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Effects of Educational Program on Wound Care Nurse Knowledge and Application in Outpatient Practice Settings

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Chronic lower-extremity wounds, which include diabetic foot ulcers and venous stasis ulcers, are responsible for \$7 billion per year in annual health-care costs worldwide (Nussbaum, Carter, Fife, DaVanzo, Haught, Nusgart, Cartwright, 2018). The prevalence of venous leg ulcers in individuals 65 and older is as high as 1–2% of the United States population (492,000–984,000 individuals) at an average cost of \$16,000 per treatment, resulting in billions of dollars spent on this wound condition alone (Nussbaum, et al, 2018). Additionally, diabetes mellitus (DM) and diabetic foot ulcers are an escalating health concern within the population. Estimates suggest that an approximate 15% of patients (or 54 million people) with DM will suffer from a diabetic foot ulcer during their lifetime.

Venous leg and diabetic foot ulcers are the most prevalent of the conditions that are classified as chronic wounds and require specific care to promote optimal outcomes. Chronic wound care is defined as *care* of wounds that are difficult to heal or that have complicated healing cycles either because of the nature of the wound itself or because of complicating metabolic factors, physiological factors, or both (Holloway, Harding, Stechmiller, Schultz, 2016; Woo, Van Den Kerkof, & Jimenez, 2016). Wound care encompasses all elements of wound management, including the control of complications during the healing process and the management of the patient's co-morbid conditions. Chronic wound care further encompasses the promotion of comfort and dignity, the relief of suffering, and the improvement of quality of life (Woo et al, 2016). Another key element of wound-care is ensuring that accurate documentation in the patient's health record is complete (with details including co-morbidities, medical history and social support networks) so that it is possible to develop comprehensive treatment plans.

Management of these conditions and the escalating number of patients in treatment require organizations to equip their wound-care nurses with ongoing, effective, and transferable educational programs, which enables evidence-based care. In their literature review, Ylonen, Stolt, Leino-Kilpi, & Suhonen (2014) identified that gaps of knowledge about the integration of evidence-based practice into the nursing care provided to patients with diabetic foot ulcers or venous stasis ulcers have a significant impact on the progression of wound healing and patients' overall quality of life. In fact, educational deficits related to common wounds and basic wound assessment can result in a failure to recognize early signs of infection or wound deterioration, which may cause patients to require additional, costly treatments, antibiotics, or readmission to the hospital. Further, nurse knowledge deficiencies on wound-care management have been

associated with poor patient outcomes such as infection, tissue necrosis and gangrene, periwound dermatitis, periwound edema, osteomyelitis, hematomas, dehiscence, and even death (Tolupe Esan, Akinwande Fasoro, Funmilayo Ojo, & Obialor, 2018). This research clearly indicates a need for ongoing educational programs for nurses in the wound-care practice setting.

To address this, my quality improvement project examines the effect of chronic wound education and documentation training on nurse knowledge of wound-care content, self-assessment of knowledge, and electronic health record (EHR) documentation practices.

The PICOT question for this project asks:

Among outpatient wound-care nurses, does formal education on diabetic foot ulcer and venous stasis ulcer standards of patient care impact nurse knowledge and application to documentation practices across 3 months?

The model identified to guide this project was the Donabedian Model of Structure, Process, and Outcome approaches. This model provides a valuable and validated approach to examine the safety and quality of service innovation in the wound-care practice setting (Ayamian & Markle, 2016). Gardner, Gardner, O'Connell (2013) used the Donabedian model to evaluate the safety and quality of nurse practitioner service. Amir, Tan, Halfens, Lohrmann, & Schols (2017) recommended using an extended Donabedian evaluation model to effectively measure the quality of pressure-ulcer care.

The Donabedian model is made up of structure, process, and outcome approaches. Structure includes human resources and expertise, facilities, and equipment. Process refers to actual service delivery and patient pathways. Outcome denotes service efficacy on the patients' health status (Ayamian & Markle, 2016). In this project, *structure* has three parts. The facilities or setting part of *structure* in this project are wound healing centers at two Midwestern, suburban, community hospitals.

Annually, these facilities treat approximately 1800 newly diagnosed lower-extremity wounds. The second part of *structure* consists of the material resources of equipment and dressing supplies. The *structure's* third part includes human resources (the number and qualifications of professionals, including education, training, and experience).

Approximately 10 nurses who are employed at the facilities provide treatment.

The *process* measures of the Donabedian model are defined by the giving and receiving care and include both patients' and health care professionals' activities related to diabetic foot ulcers and venous stasis leg ulcers and treatment

measures. *Process* measures can inform consumers about medical care they may be expected to receive for their diabetic foot ulcer or venous stasis ulcer and can contribute to improving health outcomes. The majority of quality measures that are used for public reporting are *process* measures. These reporting measures include but are not limited to the control of hemoglobin A1c, screening for tobacco use, assessing for appropriate footwear in diabetes, wound measurements, and wound-healing percentage.

These *outcome* measures are used to evaluate and reflect the impact of wound-care center interventions on patient health outcomes. The Donabedian Model examines the problems and outcomes but does not address the interventions that are needed to make changes to the 3 approaches. This is where the Plan, Do, Study, and Act (PDSA) model will be utilized. The PDSA cycle for testing a change by developing a plan to test the change (**Plan**), carrying out the test (**Do**), observing and learning from the

consequences (**Study**), and determining modifications to the test (**Act**) (Taylor, McNicholas, Nicolay, Darza, Bell, & Reed 2014).

I (the primary investigator) used a pre-test/post-test design to evaluate outcomes of this project related to nurse knowledge and documentation application in the EHR. I implemented the education project across 3 months in the following phases:

Phase I (August 2018–September 2018)

During the first phase of this project, I developed an educational program in alignment with evidence-based practice guidelines for vascular and diabetic foot-ulcer care. Leadership of the facility reviewed the program for alignment with policies and practice of the wound healing centers. I delivered it as part of a planned nurse education day for wound-center employees.

One week before the scheduled nurse education day, I emailed a letter explaining this quality improvement project, an invitation to participate, and an informed consent form to all nurses employed by the project sites. Participation was voluntary and was not related to assessment of individual workplace performance. I did not notify the organization's management of individuals' participation in the project, nor did I notify the organization's management of the participants' individual performance.

After obtaining informed consent, I provided the nurses who agreed to participate a Survey Monkey link to access and complete the Knowledge Self-Assessment: Chronic Wounds & Clinical Practice Survey. This survey took approximately 10 minutes to complete. The educational program, which I provided to all wound-care nurses, supported best practice and staff development. Only those nurses who agreed to participate in this project received the evaluation tools.

Phase II (August 2018–September 2018)

Phase II occurred at the time of the nurse education day. Before the start of the educational program, I gave participants a pre-test developed from the evidence-based resources available to the nurses. This pre-test took participants approximately 10 minutes to complete and was delivered in paper format. I delivered the formal educational program immediately after the pre-test. Again, it was part of a planned education day for the wound-care nurses that included:

- a.) Delivery of education retrieved from the resource Lippincott Procedures, Advisor, & Professional Development (2018) on the content areas of vascular ulcers, diabetic foot ulcers, and wound care
- b.) Hands-on training for wound-care assessment and intervention
- c.) Application of a wound-care case study to the EHR practice environment (i.e. EPIC CarePATH sandbox for documentation practice)
- d.) EPIC CarePATH Documentation audit
- e.) Reference guides to support assessment and documentation practice

Once participants completed the educational program, I gave them the post-test to assess their content knowledge.

Phase III (December 2018–January 2019)

Approximately 3 months following the delivery of the educational program, I will meet with each participant for a follow-up evaluation. I will give the Post-test 2 and Knowledge Self-Assessment: Chronic Wounds & Clinical Practice Survey, and it will take approximately 20 minutes. This phase of the project also includes a one-to-one session with me for participant demonstration and evaluation of EHR documentation

practices within the EPIC CarePATH Sandbox. I will use the case study from Phase II in the EPIC CarePATH sandbox for documentation demonstration, and it will take approximately 10 minutes per nurse participant.

Chronic lower-extremity wounds are becoming increasingly prevalent. This quality improvement project leverages testing and education to determine whether a formal education program impacts nurse knowledge and documentation efficacy in the treatment of those patients.

Title:

Effects of Educational Program on Wound Care Nurse Knowledge and Application in Outpatient Practice Settings

Keywords:

Chronic wound care, Documentation and Wound care nurses

References:

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Abstract Summary:

Chronic lower-extremity wounds are becoming increasingly prevalent. Effective treatment requires that nurses maintain their knowledge of wounds and wound care and that they apply thorough documentation practices. This quality improvement project leverages testing and education to determine whether a formal education program impacts nurse knowledge and documentation efficacy.

Content Outline:

Effects of Educational Program on Wound Care Nurse Knowledge and application in Outpatient Practice Settings

1. The problem of Chronic lower extremity wounds
1. Types of Chronic lower extremity wounds
2. Stats
3. Costs of care
2. Management of chronic lower extremity wounds
1. Knowledge regarding wound care
2. Documentation of wound care
3. Picot Question
4. Donabedian Model
1. Description of Donabedian model
2. Application of Donabedian model
5. PDSA
1. Description of PDSA model
2. Application of PDSA model
6. Study Phases
1. Phase 1
1. Consent and pre-testing
2. Phase 2
1. Testing
2. Presenting didactic
3. Hands on training
7. Phase 3
1. Evaluation
2. Post testing
8. Conclusion

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Author Summary: Nurse for 30 plus years in various settings. Certified in Wound Care and Diabetic Wound Care. Providing wound care for the last 13 years in multitude of settings.

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Author Summary: Donna has been a nurse for over 19 years. She received her PhD and MSN from the University of Cincinnati, College of Nursing, where she currently serves as an Assistant Professor and Director of the Undergraduate Program. Her areas of research include the professional development of health care professionals through simulation and standardization. She has presented nationally and internationally and currently Donna is involved in projects to standardize care and evaluation of their practice translation.

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Author Summary: Focus on quality improvement of patient care throughout career as a nurse clinician and doctoral program as well as 30 years of practice in the area of emergency and ambulatory care has enhanced my interest in the prevention diabetic wounds. I believe that the early identification and appropriate referrals of at risk patients as well as point of care patient education will improve long term quality, appropriate and cost-effective care for a positive patient outcome.