects has created the lack of back-up medications needed for rapid intervention at the patient's home, which is a safety concern. Some physicians have a developed standing order for nurses to follow, which has proven effective for the local home health agency in managing patients' symptoms (Pahwa, Allan, Howard & Nizar, 2015). However, the

development of standing orders by some physicians does not exonerate nurses from rendering their professional leadership responsibilities. The use of a uniform clinical nursing practice guideline that sets as its goal, patients' safety, and risk reduction for the nurses provide a positive outcome for the company. As professionals, nurses must use leadership to influence change that can bring about a positive social effect on the society that they represent.

Support for the Clinical Question

The evidence noted in the review support the anticipation of interventions for the management of side effects experienced during an infusion. It is not enough for the nurse to document the side effects and allow the patient to suffer in discomfort. Nurses must also take an active part in initiating and making policy changes that seek to advocate for the patients and promote their safety. The use of a holistic approach in planning nursing care is in line with Betty Neuman's theory, which states that the patient should be treated as a whole system and provided with the best and most optimal care (McEwen & Wills, 2014). In the evaluation of the project's outcome and its suitability to the local organization, the formative and the RE-Aim framework will be used to determine the impact and effectiveness of the project in addressing the needs of the patients and the outcomes of the quality improvement (Miake-Lye, Amulis, Saliba, Shekelle, Volkman, & Ganz, 2011).

A review of the literature noted that analyzing each patient's history and planning for care can mitigate side effects (Markvardsen et al., 2015). Nurses administering IVIG to patients with a history of hypertension, arterial fibrillation, renal failure, and migraines

should anticipate an escalation of blood pressure, possible congestive heart failure, blood viscosity fluid overload, and migraines. Therefore, an intervention should be planned and ready to be implemented should the patient need it (Berger et al., 2013). Planning of care for patients with a history of migraines should include anticipation of aseptic meningitis which is characterized by severe headaches and nausea with or without vomiting during and after infusion and therefore should have a management plan for such patients before initiating infusion (Patel et al., 2017).

The CADTH (2011) recommendation guideline on home IVIG supports the need for a rapid response by anticipating common side effects associated with IVIG infusion, noting patients susceptible for uncommon side effects based on co-morbidity and then implementing a plan of care that makes it easy for the safe delivery of infusion in the patient's home. Making such anticipation and management based on common side effects and history includes the slow rate of infusion for patients with renal failure, blood thinners for patients with a history of thrombosis and providing analgesics for Headaches (Thornby et al., 2015). However, while it is important to document and research side effects and associated management, research articles noted that guidelines be created for future use, much like what has been done it with the blood transfusion guidelines for a uniform use across the health care industry (CADTH, 2011).

A great part of the new health care paradigm is the use of evidence-based research to support clinical practice and, when there is a gap, to ask scholarly questions that provide the needed information (Michael & Clochesy, 2016). In his article on the development of a standardized form for the management of side effects associated with

chemotherapy, Butcher (2011) argued that the anticipation of such standards could assist in reducing patients' side effects, improving their experiences, and allowing them to receive the treatment needed to manage their disease process. Clarke (2010) also noted that the complex health care of patients, disease process, need for cost control and need to use the available resources in an effective manner calls for the use of interprofessional collaboration in the management and development of quality improvement programs for the management of patients. The use of clinical nursing guidelines supports the utilization of interprofessional collaboration in managing the side effects associated with IVIG. It means that all members of the healthcare team must work in professional collaboration to promote the best outcome for patients (Clarke, 2010). McKinney (2010), in his article on stroke team noted that teamwork produces a better patient outcome and therefore supports the need for teams to work together to control the cost of health care by reducing redundancy, acting in a preventive way while providing high-quality care. It noted that high costs do not necessarily correlate with high-quality care if teams do not work together to remove fragmentation (McKinney, 2010).

Analysis and Synthesis

The purpose of analysis and synthesis of evidence for this project was to critically analyze, appraise and use the evidence to address the problem of creating a uniform guideline clinical nursing guideline for effective and rapid management of side effects of intravenous immunoglobulin in the home health setting due to its remoteness. The analysis and synthesis of the level of research evidence obtained in the project evidentiary process will utilize the profile and steps stipulated by Melnyk and Fineout-

Overholt (2011) and Mantzoukas (2009). During the initial step of the project analysis, evidence obtained was sorted out utilizing both tables and graphs to arrange them in a level of the hierarchy that places quantitative data above qualitative analysis. Level 1 evidence uses a systemic review of the data. Level 11 is a randomized controlled trial. Level 111 evidence contains data from quasi-experiments, and level V1 is descriptive, predictive correlational and cohort studies. Mixed method research, descriptive and qualitative study, and expert opinions were placed in levels V, VI, and VII, respectively. The Mantzoukas classification tables are utilized in the methodology of research evidence, specifying analysis of the evidence into quantitative and qualitative tables with specified naming nomenclature for quantitative research and qualitative research (Gray, Grove &Sutherland,2014). The determination of the type of study is through an analysis of the abstract. A listing was compiled that addressed the management of the most frequently occurring common side effects noted during and post infusions of immunoglobulin therapy, the associated patient interventions, and drugs recommended for management. The analysis and synthesis of data was provided to the Project Team comprising of four registered nurses with clinical experiences in IG infusion, a pharmacist representing the specialty drug pharmacy, the administrator of the company and a physician for the development of a table of standing orders using a grading criterion noted in the research from mild to severe with an associated patient symptom that is deemed mild to severe, a stepwise nursing intervention and documentation for each stage and outcome documentation. This is supported by the rapid response intervention recommendation (CADTH, 2011). The guidelines contain a stage for the

abortion of therapy, initiation of Epi-pen, and emergent care if patient safety is at risk. Part of my responsibility as a leader was to provide the expert panel with a list of drugs that are federally prohibited in a home setting and the need for narcotic counts if used in the home setting. A statistical calculation was used for the creation of the guideline as it related to the most common side effects and drug responsive to treating it. The project team then appraised the guideline using the AGREE II tool.

Ethical Protections

The study did not involve the use of human experiments. The participants for the study are members of the organization that were assured anonymity in the study. Before obtaining the Walden IRB approval, participants provided the signed consent for the project. The maintenance of trade and company secrets was very important to the company, and for that reason, the names of participants were masked. Company data were not revealed in the study.

Summary

The DNP student must use knowledge his or she gained to fill a practice gap when that gap is noted (Sherrod & Goda, 2016). There is a clear gap in knowledge in the management of patients with side effects of home IVIG. As a leader in the profession, it is an essential duty of the DNP student to advocate for their patients through a policy that develops quality improvement (AACN,2012). Creating a nurse-led standing order in collaboration with physicians and specialty pharmacists can enable the delivery of the essential drugs needed to manage patients in their homes. Nurse leaders, as part of the interprofessional team in the health care industry, should use their education and training

in implementing these policy changes of rapid response intervention through the utilization of care that anticipates side effects (Toto et al., 2009). The clinical nursing guideline for the project was developed based on the methodology that utilized systematic review and synthesis of evidence-based research articles. The organization used for the scholarship needed to develop the knowledge was based on PICO to ensure inclusion of the philosophical thinking and search for knowledge is the foundation for the research. The next section is devoted to the findings and recommendations based on the synthesis and analysis of secondary data. The findings were utilized in the development of standing order. The evaluation of the guideline is based on criteria that improve patient outcome and experience.

Section 4: Findings and Recommendations

Introduction

The clinical practice issue was that the home health agency had no organized system in place utilizing a rapid response to manage the side effects associated with home infusion of IVIG. Current policy at the home health agency suggests that practitioners abort infusion and activate emergent care rather than utilizing an evidence-based clinical nursing guideline to introduce standing orders for a rapid response to manage the patient. This policy delays the implementation of interventions that mitigate and manage postinfusion side effects according to the agency Administrator and clinical nurse Manager. There was a gap in clinical care regarding the use of evidence-based clinical guidelines with standing orders by local agencies to address the anticipated side effects of IVIG. Detailed interventions to guide field nurses in a rapid response of side effects during and after infusion in a patient's home were also lacking. I addressed this gap by creating a standing order that rated side effects on a scale from mild to severe (see Appendix A). The practice-focused question was, Can an interdisciplinary group of healthcare professionals develop clinical practice nursing guidelines to assist home health nurses in managing the side effects associated with the intravenous infusion of immunoglobulin in a home setting?

In developing this project, I sought to provide a solution for the management of side effects of IVIG in the home setting by creating an evidence-based research clinical practice guideline for the home health agency. The lack of a clinical nursing guideline is not only a gap in the body of knowledge but also a patient safety issue as quick access to

care is a patient safety issue (IOM,2010). In addition, quick access to care is an important part of process and outcome measures (CMS,2018). Establishing a clinical practice guideline that incorporates interprofessional collaboration in planning and implementation processes is likely to improve patient outcome significantly (AGREE II, 2017). The ultimate purpose of the project will be to determine whether patient outcomes can be improved through the creation of a uniform, interprofessional clinical practice guideline for the rapid management of side effects experienced by patients in the home. However, this is beyond the scope of this study. I focused on the use of evidence based research findings to put into practice, interventions that may improve patient outcome during and post infusions of IVIG.

Findings and Implications

Sources of Evidence

I collected evidence for the project from peer-reviewed articles (see Appendix B). Evidence was collected from several databases, such as Medline, CINAHL, ProQuest, and the Cochrane Database. Articles were excluded if they were published before 2008 and if the patients studied were less than 16 years old. I included research published after 2009 in which patients of 16 years old and older were studied.

Search criteria included common symptoms and side effects associated with IVIG infusion to ensure that data targeted a variety of patients in the home setting. A meta-analysis and synthesis of articles (Markvardsen et al., 2015) was used to support the data on common side effects. Both OVID and the Mankousas grading system(formed the bases for the evidence selection method used. A simple frequency distribution was

utilized to categorize side effects for the appraisal. Research data used to support the project were divided based on the grading scale to ensure that the project used the best evidence. A consistent theme in all articles indicated the use of mild to moderate analgesics for the management of headaches and migraines, anti-convulsant such as Depakote, anti-spasmodic for the management of spasms and severe migraines, and an anti-emetic for the management of mild to severe nausea and vomiting (Markvardsen et al., 2015). Also, analysis of articles highlighted that slowing the rate of infusion for patients with a history of migraines and renal insufficiency is also effective in managing side effects associated with IVIG (Bonila,2014). A meta-analysis by Oaklander et al. (2017) also supported the findings.

A recommendation made in a study by Bonila (2014) noted that patients with potential for hyperviscosity due to their disease process should have a slow infusion rate and hydration with normal saline if possible. Such patients require treatment with antiplatelets for days before infusion if approved by their hematologist (Bonila,2014). Research findings indicated that steroid administration was effective in managing migraine and pressure in the spinal fluid caused by elevated protein levels and the consequent cerebral edema associated with such pressure. A common theme noted in the articles reviewed was that decreasing side effects both during and post IVIG infusion improved patient safety and outcome. It was also important to ensure that nurses had within their arsenal essential medications needed to manage side effects.

Analytical Strategies

As the project coordinator, it was my duty to collect and organize the articles selected for this research. To ensure that a representative sample of side effects, , I focused selection criteria on the most common symptoms. Outliers were analyzed, based on the frequency of occurrence and nature of evidence, to ensure equal distribution. Symptoms relevant to home management were selected using a frequency distribution. The mean and median were used to address rare outlying symptoms that may be observed during infusion in some patients. I also provided information on medications federally permitted for home use such as [Toradol, Dexamethasone, Valproate, Valium and Banadry (CMS,2018). I explained the rules home health agencies follow regarding CAPHS scoring, emergent care utilization, and the effectiveness of the standing order in allowing the agency to increase its reimbursement. In addition, I used the opportunity to explain to each of the stakeholders the positive social change associated with the guideline in terms of both legal and financial benefits.

As the team leader, I explained the AGREE II (2017) instrument that formed the basis for the appraisal of the guideline and the grading system used in each domain to the team members. Part of my role as team leader was to meet with the panel of experts made up of a clinical pharmacist, administrator, clinical nurse director, medical director, field nurse, and quality control nurse on a biweekly basis to answer questions and to provide clarification of the data and how the evidence obtained can be implemented by local home health care providers. I educated the team on the level of evidence used based on OVID and the Mankousas scale and informed them of medications that can be used in the

home setting. I also discussed what other healthcare providers were doing to implement a system of standing orders for individual patients and methods of cost management and control such as prescribing medications that control side effects for patients to have for future infusion.

The meetings presented an opportunity to explain the grading system used in evidence-based research and discuss concerns regarding the workability of evidence in home health care to avoid vendor conflict, which can impact the referral of patients as part of program analysis(Hodges & Videto, 2011). We also used the meetings to address the workability of the project within the home health organization and how standing orders could be initiated and become part of the company record based on approval by the governing body. Approval is required by the regulatory authorities of home health agencies (CMS,2018).).

Information for the expert panel was assembled based on evidence from research articles subjected to analysis and synthesis, utilizing a grading system to ensure data quality (Gray et al., 2014). After reviewing and debating the evidence, the expert panel indicated that the data selected qualified for inclusion in a clinical nursing practice guideline. In addition to evidence-based research findings, the clinical nursing practice guideline was based on the CADTH recommendations with associated symptoms rating (CADTH, 2011).

I created standing order that rated side effects on a scale from mild to severe using the data collected (see Appendix A). Each symptom rating was given an associated medical and nursing management action that focused mainly on a rapid response

intervention. The medical management of side effects was based on medications that can be utilized in a home environment and that are federally permitted for home administration by the state Department of Health and Human Services and other regulatory agencies. I presented the clinical guidelines and the standing orders to the project team for their final approval and appraisal after dosage review by the pharmacist.

I presented the panel of experts the updated version of the AGREE II Consortium Instrument (2017), a tool that is used to appraise clinical guidelines. It has six domains, and each domain contains targeted information for the appraisal (AGREE II,2017). The main purpose is to ensure that evidence used in developing clinical guidelines is based on scientifically sound data (AGREE II, ,2017). My motivation to use this instrument in this study was to ensure a clear method for the assessment and appraisal of sources of evidence used to develop the guideline. Also, the AGREE II instrument provided a methodological strategy for the development and reporting of the clinical nursing guideline. To appraise the articles used as evidence to support the creation of standing orders, the five experts were provided with the AGREE II Clinical guidelines, which were made up of the six domains listed in the AGREE II Consortium instrument (2017) as follows:

- Domain 1: Scope and Purpose of the Clinical Guideline Statement,
- Domain 2: Stakeholder Involvement,
- Domain 3: Rigor of Development,
- Domain 4: Clarity of Presentation,
- Domain 5: Applicability of the Clinical Practice Guideline, and

- Domain 6: Editorial Independence.

Each of the domains contained 23 questions used to evaluate the integrity of the evidence. Overall, two methods of scoring using a 7-point grading system from *strongly disagree* to *agree strongly* were utilized in appraising the data. The first method was based on an appraisal by individual experts, and the second method was based on the consensus between them. The result of both scores was averaged and formed the basic unit for the development of the clinical nursing practice guideline. I accepted the experts' scoring. Tables 1 includes the experts' individual scores; Table 2 includes the consensus scores. The tables indicate that the evidence passed the requirements for use in developing a clinical guideline.

Table 1

Individual Scores Using the AGREE II Consortium Instruments

Domain	Score (%)							Aggregate score
1: Scope and Purpose	5	3	6	5	6	7	6	96
2: Stakeholder Involvement	4	4	6	5	5	6	5	97
3: Rigor of Development	5	7	6	4	6	3	4	95
4: Clarity of Presentation	6	7	8	6	7	6	6	95
5: Applicability	7	2	5	5	5	4	4	96
6: Editorial Independence	4	5	4	7	8	6	7	93

Note. Method 1 was based on individual appraisal scores using the AGREE II guideline on evidence submitted. The formula for the score was based on the updated 2017 AGREE II consortium and was the score from each domain minus the minimum possible

score divided by the maximum possible score in each domain minus the minimum possible score.

Table 2

Consensus Score Using the 2017 AGREE II Consortium Instruments

	Domain 1	Domain 2	Domain 3	Domain 4	Domain 5	Domain 6
Consensus score	97	95	97	96	94	95

Note. The calculation method was as follows: Obtained score − minimum possible score)/(maximum possible score − minimum possible score). A 7-point scale was used, in which 1 = *Strongly Disagree* and 7 = *Strongly Agree.*

After the ratification of the standing order and the reconciliation of issues of compatibility with agency regulation, I presented it to the administrator for final approval by the governing body. This is required by the regulatory bodies governing home health care agencies before a standing order can be included in agency policy and procedure (CMS,2018)..

Implications for Social Change

The IOM (2010) report called for the use of inter-professional collaboration to develop new knowledge where knowledge gaps exist. Patients benefit when experts exchange clinical skills. The implications for social change when this occurs include the reduced use of emergent care and a decrease in the financial cost of health care through better access to higher quality health care.

The knowledge developed in the project can easily be used not only by the home health agency but also by other home health care providers. The goal of using home health as an alternative to hospitals to reduce the cost of health care can be achieved with

care that effectively manages side effects is implemented by field nurses in home settings without the need for hospitalization.

Evaluation Plan

The evaluation plan for the new clinical nursing practice uses RE-AIM in conjunction with formative and process framework. Both processes evaluate the fit and sustainability of the project within the organization. The goal is to ensure the project reaches the target population, is effective in managing side effects of IVIG promptly, the sustainability of the evidence-based practice within the organization maintenance and adoption of the project as part of the company policy and procedure manual. Part of the implementation of the guideline and adoption of the project is done during the internal phase of the dissemination process as part of the home health agency requirement by the federal regulating body. The rules and regulations for home health agencies require that all policies be adopted and made part of the patient plan of care. Implementing a patient plan of care that uses the project premise ensures that the project reaches the target audience and implemented according to the plan of care. Sustainability and maintenance of the evidence-based project are achieved by having the project adopted by the governing body and made part of the policy and procedure manual. The overall project outcome and effectiveness measurement is through the number of aborted infusions and patients seeking emergent care for the sole management of side effects post infusions. There is a system in place for tracking outcome measures through the Center for Medicare and Medicaid outcome assessment data set (OASIS).

The system of tracking utilization of emergent care and incomplete infusion matches the RE-AIM framework and will be used to evaluate the maintenance and effectiveness of the standing orders created through comparison with the previous period. The quality improvement nurse will be educated as part of the steps to be done during the dissemination stage and has a system of tracking in place as required by the home health agencies rules and regulations established by CMS. All home health agencies are required to perform a biannual quality improvement that focuses on emergent care utilization, the reason for the use of emergent care, performance, and outcome measures for patients in their care.

The quality improvement nurse is responsible for evaluating the effectiveness of the standing order in reducing side effects, any emergent care visits as a result of side effects of IVIG, the cost of adopting the standing orders during the bi-annual quality improvement. The final result of the outcome of this project is not feasible at this time for compilation by the project leader. The reason for the lack of compilation is because the home health agency compilation of clinical data for quality control uses federal regulations. The fiscal period for the collation of actual data on patients based on OASIS information that will reveal the outcome for the fiscal year of 2019 reporting is December, which is outside the timeline for my program completion. The Agency quality control nurse is in charge of data collection and compilation. Based on this fact, the quality control Nurse has been provided information for data comparison between this fiscal year data and next fiscal year reporting, which is automatically generated by the

software. Results of patient experience collected through Press Ganey will be available at that time.

Implications for Patients, Home Health Agencies, and Communities

The CMS (2017) has suggested that home health agencies reduce fragmentation caused by specialization of services in the community and improve the quality of care patients receive using care coordination and implementation of inter-professional collaboration in the patient plan of care. The goal of using interprofessional collaboration in the management of patients is to reduce the redundancy of services, provide quick access to care, reduce medication errors, improve the quality of care, and save costs through the provision of efficient health care services. The CMS (2018) goal of reducing redundancy, financial waste, and the high cost of health care can be achieved through the DNP project. The philosophical view of nursing was used to develop a PICO-based question that sought to provide an answer to the existing knowledge gap.

A lack of clinical nursing practice guidelines for rapid response interventions to address the side effects of IVIG infusion has led to the frequent utilization of emergent care and or the termination of infusion (CADTH, 2011). Delays in interventions to address side effects resulting from infusion may result in negative patient experience as measured by home health agency Consumer Assessment of Healthcare Providers and Systems (CAPHS, 2018) survey scores. A low score on the CAPHS survey results in a decreased rate of reimbursement and a low score for the agency in home health comparisons conducted by regulatory agencies. The Center for Medicare (CMS) currently reimburses home health agencies using a grading system to calculate the rate of

reimbursement (CMS, 2018). The grading system uses outcome and process measures, emergent care utilization, and hospital stay on a sixty-day recertification cycle (CMS, 2018). For home health agencies to remain competitive and receive high reimbursements, they must maximize their market value. Improving their market value means emergent care less frequently and increasing their scores for patient outcomes and processes.

At the individual level, patients will benefit from the effective use of the guideline as a tool for rapid response that anticipates side effects and their management. As a result of the guideline, nurses will be better equipped to intervene on behalf of patients, promoting advocacy and positive social change. At the organizational level, the clinical practice guideline provides a clear indication that the local agency can meet the challenge of engaging in evidence-based practice. The guideline will help the agency become well informed and engaged in the positive social change that utilizes evidence-based practice to provide care that is efficient and rapid. The creation of the guideline will benefit the agency, as the rate of patient hospitalization will decrease, and CAPHS scores will increase with the use of the evidence-based practice. Also, the community will benefit from the guidelines, as health care practices are supported by evidence. Better access to higher quality health care will decrease health care spending. There will also be a decrease in the fragmentation of care, as the agency will be able to provide bundled care to patients as a result of care planning that includes the anticipation and management of side effects.

Contributions of the Doctoral Team

A team of experts from several disciplines, comprising a specialty pharmacist, four registered nurses, an administrator, and a medical director was chosen to ensure compliance with the Medicare Challenge (CMS, 2017) and the (IOM,2010) initiative on the use of new knowledge. The team appraised the research materials as instructed. The inter-professional team of experts used the AGREE II guidelines to reach a clinical decision based on scientific data that produced new knowledge in the provision of health care and the coordination of care amongst disciplines. After reviewing and appraising the data for its use in the development of the clinical nursing practice guideline, the team presented their findings using the six domains outlined in the AGREE II Consortium instrument. Finally, the experts reached a consensus on their rating of the evidence (Table 2). The scores indicated that all experts gave the evidence a passing score, and the final score indicated that the evidence met the required criteria.

Role of the Doctoral Team in the Final Recommendation

Based on the appraisal, a standing order was developed and submitted for further review by the expert panel. In total, two-panel members indicated that the standing order should provide for over-the-counter medications to be given at home before the infusion, as the data indicated that some over-the-counter medications, such as anti-inflammatories and analgesics, can manage side effects. Some members suggested that a specialty pharmacy should be called during rate adjustments, as the rate of infusion can increase reimbursement rate. The recommendations made by the panel were noted and taken into consideration in preparing the final standing order for the clinical practice guideline.

Plans to Extend the Project Beyond the Doctoral Team

In the future, it is hoped that the project will be presented at the annual meeting of the Immunoglobulin National Society (IgNS) to use this forum to start a discussion on the use of a uniform standard of care for patients receiving IVIG. The presentation of the findings will provide an avenue that allows home health agencies to improve their cost management and control over the health care services. It will also provide a forum to present the benefits to home health agencies of creating a uniform protocol for the provision of high-quality care to patients in the future.

Strengths and Limitations of the Project

Strengths

The strength of this study was that its recommendations, which were based on research evidence, can be translated into practice. The use of a standing order that addresses the management of side effects experienced by patients in the home setting reduces fragmentation created through the specialization of care. Patients enjoy the benefits of receiving acute care in their home, like the type of care they would receive in a hospital setting. Home health agencies can show their readiness to tackle the demands associated with engaging in evidence-based care in the home setting. The study has also contributed to the development of nursing as a profession, as a theoretical basis was used to support the project.

Limitations

The study limitations in implementing this guideline are potential insurance companies' refusal to pay for medications based on an anticipation of needs. A refusal to

pay for medications means that pharmacies are unable to deliver medications needed for side effect management in the home setting. Patients limited in resources may be unable to finance rapid response medications. Also, physicians who resist change may be reluctant to sign off on the standing order. Not having a physician signature would render the standing order ineffective, as all orders are required by law to be signed by ordering physicians.

Future projects should consider the cost associated with the management of side effects in emergent care post IVIG infusion, as there is a knowledge gap on this topic. To fill this gap, emergency rooms must use a coding system that allows for collation of costs associated with treating patients for side effects associated with the infusion. Also, future projects could address the benefits of ensuring that only nurses credentialed in IVIG infusion conduct them in the home setting. However, nursing scarcity and the costs associated with paying expert nurses in the field may limit this practice in the real world. In Section 5, I will address the methods used to disseminate and evaluate this project.

Section 5: Dissemination Plan

Introduction

An evidence-based research project is not complete without planning for the dissemination of information and knowledge acquired (Moran & Conrad,(2017). Knowledge transfer and the transformation of care using scientific knowledge can only be effective by disseminating information to the intended stakeholders (Moran & Conrad, 2017) . In this section, I discuss my plans to disseminate the project. I also reflect on my growth as a project leader, practitioner, and scholar while completing my capstone.

Plans for Dissemination

Project findings may help motivate, educate, and inform the U.S. healthcare industry's efforts to provide optimal care at minimal costs. The approach that was selected for the project's dissemination was based on the method that best translates the information that was gained for the organization's benefit to ensure it achieves the project's stated goal. The approach aligned with recommendations by research that the method used to disseminate information should match the target audience (Gray et al., 2014). Without proper dissemination, the home health agency may not fully realize their potential opportunity to provide high-quality patient care using evidence-based research. The inability to translate evidence into practice limits the nursing profession's growth as an applied science profession. A professional construct of nursing notes that the translation of knowledge gained through research into evidence-based practice is necessary for the future growth of nursing as a profession (McEwen & Wills, 2015). The

professional construct of nursing posits that, for the nursing profession to be treated as a science, interventions performed on patients must be supported by research findings (McEwen & Wills, 2015).

Dissemination of project findings may not only assist the home health agency in providing quality nursing care and improved outcomes but also be beneficial to patients, scholars, and manufacturers of intravenous immunoglobulin. The recent trend in healthcare demands that home health agencies—as an alternative to hospitals—use evidence-based practice in their provision of care (Reinke, 2012). When home health agencies implement evidence-based nursing care, they demonstrate to physicians and insurance companies that they can handle sophisticated nursing care and management related to IVIG. Researchers have noted that home health agencies must take an active role in preparing to lead the growing trend in healthcare cost control that is moving patients from acute settings to home health settings (see Reinke, 2012). The project supports home health agencies as equal partners in influencing change by using evidence-based practice in care delivery.

The approach to the project's dissemination will comprise two levels: internal and external. At the internal level, I will disseminate within the home health agency as the primary focus; the main goal is to improve the system of operation by using a system of rapid response. Another focus at the internal level involves ensuring that the project is disseminated in such a manner that ensures its sustainability for the benefit of the organization as well as the patients it serves. Finally, the internal phase of the dissemination includes the formative and RE-AIM framework (Holtrop et al., n.d.) to

ensure reach, sustainability, implementation, adoption, and maintenance of the guideline. The meetings at each level should ensure the achievement of the goals of the evaluation as it is based on a process of adoption and implementation of the guideline as part of the agency policy and procedure and subsequent inclusion in the patient plan of care as required by laws governing home health agencies. The external dissemination method will be performed at the community and public levels to make acquired information available to other home health agencies and scholars to ensure transferability.

Internal method of dissemination to the organization. The initial approach to the project's dissemination involves having the agency's administrator hold a meeting with the governing body, as is required by law, for the adoption of the clinical nursing guideline as part of their policy and procedure manual, as is required by the regulatory agencies. Having the guideline adopted clears the path for staff nursing education and allows the guideline to be implemented into the agency's system of operation, which aligns with the overarching purpose of the project to improve quality of care. I will use the meeting to outline the steps needed for implementation as well as the staff's general education. The meeting will provide an opportunity to discuss ways by which the company can ensure the project's sustainability.

After the expected adoption of the guideline by the governing body, I will present the project at the company's professional action committee meeting in the form of a PowerPoint presentation. The professional action committee is a group of interprofessional specialists charged with overseeing the company's clinical operation, as is required by the regulatory agencies. Presenting the information at this meeting will

ensure that the policy adopted by the agency is enforced and is made part of the agency's guideline. I will use the meeting an opportunity to educate the committee on the benefits associated with guideline implementation and the importance of using evidence-based practice in patient care.

The next step in the dissemination process is to schedule a meeting with the quality improvement officer at the agency. The purpose of this meeting is to plan how staff should be educated on the guideline and documentation that will form part of the company's operational procedure. It is the responsibility of the quality improvement nurse to review nursing documentation, provide in-services to staff, and ensure compliance with the company's policies. Part of the meeting will be focused on collaborating with the quality control nurse on staff in-services and placing the guideline on the company's bulletin board. Staff nurses will be provided a forum wherein they may ask questions and seek clarification if necessary. I will ask members of the organization to place a laminated copy in the policy and procedure manual for future reference and to educate new nurses.

External method of dissemination. I will perform various steps to disseminate the evidence-based project externally. The web is also another form of information dissemination. To leverage this medium, I will seek permission from the company to include the information online as part of their marketing skill strategy.

Another approach to project dissemination will involve presenting the project at the yearly national forum of the Immunoglobulin National Society (IgNS). The IgNS is a national society that offers yearly meetings to discuss issues and innovation in the IG

living world (IgNS,2019). These meetings bring together various pharmaceuticals, physicians, researchers, and other allied healthcare professionals. For this reason, these meetings may potentially provide an opportunity to introduce the project to a group of interprofessional specialists and manufacturers. I will use this opportunity to present and discuss how my findings can be adopted as part of a uniform, gold standard for IVIG infusion. I will provide handouts at the meetings to encourage other home health agencies to implement the project in their respective organizations.

In addition, I will use the Walden University dissertation forum to publish the project as an article. This venue makes the article available to scholars and others who may continue referring to it to advance their knowledge. My ultimate goal is to submit the manuscript to a nursing journal for publication. The publication of the research outcome and findings should provide nurses with the knowledge and evidence required to provide quality care to patients. Publishing the project will also allow other clinicians and researchers to apply project findings in other contexts.

Analysis of Self

The journey toward obtaining my DNP degree has been a difficult although worthwhile adventure. My ability to prevail over obstacles, both internal and external, has been instrumental to the completion of the program. The knowledge I have gained by reviewing the degree program's essentials offers a positive, professional, and leadership interaction with patients, the community, and the practice itself.

As a determined, goal-driven person who is filled with curiosity and the will to learn, it is becoming increasingly necessary that I use my acquired scholarship when

venturing into entrepreneurship to act as a patient advocate, promote public health, improve the organizational system, and improve advanced practice nursing care's management of the chronic disease.

Venturing into the business will create the opportunity to provide underserved communities access to healthcare. The United States, as a developed country, cannot boast that it's suffering citizens possess quick access to care. The obtained scholarship facilitates the introduction of programs that seek to benefit weak individuals within the community. This scholarship has comprehensively helped me cultivate the leadership skill necessary to contribute toward change by influencing policies. Nurse leaders are needed to educate the future nursing workforce, and the scholarship received through Walden University is instrumental in participating in leadership.

Project Leader

As a clinical nurse manager, the knowledge I have gained through my DNP project has been instrumental in helping me focus more closely on the importance of using evidence-based knowledge when providing care. Part of my leadership contribution of promoting the translation of evidence into practice involves using the knowledge I gained through this scholarship, the best method for education nursing staff by using scientific research articles.

We have enacted policies wherein the use of evidence-based practice in task performance encourages nurses to seek higher education. My educational exposure has allowed that I support the use of the evidence-based nursing practice in the workplace. An aspect of leading the future generation of nurses involves the incorporation of an in-

service plan that implements evidence-based articles and guidelines to educate nurses. In-services are planned using research articles and new recommendations specific to patient management. I additionally implemented a patient education method that utilizes evidence-based practice rooted in research findings; such utilization not only educates patients on disease processes and medications ordered but also offers reasons for the adoption of interventions and their expected outcomes as well as possible side effects that must be considered when managing those interventions. Moreover, we have implemented policies that seek to answer questions using the theoretical basis of nursing to promote our profession's growth.

Practitioner

Advancing nursing practice is a significant part of the DNP Essentials (AACN, 2011). Nurses should take active roles when leading change through knowledge embedded in education (AACN, DNP Essentials, 2011). As nurses, we must gain advanced knowledge of disease pathophysiology and management to benefit the community. Part of advancing nurse practice leadership requires the use of scholarship underpinning for patient care (AACN, 2011). Education and training are a major part of leadership training. The IOM report charges nurses to gain leadership through education and training to equip them with the tools necessary to train the future generation of nurses (IOM, 2010).

The developed leadership is based on education that supports the profession's growth and improves the quality of care patients receive within the healthcare community. Nurses comprise more than one-third of the healthcare employee population

and should, therefore, be at the forefront of influencing healthcare policies through active participation.

Advancing the goals outlined in the essentials was an important influence within the practicum setting. During the practicum, I took advantage of the diversity within the setting to gain systems knowledge and use interprofessional collaboration to manage the disease process. Part of the advancing nursing practice was also centered on obtaining the education needed for the development of public health policies. Based on the acquired education, I implemented a system wherein interprofessional collaboration may be used to manage chronic disease processes: systems management and the use of interprofessional communication in improving.

I introduced the system of medication reconciliations between pharmacies, patients, and the practice upon discharge of patients from acute care setting or visits to specialists to decrease fragmentation in care and improve a line of interprofessional communication. In addressing chronic disease management, I developed forms and a policy that relies on evidence-based research to assess patients upon their arrival at a clinic as well as symptoms management about hypertension, high cholesterol, autism, vaccination, and diabetes mellitus. I also took advantage of my newly acquired knowledge to develop a system that ensured compliance with the use of informatics for managing population health and ensured the practices were following Merit-based Incentive Payment System (MIPS) as detailed by Center for Medicare (CMS,2018).

Scholar

The nursing scholarship is the acquisition of knowledge that informs and arms future leaders with the information necessary to manage the growing diversity in the healthcare industry. An important purpose for the development of Advanced nursing education is the production of future leaders that can translate research evidence into practice promptly (Moran et. al.2017). We are currently amidst an era of increased diversity in the healthcare industry, which requires that management staff be prepared to handle the ever-increasing complications and regulations occurring within the industry. In an era of educated patients who seek answers to problems that are supported by research, we must utilize scholarship to provide answers and solutions to their problems. The DNP education provided the vehicle for my knowledge acquisition; part of the DNP essentials involves preparing nurses to use education to influence healthcare decisions and improve the quality of their provision of care. The scholarship also serves to educate the community about how they may seek health promotion and disease prevention.

Part of my nursing scholarship has been centered on improving my personal growth, and Walden University has been instrumentally helpful as I prepare for my professional growth. Walden University developed an outline that matched the recommendations outlined in the DNP essentials for knowledge required in advanced nurse practitioners (AACN, 2011). The classroom participation experience I gained alongside the practicum's learning activities satisfied the goals I needed to achieve for the learning process to occur. This information was acquired with the essentials of the DNP requirements to ensure that the scholarship's objective and goals were met.

As a nurse leader, I am better able to inform the decisions I make in the workplace using evidence-based research articles and putting such evidence into practice through communication. Also, through the information I have gained through the scholarship, I have been able to influence policies centered on evidence-based practice. The DNP project informed me about the research process, the methods used to analyze and synthesize articles, the importance of rigors, and the steps that must be taken along the research process.

Challenges in Completing the Project

While embarking on a scholastic journey to find answers that fill knowledge gaps where such gaps exist may prove to be a daunting task, implementing and disseminating research findings can be equally challenging. Overcoming this challenge requires preparation, risk calculation, and methods for solving issues as they arise. Part of this challenge lies in the financial resource availability for training nurses on how to use new knowledge, while another challenge involves finding the most suitable method of information transfer and sustainability. The process of communicating research findings presents a significant challenge in preparing the project. Some of the information to be processed is deciding the best method to be used, who are the stakeholders, where are the resources for the training coming from, and the sustainability of the project. I used the organization chart to learn about the internal flow of information, and this informed the way I planned my information sharing.

To discover solutions to these challenges, I researched methods used by other scholars and noted what worked for them, what made them fail and why these results were achieved. Tackling these challenges allowed that I batch the problems and create a dissemination method that addressed both internal and external factors. That the home health agency can utilize immediately in implementing evidence-based practice,

Another challenge is navigating the external factors that can impair the project implementation within the home health organization. The most important external factor is federal and state regulations that the home health agency must comply with if they are to keep their operational licensure. Compliance issues in the area of medications that are allowed to be administered in the home setting were tracked, studied, and noted. It was also important to ensure that the method used in dissemination follows the recommendation of the regulatory agencies in the area of policy adoption, staff education, and professional action committee approval. In tackling the challenges presented required reading the rules and regulations that guide home health agencies both at the local and federal level,

The DNP student is trained as a leader in influencing change. Part of that leadership skill requires communicating with other leaders to use interprofessional collaboration in patient care. The project presented a challenge as I had to communicate with leaders from the varied discipline of the importance of interprofessional collaboration in bringing about a positive patient outcome. Meetings and conferences offered an opportunity needed to overcome the challenge that fragmentation in professional skills has created in the health care industry.

Intuition Gained

Selecting the DNP project and knowledge gap to be addressed presented a significant challenge. It was important in the early decision making to determine the best approach that will present a significant positive outcome. It was important in the early process of the project writing to plan the focus question and abstract in such a way to avoid receiving a rejection of the project by the school committee chair. To overcome the obstacle, I utilized the Walden guidelines on the project writing process, type of projects that are accepted, and project checklist as a tool that informs the project.

Another intuition is in is selecting the method for information sharing for the sustainability of the project. Research projects to be useful must be translated into practice. Part of dissemination lies in the ability of the DNP student as a leader to share knowledge gained with other leaders to improve patient outcome.

Future Career Growth

Tremendous educational enrichment has been gained as a result of my DNP education. I can more effectively influence and support changes using my evidence-based project and the theoretical basis of nursing, respectively. The team of nurses with whom I work will now view themselves as champions for change within the organization.

As I continue to grow, I foresee a future in nursing entrepreneurship; owning a business that addresses the community's need will be an essential part of the training I obtained through the program.

Summary

This project's dissemination is a significant aspect of the Doctor of the nursing degree process. Without information transfer, search effort is wasted. This evidence-based research is important in proving that home health agencies as part of the health care community can effectively provide quality care in the patient environment that is based on a nursing practice that utilizes scientific evidence as a basic unit for the provision of quality health care. The project used the nursing theory and frameworks to support the evidence. Several frameworks and theories gave evidence that supports the theoretical framework of nursing as a profession. Part of the decision regarding the utilized method involved reviewing the organization to ensure that certain decisions considered the system of operation and the project's purpose. I additionally took advantage of the project to analyze my future goals and determine how to achieve them.

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Appendix A: Rapid Response Standing Orders

Mild Symptom

Initial intervention

1. Hydrate with normal saline 250ml Intravenous piggy back
2. may repeat premeds of Benadryl and Tylenol
3. Start with the lowest possible dose and increase as needed per standing order protocol

Symptoms	Rapid Response Medications	Outcome/document dose given
Nausea	Zofran 4mg IVP q4-6hrs PRN Phenergan 12.5-25mg IVPB q6hrs Reglan 10mg SIVP q6hrs-monitor for tardive dyskinesia	
Flushing	Tylenol 1000 mg PO Q6 hrs PRN Benadryl 25 mg to 50 mg PO, PRN do not exceed 100	

Symptom **Mild Reaction** **continued**	**Rapid Response** **Medications** **continued**	**Outcome / Document dose given**
	Mg in 24 hours	
Spasms	Valium- 2.5 to 10 mg SIVP 4 to 6 hrs prn intravenous	
Restless legs	Valium -5 mg to 10 mg SIVP intravenous Lorazepam- 0.2 mg to 1 mg SIVP X1 intravenous	
Mild Headaches	Anti-inflammatory e.g. \ Slow rate of infusion, to tolerable rate if no relief, Repeat Tylenol and Benadryl premeds if no relief then Toradol 30mg IVP Q4 TO 6HRS PRN	

Moderate

Slow or stop the infusion until rapid response medications are given

Start normal saline 250ml IVPB

Restart infusion of IVIG at a lower rate when symptoms resolve

Symptoms	**Rapid Response** **Medications IVP**	**Outcome /** **Document dose given**
Nausea with Vomiting	Zofran 4mg IVP Q4HRS PRN Normal Saline 250ml IVPB	
Migraine/full headache	Depakote, 500mg IVPB Decadron 10mg SIVP or Solumedrol 40 MG, 100 MG, to 125 mg IVP May increase to 250 mg if not diabetic	
Elevated Blood Pressure	Consider Clonidine 0.1 mg for pts with hypertension	

Symptoms	**Rapid Response** **Medications IVP**	**Outcome /** **Document dose given**
Chills	Low dose Valium 2.5 mg to 10 mg SIVP in graduated dosing. Monitor sedation	
Severe Flushing	Benadryl intravenous, stop the infusion and resume at a low rate	
Normal Saline Hydration	250 ml bolus pre or post infusion	
Decrease Infusion rate	Patient tolerance	

Severe

Start Normal saline hydration

Stop infusion for 3o minutes, activate intervention and restart at a low rate of infusion

Vomiting with or without nausea	Intravenous Anti-emetic such as Zofran, Phenergan	
Nuchal rigidity **Symptoms**	Stop infusion, start normal saline hydration, medicate with Benadryl 50mg IVP **Rapid Response Medications- IVP**	Notify Md **Outcome / Document dose given**
Nuchal Rigidity	Intravenous antiemetic Zofran 4mg IVP Or Stay until patient stable	
Elevated blood pressure	Anti-hypertensive if reducing and aborting infusion does not control blood pressure	
Back pain Mild to severe	Normal saline 250 ml bolus Toradol 30mg SIVP Educate pt on oral hyd-	Notify MD, Pharmacist/ Clinical Nurse Manager

	ration Monitor voiding	
Back pain	Educate pt on oral hydration Monitor pt for adequate voiding--possible acute renal failure	
Chest pain **Symptoms**	Stop infusion Monitor and activate EMS if needed **Rapid Response** **Medications- IVP**	**Outcome /** **Document dose given**
Hives	❖ Stop infusion ❖ Monitor Pt for increasing reaction ❖ If reaction is not progressing but still present, Consider activating anaphylactic protocol of Epi-Pen,	

	❖ Start hydration with normal saline IVPB ❖ Give Intravenous Benadryl 25 to 50 mg per protocol ❖ Notification call to MD and Supervising Nurse for further direction.	

Sources for Epi-Pen- protocol in the home setting:

❖ Guidelines for Administration of Intravenous Immune ...Epinephrine should be available in the treatment area retrieved from https://www.health.gov.nl.ca/health/bloodservices/pdf/guidelines_admin_ivig.pdf

❖ Title: Immune Globulin Intravenous(IVIG). Have epinephrine readily available. Retrieved from https://www.utoledo.edu/policies/utmc/nursing/guidelines/general/pdfs/immune_globulin...

Wang,S.,Lara,P., Lee-0w,A.Reed.,J.,& Wang.,A.(2002). Acetaminophen and diphenhydramine as premedication for blood product transfusions:Aprospective randomized double-blind placebo-controlled trial. *American Journal of Hematology. 70(3).* Retreived from https://doi.org/10.1002/ajh.10119

Nursing consideration

1. Educate pt. on hydration prior to infusion

2. Make sure standing order signed before implementing patient care

3. Coordinate with specialty pharmacy before initiating care to ensure insurance approval and delivery of essential drugs in the patient's home.

4. Call pt. to ensure medication delivered and rapid response medications available.

5. Premedicate patient before next infusion as signed

Appendix B: Levels of Evidence

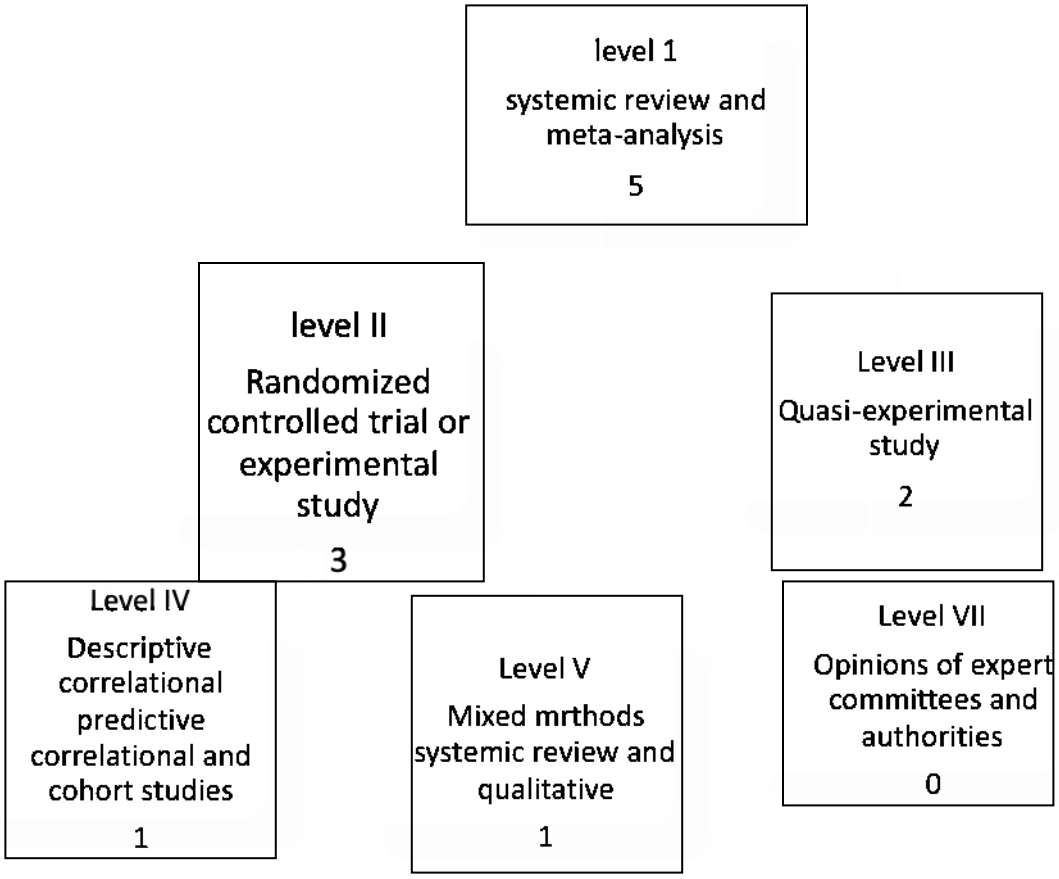

Figure B1, Levels of evidence for the project. The total number of evidence-based articles reviewed after exclusion criteria was 35. The total selected that focused on the study was 12.

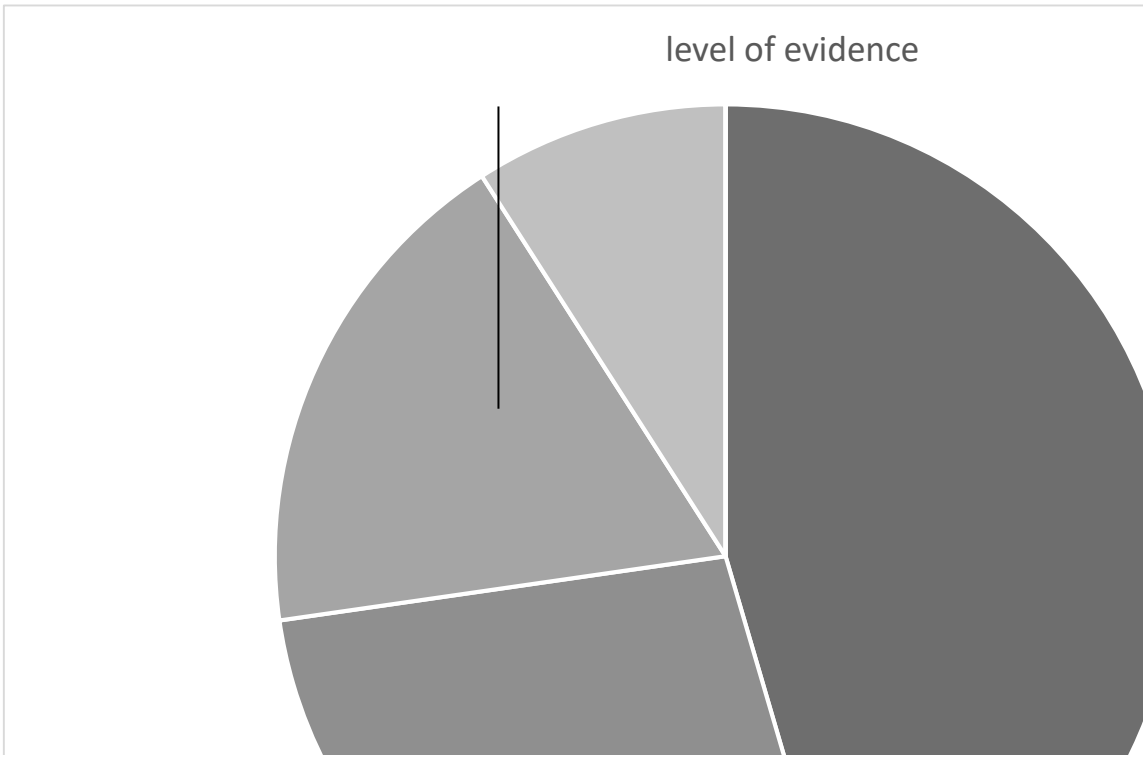

Figure B2. Pie chart showing the levels of evidence for the project.