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Wound and Stoma Care Education for Primary Care Providers

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Wound and Stoma Care Education for Primary Care Providers

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Abstract

Problem. Patients with percutaneous endoscopic gastrostomy (PEG) tubes and their families report physical and psychosocial changes associated with complications after gastrointestinal surgeries. They are at particular risk for tube dislodgement, leakage, infection, poor fit, and skin irritation. The lack of specialization and fundamental stoma care knowledge among community health care providers potentially results in unintended consequences, leaving the system inefficient with fundamental inequities of stoma care delivery. While there is an increasing amount of accessibility to specialty centers for other types of wound care, stoma care support resources are scarce and not readily available to patients.

Context: This Doctor of Nursing Practice project focused on conducting a stoma care education workshop to primary care providers in outpatient clinics within the community. There is a need to enhance the quality of care for patients and families caring for stomas at home and improve barriers in access to specialized care, especially in rural communities. Utilization of trained primary care providers has the potential to reduce the costs associated with emergency room visits and hospital admissions.

Intervention. Emphasis of this project was placed on providing comprehensive education for wound and stoma care focused on gastrostomy tubes to providers at the California Association of Nurse Practitioners for the 43rd Annual Educational Conference. However, due to the current covid-19 pandemic the conference was cancelled and the project was implemented with a small group of nurse practitioners at Lucile Packard Children's Hospital.

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Outcome Measures. Outcome measures for evaluation of this project consisted of data collected from pre/post training assessment surveys to evaluate change in provider knowledge and confidence in implementing evidence-based wound and stoma care.

Results. Data analysis revealed an increase in overall provider knowledge with providing wound and stoma care by 25%. Of the participants, 66.67% (4 of 6) considered themselves as experts in gastrostomy tube care, while two participants indicated a proficient level of knowledge on the self-assessment questionnaire prior to the workshop. Significant changes were seen in provider recognition of common mechanical feeding tube complications and methods for treating peristomal hyper granulation tissue with a 33% increase, followed by a 25% increase in identifying risk factors for complications, and 22% improvement pertaining to treatment and causes of minor and major wound complications.

Limitations. Due to competing provider priorities focused on the novel covid-19 pandemic and social distancing considerations, only a small volume of providers were available to participate in the education workshop. Participants indicated that they were either an expert or proficient in gastrostomy tube care, therefore leading to bias.

Conclusions. Despite provider knowledge level pertaining to wound and stoma care, continuing education is an effective approach to enhance clinical skills and knowledge. Written educational materials are helpful tools for both providers and patients, especially in rural areas where access to specialized providers are limited.

Keywords: *PEG, feeding tubes, complications, hospital readmission, emergency room visits, wounds, and stoma.*

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Section II: Introduction

Problem Description. Lucile Packard Children's Hospital (LPCH) is a 302-bed acute care hospital that is devoted to the delivery of pediatric and obstetric care. The facility is located in Palo Alto, CA and has an emerging network of providers in the San Francisco Bay Area. The challenge is that there is a growing number of gastrostomy tubes being placed by pediatric surgeons each year. This creates a problem for several reasons. Consultations for peristomal wounds from primary care and newer subspecialty clinics to the LPCH pediatric surgery team has increased. Consequently, the surgery nurse practitioners (NPs) are overburdened with doing basic wound care every week and do not have the ability to see these patients in a timely manner due to limited clinic availability. Furthermore, many patients lack transportation or resources to travel to the clinic and receive necessary care. The goal of this change of practice project was to improve care transition from the hospital to community for patients with a gastrostomy tube through education targeted at outpatient primary care providers in the community.

Available Knowledge

Stoma creation is a standard procedure used to treat patients with colorectal or urogenital conditions in general surgery practices and is associated with a significant burden on the well-being of patients and their families (Atluntas et al., 2012). The procedure is widely performed in the United States with approximately 250,000 surgeries completed annually (Hucl & Spicak, 2016). The reported incidences of PEG tube complications following surgery widely vary from 16 %-70% due differences in definitions used and populations studied (DeLegge, 2019). Most studies suggest that complications are likely to occur in patients with comorbid conditions (DeLegge, 2019).

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High rates of emergency room (ER) and hospital readmissions related to gastrostomy tube (GT) displacement, granulation tissue, and infection within the early post-operative period have resulted in increased health care costs incurred from diagnostic testing and treatment (Correa et al., 2014). The mean ER visit length of stay was reported at 5.4 hours and the mean cost of an ER visit related to GT concerns is estimated to be between \$1,200-2,500 (Correa et al., 2014). Because gastrostomy tubes are connected to the skin and gastrointestinal tract, infections are not uncommon. Infections can occur secondarily to poor hygiene, leakage from the stoma site, skin colonization or poor aseptic technique at time of GT insertion. Despite the causes leading to an ER visit or readmission, studies show that the majority of postoperative GT issues are generally not serious and could be avoided (Kazmierski, Jordan, Saeed, & Aslam, 2013). Though there is limited research available pertaining to health outcomes after an educational colloquium for stoma care, the following best practices for gastrostomy tube care and management of complications were found in the literature.

Dislodgement and Difficult Replacement. Feeding tube devices can become removed inadvertently due to factors such as confusion, delirium, patient transport or activity, and manually by the patient as a result of discomfort. In these situations, the length of time since surgery helps to guide who should replace it (Buscaglia, 2006). Patients with gastrostomy tubes that are dislodged within 7 to 10 days after placement are at risk for closure and leakage of gastric contents into the peritoneal cavity from perforation of the stomach due to immaturity of the tract (Shalom, 2016; Simons & Remington, 2013). This situation requires urgent attention in the ER room. It is best to confer with the consulting specialist for removal or replacement issues that occur less than eight weeks after placement (Fuchs, 2017). However, if the tube was dislodged beyond the eight week post-operative period, a patient or caregiver with proper

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training may replace the tube at home. Difficult replacement for mature tracts that are created more than eight weeks from the time the tube has come out and the opening is visible should be replaced by the emergency physician (Fuchs, 2017). In situations when the ER is more than two hours away, the patient or caregiver must put the spare tube into the opening and tape it in place to keep the opening patent. Patients should not infuse anything into the tube until correct placement is confirmed by fluoroscopy for all traumatic tube dislodgements or if the tube is difficult to replace (Abrajano & Nguyen, 2008).

Displacement or Migration. Tube displacement or migration is a complication in which the tube is not obliterated. Internal or external tube displacement can accidentally occur with activity, transport, and coughing or gagging. Internal displacement of a gastrostomy tube can lead to migration of the tube distally into gastrointestinal tract (GI) and results in gastric outlet obstruction. There are no changes observed in the external site in these situations. Gastric outlet obstruction is presumed if the patient presents with nausea, vomiting, and abdominal cramps. Avoid tube feedings or medication administration if an internal tube displacement is suspected. Such complications can be prevented with proper maintenance of the external bumper within 0.5 to 2 cm from the skin. This practice will prevent the tube from becoming drawn into the stomach. Close monitoring of the external bumper position is critical in detecting gastric outlet obstruction from displacement of the tube. A contrast study is necessary to determine tube location if reckoned (Schallom, 2016).

External displacement transpires when a gastrostomy tube is positioned outward without complete dislodgement. This complication can occur at any time but commonly found when the GI tract is not well formed or with an immature tract. External leakage of gastric contents may be observed and cause abdominal pain (Schallom, 2016).

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Tube Blockage. Occlusion of a PEG tube is a common complication that is costly and often caused by medication delivery of crushed tablets, especially potassium and iron supplements (Simons & Remington, 2013). It can cause discomfort to the patient as a tube change is often necessary if the tube cannot be cleared. Obstructions are evident when it is difficult to flush or when the feeding pump occlusion alarm is triggered. Regularly flushing the tube with 30 ml of tepid water every 4-6 hours for continuous feeding, before and after intermittent bolus feedings or medication administration, and after checking residuals can prevent blockage. Each medication administered should be given separately and followed by a flush of 10ml of water in between. Medicines should not be mixed with tube feeding formulas, and buccal or sublingual medications should not be administered via feeding tube (Schallom, 2016).

Oral feeding is preferred for patients with a functioning GI tract and able to swallow liquid medications. Increased pressure on the PEG can be avoided using a 60ml syringe for flushing (Simons & Remington, 2013). Blocked tubes can be cleared by either 1) rolling the tube to disrupt the occlusion and aspirating the tube contents, 2) attempting to flush the tube with 30 ml of tepid water while moving the syringe plunger back and forth several times, or 3) instilling an alkalized enzyme to de-clog the tube and clamp for 5 minutes. Tube replacement is necessary if all de-clogging efforts fail (Schallom, 2016).

Buried Bumper Syndrome. Buried bumper syndrome (BBS) is a complication that occurs from excessive pulling on the internal bumper of the PEG tube. Consequently, the tube will migrate from the gastric lumen and become lodged in the abdominal wall, leading to gastric ulceration or mucosal overgrowth at the bumper site (Schallom, 2016). BBS can be prevented by proper surgical technique and maintaining 1-2 cm between the external bumper and the

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abdominal wall. Routine care of the PEG includes gentle rotation of the external tube initially every day, then weekly once the tract has formed and the stoma is fully healed (Simons & Remington, 2013). Generally, the GI tract is formed within 7-10 days. When rotating the PEG, release the external fixation device, clean the tube thoroughly with soap and water, and rotate it 360 degrees. There should be no resistance when rotating the tube. When BBS is presumed, stop all feedings. BBS is detected by abdominal computed tomography (CT) scan or endoscopic contrast injection. Removal is required if the bumper is completely enclosed by the gastric mucosa (Fuchs, 2017).

Peristomal Leakage. Commonly seen the first few days after the placement of a PEG tube and can also occur with a mature tract. It typically occurs in malnourished patients, those with diabetes mellitus, poor tissue healing, and susceptible to wound breakdown. Tubes that are placed tightly against the external bolster and abdominal wall can also contribute to poor tissue perfusion, wound deterioration, and ultimately peristomal leakage. These complications can be avoided with proper surgical construction and care. Treatment involves managing comorbidities such as hyperglycemia and malnutrition, loosening the external bolster, and utilizing absorbing agents or a skin protectant to address skin breakdown (DeLegge, 2014).

Infection. Patients with diabetes, poor nutritional status, and those who are immunocompromised are at increased risk for infection. Infection is suspected if the peristomal site is red, tender, swollen, warm, and presence of purulent or malodorous drainage. It is important to bear in mind that the stoma site can become red without the presence of an infection. Pressure or friction between the skin and tube and leakage of gastric effluent can cause skin redness. The use of skin barrier products and eradication of the cause are indicated in these cases (Kazmierski, Jordan, Saeed, & Aslam, 2013).

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Staphylococcus aureus, *Pseudomonas*, and *Candida species* are common microorganisms found in peristomal infections. When diagnosed early, broad spectrum oral antibiotics for 5-7 days may be all that is necessary to treat the infection. Local infections can be treated devoid of systemic antibiotics with use of an impregnated antiseptic dressing such as silver, honey, or iodine. Patients who present with systemic signs of infection require intravenous broad-spectrum antibiotics coupled with local wound care. Topical antibiotics are of limited value and not indicated for treating peristomal wounds that are colonized or infected (Edwards-Jones & Gilmartin, 2013; Lynch & Fang, 2004).

Ileus and Gastroparesis. Gastroparesis occasionally transpires in some patients after PEG placement. Patients present with nausea and vomiting which is usually transient. If these symptoms arise, the PEG tube should be unclamped to allow for gastric decompression, feedings are withheld for 24-48 hours (Schrage et al., 2007). In rare situations, progression to an ileus may occur, and tube feeding is held until it is resolved. Clinical recognition of an ileus includes persistent abdominal distention with pain and absent bowel sounds. An ileus is more common in patients with a significant pneumoperitoneum. Associated clinical symptoms of a perforated viscus should always be ruled out by x-ray or CT imaging (Hucl & Spicak, 2016).

Irritant Contact Dermatitis. The most common cause of peristomal skin complications is irritant contact dermatitis (ICD). This condition is caused by exposure of skin to the intestinal effluent and improper fit of the stoma. ICD can be prevented by close attention to the changes in the abdominal wall and the need for adjustment in the size of the device (Kwiat & Kawata, 2013).

Ulcerations. Pressure of the external bumper against the abdominal wall can lead to ulceration underneath the internal fixation device. This can be alleviated by loosening the

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external bumper or exchanging the rigid internal bumper with a flexible one to ease the pressure and promote ulcer healing. Ulceration can also develop contralateral to the gastric wall as a result of mechanical damage from an internal bumper that is too long or due to the replacement of gastrostomy tubes in which the tip is compromised. Low profile tubes with an internal bumper, tubes without a balloon, or a non-balloon gastrostomy tube can remedy the issue. Proton pump inhibitors can also aid in the healing process by decreasing the pH level of gastric contents and minimizing further irritation (Hucl & Spicak, 2016).

Hyper granulation Tissue. Formation around a gastrostomy site is a common problem that occurs with prolonged stimulation of fibroplasia and angiogenesis. About 25% to 68% of patients are affected by this complication. It is characterized as moist, red friable and shiny skin that is raised above the surface of the level of the skin. The tube site is prone to infection and can cause pain, discomfort, increased leakage, and has been associated with persistent bleeding (Ae, Kosami, & Yahata, 2016).

The fundamental cause of hyper granulation is related to external tube friction from mobility of the tube against the skin around the stoma insertion site. Therefore, the first priority is to minimize this by ensuring that the bumper of the tube is flushed against the inner stomach wall. The outer ring of the tube should be about 1/8 inch from the skin. A 2x2cm gauze pad can be placed between the outer flap of the device and abdomen to obtain a snug fit if necessary (Ae, Kosami, Yahata, 2016).

Conventionally, hyper granulation tissue is treated with chemical cautery with silver nitrate. Topical corticosteroid use is a less painful alternative which has shown to be a safe and effective treatment that is non-invasive. Surgical resection may be indicated in some cases (Ae, Kosami, Yahata, 2016).

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Bleeding. A rare post procedural complication of PEG placement. The etiology of bleeding can originate in the abdominal wall as a result of a significant vessel injury. It is an early complication that presents as oozing of blood around the gastrostomy site and leads to hematemesis, melena, low hemoglobin, or signs of unexplained hypotension. Diagnosis of bleeding is rudimentary, and early recognition of intraluminal or intraperitoneal bleeding is imperative. To determine the cause of the bleed, endoscopic inspection, CT of the abdomen, or surgical exploration may be indicated. Minor bleeding from the gastrostomy can ensue and usually ceases spontaneously. If bleeding does not stop, apply pressure to the abdominal wound or tighten the external bolster for no more than 48 hours to avoid pressure injury (Hucl & Spicak, 2016).

Early recovery after surgery (ERAS) is associated with a decrease in stoma complications, hospital length of stay, and readmission rates. Although a shorter hospital length of stay is positive, it results in less time available to patients to become proficient with their stoma care (Burch & Slater, 2014). Many organizations do not have standardized protocols, and patients may not receive stoma education due to early discharge (Stokes et al., 2017). Furthermore, variation in educational interventions and provider practice can lead to confusion for families and increases the potential for inconsistent care.

Primary care providers can effectively manage and evaluate these patients in the outpatient setting. They can provide the education and attention needed to minimize post-operative complications and optimize care transition from the hospital to the community (Delaplain & Joe, 2018). However, there is a disparity in accessing these specialized providers among underserved populations and rural areas. Thus, there is an unmet need for trained providers in primary care clinics (Delaplain & Joe, 2018).

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The competency level of providers has a positive impact on patient outcomes. Wound and ostomy care (WOC) training is encouraged to obtain further knowledge and skills related to assessment and management of stomas (Doughty, 2000). Primary care providers with WOC training can offer valuable support to underserved populations where patients are forced to travel long distances to receive the specialized care (Medley, 2014). In order to achieve a desirable quality of life, a person with an ostomy must have support and access to high-quality care in all settings throughout the continuum and ideally counseling should be provided by a trained medical professional (United Ostomy Associations of America, n.d.). Therefore, the intent of this project was to focus on providing wound and stoma education to primary care providers within the community.

PICOT Question. The problem, intervention, and significance of change in practice in the primary care setting were queried and used to develop the following PICOT question: In patients with a gastrostomy tube, how does current wound and stoma care practices compared to care after implementation of a wound and stoma education workshop affected change in primary care provider (PCP) practice and patient outcomes?

Search Methodology. A literature search was conducted for prospective articles published between a date range of 2010 and 2018 to obtain the most current research on the subject. The Cumulative Index to Nursing and Allied Health Literature (CINAHL), Cochrane, and PubMed databases were used to retrieve data used for the purpose of this review. Key terms used were *gastrostomy tubes, PEG, feeding tubes, complications, hospital readmission, emergency room visits, wounds, and stoma*. A total of six articles were included in the literature review due to limited research available pertaining to health outcomes after an educational colloquium for stoma care. The evidence was then reviewed and synthesized using the John

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Hopkins Evidence-Based Practice Appraisal Tool to evaluate the level of strength and quality of each study (Dang & Dearholt, 2017). An evidence table was created to document the results of the literature review (Appendix A).

According to the literature, complications related to gastrostomy tubes can range from minor to major. Goldberg et al. (2010) evaluated 94 patients and found that minor issues such as infections occurred in 37% of patients, 68% with hyper granulation tissue, and 4% experienced major complications. In a study of 159 pediatric patients who underwent gastrostomy tube placement indicated that the majority of emergency room (ER) visits were due to granulation tissue (58%), and tube dislodgement (28%), with 93% being discharged from the ER (Correa et al., 2014). A larger study including 219 patients discharged from the hospital less than 30 days after surgical placement, 20% returned to the ER within one month due to gastrostomy tube related concerns. Approximately 39% of patients were seen for issues such as leakage, clogs and granulation tissue. More than half the patients presented to the ER due to infection or tube dislodgement (Hucl & Spicak, 2016).

Conversely, ER visits nearly doubled for patients with gastrostomy tubes placed more than 30 days but less than one year. Of these visits, 83% was a result of tube dislodgement, granulation tissue, leakage, and clogs. While some of these visits were essential, many could have been avoided. Primary care providers will encounter patients with feeding tubes in everyday practice and can help manage these minor complications in outpatient clinics with specialized stoma training (Corea et al., 2014; Hucl & Spicak, 2016).

Access to providers with specialized stoma care knowledge. Primary care providers (PCPs) can effectively manage and evaluate patients with a stoma in the outpatient setting. They can provide the education and attention needed to minimize post-operative complications and

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optimize care transition from the hospital to the community (Danielsen, Burcharth, & Rosenberg, 2013; Delaplain & Joe, 2018).

Education. Many patients and families worry about body image and their ability to provide adequate gastrostomy tube care which may lead to bad odor and embarrassment. While some patients and families are willing to learn how to change a gastrostomy tube, others report they will never be comfortable with this procedure (Altuntas et al., 2012). Patients and caregivers should receive both written and verbal instructions and practice with all equipment before discharge to prevent complications and encourage them to participate in their stoma care. Providing proper education and support can significantly influence patient outcomes. It can also help promote patient acceptance of the stoma and prevent emotional, physical, and social tribulations (Altuntas et al., 2012; Fuchs, 2017; Wilson et al., 2010).

Patient education and early intervention is key to reducing surgical complications in the outpatient setting, especially in rural communities. The competency level of a provider can positively impact patient outcomes. Therefore, wound and ostomy care (WOC) training is encouraged to obtain further knowledge and skills related to assessment and management of stomas. Moreover, providers with WOC training can offer valuable support to underserved populations where patients are forced to travel long distances just to receive the specialized care (Medley, 2014). A person with an ostomy must have support and access to high-quality care in all settings throughout the continuum, and ideally, counseling should be provided by a trained medical professional to achieve a desirable quality of life (United Ostomy Associations of America, n.d.).

Rationale: Conceptual Framework

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The conceptual framework shaping this project is the American Association of Critical Care Nurses (AACN) synergy model which was developed in 1996 to delineate the needs of critically ill patients and the nurse competencies that are required for their care (AACN, n.d.). Though it was originally created for critical care environments, experts determined that the model can be applied in diverse clinical practice settings. The synergy model is a basic framework that unifies innovative approaches to professional nursing and patient care. It is a mechanism for evaluating the needs of patients and families as well as the level of care they require (Kaplow, 2008).

The model objectively quantifies eight patient characteristics and eight nurse competencies that influence patient outcomes. These two variables impact patient safety and quality, which can be used to develop staffing guidelines to enhance stoma care and patient education to optimize outcomes. The use of the model helps to align system initiatives with clinical competencies and patient outcomes. When a provider's competencies align with the needs and characteristics of a patient or health care environment, synergy is accomplished, and optimal care is provided (Kaplow, 2008; MacPhee, Wardrop, Campbell, & Wejr, 2011).

The objective of assessing the care management of pediatric patients with a stoma in an outpatient setting is to understand if primary care providers with WOC training has a positive effect on patient outcomes. Using the synergy model, this author investigated the delivery of various wound care interventions and whether they improved patient outcomes. The evidence suggests that the competency level of the clinician can have a positive impact on patient outcomes, particularly in rural areas with limited access to specialized services.

Imogene King's goal attainment theory also aligns with the intent of this project and considers the relationship of healthcare providers and their patients in setting goals and

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determining the appropriate steps to achieve them (Petiprin, 2016). Enhanced knowledge in wound and stoma care will allow providers to confidently discuss treatment options available (Delaplain & Joe, 2018). The patient can then agree on realistic goals to properly care for their stoma at home and prevent unnecessary ER visits or hospital readmission due to complications.

By attaining the necessary knowledge and skills for appropriate stoma care management and treatment, providers can deliver high-quality care to patients and improve health outcomes (Petiprin, 2016). Moreover, PCPs with specialized knowledge on wound and stoma care will make better clinical decisions and feel more confident in caring for patients who present to their clinic with stoma-related issues. As a result, appropriate information can be communicated to the patient and mutually set goals and implement interventions to achieve them (Petiprin, 2016).

Aim Statement

The aim of this Doctor of Nursing Practice (DNP) was to develop, implement, and evaluate a wound and ostomy assessment tool kit and treatment education program directed at primary care providers in outpatient clinics. The goal is to enhance provider knowledge and improve patient outcomes by applying best practices for wound and stoma care and decrease the number of unnecessary referrals to specialty clinics and the ER due to preventable complications by 30%. This project was completed on May 11, 2020.

Section III: Methods

Context

The current process for delivering appropriate stoma care and education to patients in the hospital and primary care clinics was examined to improve transition from the hospital to community after discharge. Due to the large volume of referrals and provider calls related to the peristomal wound management, the need for education to enhance provider knowledge in

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gastrostomy tube care and management within the community was identified. Currently, there are two nurse practitioners on the general surgery team at LPCH who provide wound and stoma care to patients in the hospital and outpatient surgery specialty clinic. Because there are only three half day clinics scheduled each week, access to care is limited. Moreover, patients and families who live in rural areas face barriers with transportation and resources to travel long distances to receive the care needed. As a result, these patients ultimately seek care in the emergency room for complications that could have been prevented. This affects patient satisfaction, health outcomes, and increases health care costs.

Effective patient education is crucial for preventing complications in outpatient settings. A provider with wound and stoma care training can offer valuable care to underserved populations where patients are forced to travel long distances to receive specialized care (Medley, 2014). Developing of an evidence-based wound and stoma care education workshop directed at the LPCH hospital staff and PCPs in the outpatient setting will ensure that patients receive proper education for gastrostomy tube management and timely high-quality care that is cost-effective.

Stakeholders

The stakeholders include PCPs in the community as they are at the forefront of preventive care services, the general surgery nurse and NP as well as the wound and ostomy care nurse (WOCN). This DNP candidate developed the material for the wound and stoma care education workshop and toolkit. The content of the educational materials were appraised by the pediatric surgery NP who is a certified wound, ostomy, and continence nurse (WOCN) throughout the process to ensure key points were appropriately addressed to meet the objectives of the project.

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Intervention

The purpose of developing an evidence-based wound and stoma care education workshop is to promote best practices for managing peristomal wounds and associated complications. The intervention was chosen to enhance provider knowledge and skills in wound and stoma care to improve access to care for those who live in rural areas, decrease complication rates and ER visits. This DNP candidate was also influenced by the LPCH values to collaborate, advance, respect, educate, and serve (CARES) to align people and resources to provide extraordinary patient and family centered care (Lucile Packard Children's Hospital, 2020). This education workshop took place virtually on May 4, 2020 and included PowerPoint slides (see Appendix I for the Wound and Stoma Care Education Workshop PowerPoint Slides) and a written patient education tool (see Appendix J for the Gastrostomy Tube Patient Education Tool). Information pertaining to the types of feeding tubes, minor and major complications, as well as best practices to prevent, manage, and treat these complications were reviewed.

Gap Analysis

At LPCH there is a need for wound and stoma care education within the organization and network of PCP's in the community. As stated previously in the description of the problem, referrals from PCPs for wound and stoma management has increased. Many of these referrals are unnecessary as these issues could be managed by PCPs if they felt comfortable and had more knowledge on how to treat peristomal wounds according to best practice. Enhanced PCP knowledge could also mitigate the problem with the burden on the surgery NPs in meeting the patient demand. Additional suboptimal processes include the delay in timely care resulting in ER visits, hospital admission, as well as inconsistent stoma care and education provided within the organization. This can cause confusion for patients and their families as well as PCPs who

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manage their care after discharge. Therefore, the desired state is to mitigate these issues by developing a wound and stoma education toolkit directed at providers within the organization as well as PCPs in the community. A literature review of current evidence-based wound and stoma practices was conducted to develop the educational materials and a community assessment of the internal and external issues will be assessed to determine areas for further improvement (Appendix B).

GANTT

A GANTT chart (Appendix C) was developed to outline the planned interventions within a period of 10 months beginning in July 2019. This chart facilitated the plan and illustrated the schedule of the project to ensure that deliverables were completed according to the deadline. The GANTT chart highlights the tasks necessary during the planning, implementation, evaluation, and spread phases of the project.

Planning. This phase began with defining the need for change by identifying the issue, population, and knowledge deficits. Then, a literature search was conducted for evidence-based information pertaining to wound and stoma care to utilize in developing the educational materials. The Health Insurance Portability and Accountability (HIPAA) regulations and consents was reviewed for medical-legal compliance. The aim of the project, plan proposal, and charter was then developed. The stakeholders and project team were identified, and the information was be presented to them. Last, a draft of the project manuscript was be submitted to the DNP chair for approval.

Implementation. Wound and stoma care educational materials were developed by this DNP candidate to provide evidence-based wound and stoma care. An education workshop was held on May 4, 2020 to NPs employed at LPCH.

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Evaluation. The effectiveness of the educational material was assessed through pre and post assessments to measure the knowledge gained from the intervention. The information was collected using the Survey Monkey online tool to capture the information. Through analysis of the data collected, areas for refinement were identified and the educational materials were revised based on the feedback received for future presentations.

Spread. Deployment of the revised education toolkit was conducted. Adoption of best practices for wound and stoma care will be monitored to foster long term change necessary to improve the quality of care along the continuum for patients with a stoma.

SWOT Analysis

An analysis of the strengths, weaknesses, opportunities, and threats (SWOT) (Appendix D) was conducted to determine whether this intervention plan is feasible and aligned with the aim of the project which is to improve community provider knowledge pertaining to stoma care.

Strengths. The main strengths identified are the availability of expert resources to implement the project, multi-disciplinary collaboration and support between surgery and primary care providers, as well as support from the department leadership. These strengths will augment care to meet the needs of patients with a stoma when they are discharged from the hospital.

Weaknesses. Some of the weaknesses that were considered are scheduling challenges for project team meetings due to differences in work schedule and social distancing limitations which caused delays in meeting the project milestones as planned. Other weaknesses include competing hospital and clinic initiatives due to the covid-19 pandemic.

Opportunities. This project provides an opportunity for safe delivery of timely wound and stoma care, improve access to high-quality care to patients with gastrostomy tubes who live in rural areas, and prevent unnecessary referrals to a higher level care due to complications that

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can be managed in outpatient primary care clinics. PCPs with enhanced knowledge in wound and stoma care will be able to apply best practices for gastrostomy tube management. Accordingly, this will improve patient access, satisfaction, and health outcomes in underserved areas.

Threats. External threats for the project included the unforeseen cancellation of the California Association of Nurse Practitioners 43rd Annual Educational Conference in Riverside, California due to the novel covid-19 pandemic. Changes with the planned implementation site and determining alternative method to provide the education during the current pandemic greatly affected the project timeline for completion. Time constraints for all team members to congregate also impacted the project deliverables.

Work Breakdown Structure

The following work breakdown structure (WBS) was created to facilitate the execution of the project objectives (Appendix E).

Initiation. The project manager, who is a registered nurse with the general surgery team and this DNP candidate was responsible for the initiation phase of the WBS which included five sub-phases. The first step included a detailed gap analysis that was completed to examine in detail the need for improved stoma care knowledge among PCPs in the community clinics. The lack of PCP knowledge or confidence in caring for peristomal wounds creates several problems such as unnecessary referrals to specialty providers, emergency room visits for treatment of granulation tissue, and hospital admissions due to preventable complications related to infection. Subsequently, a charter for the stoma care education project was created. This was followed by the development of the first deliverable of the project, which is to submit the charter to the sponsor. The project charter includes information pertaining to the problem statement, business

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case and benefits, goals, timeline, scope, and team members. The sponsor of the project, the general surgery attending physician then reviewed the charter for approval.

Planning. In the course of the planning phase, the preliminary scope statement was created by this DNP candidate who also developed the project plan. The team included the project manager, NP with wound care experience from the surgery department, and a WOCN. The surgery NP assisted in reviewing the project charter and educational materials to provide feedback from a provider perspective and the wound care nurse was an expert consultant for the wound management aspect of the project. A team kick-off meeting was held to determine the goal of the project, encourage communication, and set expectations prior to commencement (Harris, Roussel, Dearman, & Thomas, 2016). The plan was reviewed by the entire team and the project plan was approved.

Execution. This DNP candidate conducted a thorough research of evidence-based wound and stoma care assessment and treatment from peer-reviewed journals prior to achieving two deliverables. The first project deliverable was the creation of a written material for stoma care that included information gathered from the research review such as identification and treatment of granulation tissue, leakage, dislodgement or displacement, and infection. The second deliverable focused on developing PowerPoint slides which included evidence-based stoma care principles. An evaluation of these materials was conducted, and the project was then be implemented.

Control. The control phase encompassed a series of project management sessions and meetings to evaluate the status of the project. This was led by this DNP candidate. Continuous project updates were provided to the project team and stakeholders so that they were well

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informed about the progress of the project. Amendments were made according to feedback received.

Closeout. During the closeout phase, the information gathered was used to measure and evaluate the outcomes and determine if the objectives of the project were achieved.

Proposed Budget

The total estimated costs for the project is \$10,194 which includes time spent for developing the educational materials, pre and post knowledge assessment surveys, hours worked for data collection and analysis. This DNP candidate delivered the wound and stoma care education to NPs and developed the educational materials. The project team collectively devoted a total of 129 hours towards the project (Appendix F).

Return on Investment

Implementation of best practices for wound and stoma care by PCPs will improve health outcomes, patient satisfactions, and access to care for patients with gastrostomy tubes who live in rural areas. The education workshop will enhance provider knowledge and confidence in caring for minor gastrostomy tube complications. This will help reduce out of pocket costs for transportation and preclude costs for unnecessary ER visits. Based on the fees from Uber which is a multinational transportation service company that is utilized in the community, the estimated cost for transportation to Lucile Packard Children's Hospital in Palo Alto, CA is as follows (Uber, 2020):

Transportation Cost via Uber	Distance to Palo Alto (zip code 94305)
\$55-75	50 miles
\$80-110	70 miles
\$100-120	90 miles

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The supply cost for silver nitrate applicators used to treat granulation tissue which is a common gastrostomy tube complication ranges between \$30-40 for a quantity of 100. Using the California Noridian Medicare Part B fee schedule as an example for the current procedural terminology (CPT) billing code 17250 for chemical cauterization of granulation tissue, the reimbursement for this procedure ranges from \$87.11 to as low as \$39.41 if performed in a facility setting (Medicare Noridian, 2019).

Gastrostomy tube changes are recommended every three months and can be done by PCPs. The reimbursement rate for the CPT code 43762 used for gastrostomy tube changes is \$242.71 and \$38.78 when performed in a facility (Medicare Noridian, 2019). Since it is routine practice for patients with gastrostomy tubes to be supplied with an emergency gastrostomy tube kit by home medical supply companies, they are asked to bring this with them to their appointment for the tube exchange. Therefore, there are no additional supply costs for the clinic.

PCPs can make a significant impact in meeting the needs of patients who require wound and stoma care in rural areas. They can increase revenue for their practice by performing silver nitrate treatments to treat hyper-granulation tissue and gastrostomy tube exchanges every three months.

Communication Plan/Matrix

Effective communication is imperative in project management and requires a clear conceptualized plan for communication. A communication plan (Appendix G) was created to delineate the tasks that need to be completed by the project team members. This tool helped to summarize the project tasks and clearly identify who is responsible for each project

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communication. The responsibility matrix indicates the authority of each team member to define how the information was delivered throughout the project.

Study of the Intervention

Implementation. This DNP candidate developed a written wound and stoma education tool and PowerPoint slides to provide evidence-based information pertaining to gastrostomy tube care, management, and prevention of complications in the outpatient setting. The initial plan was to present at the California Association of Nurse Practitioners 43rd Annual Educational Conference on March 29, 2020 in Riverside, CA. Due to the current covid-19 pandemic the conference was cancelled and an educational workshop was conducted for a duration of one hour with a small group of NPs on May 4, 2020. In consideration of the limitations with social distancing guidelines and capacity of the conference room, three NPs participated in person and three others joined virtually via Zoom video conferencing.

Outcome Measures. A pre and post-teaching assessment survey was provided to participating NPs to evaluate their knowledge of evidence-based wound and stoma care. The survey was distributed using the Survey Monkey web based tool and included questions related to identification, management, and prevention of gastrostomy tube complications. The goal of 100% provider compliance in completing a pre and post assessment questionnaire regarding the educational content covered was achieved. Another outcome measure goal is for 90% of providers to attain the skillset to assess, manage, educate, and support patients with a stoma as evidenced by a score of 85% and above on the post assessment survey which was also achieved (see Appendix O). Ideally, data pertaining to the number of referrals to the surgery clinic, ER visits, and hospital admissions for peristomal wound care issues should be evaluated within three months to determine whether the intervention helped to decrease these incidents by 30%.

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Analysis

SurveyMonkey was used to analyze and compare the pre and post knowledge assessment survey responses. The survey consisted of five questions. Statistical calculations including means and standard deviation were calculated utilizing the online survey tool and exported into Excel. The data was then examined and interpreted.

Qualitative data was also collected prior to the education workshop to assess provider experience with gastrostomy tube care, self-assessment of level of expertise, comfort with providing wound and stoma care, as well as gather information pertaining to the frequency and reason for referrals to specialty or higher levels of care. Participants completed a SurveyMonkey questionnaire with six questions for descriptive analysis.

Ethical Considerations

In accordance with the American Nurses Association Code of Ethics Provision 3.1, patient privacy was maintained as the project was originally intended for PCPs in the community and the PowerPoint slides presented excluded patient information. Successful implementation of this project required multidisciplinary collaboration between the surgical specialty team in the inpatient and outpatient clinics as well as providers in the community. Health care delivery systems are complex and involves support and active participation of all health care professionals to contribute to the project initiative in order to improve patient outcomes. Collaborative effort between all health professions is necessary to foster optimal patient-centered care (American Nurses Association, 2015). The project team was committed to fulfilling the University of San Francisco's Jesuit mission to apply knowledge to a world of all people and held in trust for future generations by teaching best practice for wound and stoma care to providers in outpatient clinic settings. This will foster change in practice to improve health care

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outcomes and delivery of timely high-quality care to patients with gastrostomy tubes (University of San Francisco, 2017).

Section IV: Results

Qualitative Findings

Descriptive statistics was utilized to measure variability of the data analyzed and observe for common patterns. Of the six NPs who participated in the education workshop, 100% provided gastrostomy tube care in their current practice. The majority (4 of 6 participants) considered themselves as experts in gastrostomy tube care and two participants declared having proficient knowledge on the self-assessment questionnaire completed prior to the class. Four NPs felt extremely comfortable with providing gastrostomy tube care, one was very comfortable, and another indicated they were somewhat comfortable. Although 100% of the NPs responded that they rarely referred patients to the ER for gastrostomy tube related issues, two NPs reported referring patients to the ER or specialty clinic to prevent complications. The other four NPs only directed care to these departments if unable to provide necessary care in their clinic setting (see Appendix L for the pre-assessment questionnaire).

Quantitative Findings

Six NPs from various outpatient specialty clinics attended the educational workshop. A pre and post knowledge assessment online survey was also completed to evaluate the effectiveness of the intervention. Data analysis revealed an increase in overall provider knowledge in wound and stoma care by 25%. Significant changes were seen in provider recognition of common mechanical feeding tube complications and methods for treating peristomal hyper granulation tissue with a 33% increase, followed by a 25% increase in knowledge pertaining to risk factors for complications, and 22% for treatment and causes of

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minor and major wound complications (see Appendix N and O). Results of the pre and post knowledge evaluation survey mean data and standard deviation are displayed in Table 1 and Table 2 below.

Table 1

Pre-Education Workshop Knowledge Evaluation Survey

STATISTICS		
Lowest Score	Median	Highest Score
60%	60%	70%
Mean: 62%		
Standard Deviation: 4%		

Table 2

Post-Education Workshop Knowledge Evaluation Survey

STATISTICS		
Lowest Score	Median	Highest Score
70%	90%	100%
Mean: 87%		
Standard Deviation: 15%		

The mean score for the pre-survey was 62% and 87% for the post-survey. Despite the post-survey having a higher variance, a 30% improvement between the median and high scores for the pre and post survey was achieved. This indicates that the NP's overall knowledge regarding wound and stoma care improved as a result of the education workshop.

Section V: Discussion

Summary

The aim of this DNP project was to develop and implement a wound and stoma care education workshop directed at PCPs in outpatient clinic settings to enhance knowledge in evidence-based practices as well as improve access to care and patient outcomes. However, due to unexpected changes with the implementation site, time constraints, limitations with class size

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and availability PCPs during the current pandemic, participants of the education workshop included NPs who currently provide care in specialty clinics.

The objectives of the education workshop focused on four key components:

- 1) Robust stoma management skills to prevent stoma complications.
- 2) Distinguish three common stoma complications seen in patients with gastrostomy tubes.
- 3) Recommend at least two methods for treating stoma complications.
- 4) Primary care providers will be comfortable caring for gastrostomy tubes in their clinical setting.

Promoting change in PCP practice by providing gastrostomy tube care and reducing referrals to surgical specialty clinics or higher levels of care for issues that can be managed in outpatient clinics can positively impact patients and both the organizations in the acute care hospital and community clinic settings.

Primary care providers are at the forefront of preventive care services, and it is essential for them to utilize clinical inquiry to analyze innovative strategies for stoma care that would be most successful for the patient (Doughty, 2000; Zeller, Nair, & McComiskey, 2018). Distinct and specialized wound and stoma care knowledge is relevant to clinicians working in primary care clinics, particularly in rural areas (Doughty, 2000). A provider with wound and stoma care training can offer valuable care to underserved populations where patients are forced to travel long distances to receive specialized care (Medley, 2014). Effective patient education is crucial for preventing complications in outpatient settings.

Interpretation

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Gastrostomy tube complications are common and can lead to problematic consequences that are substantial to patients and their families from a health economic viewpoint. According to the data collected, is evident that continuing education is essential to maintain expertise in specialties such as wound and stoma care regardless of provider experience and knowledge. The NPs that participated in the education workshop stated they were either an expert or proficient with gastrostomy tube care. However, the results of the pre-assessment knowledge assessment indicated an average score of 60%. This was indicative of the need for education to enhance provider knowledge and promote best practices. The expected outcomes for this project included improvement in provider knowledge which will in turn improve access to care, decreased complications and referrals to specialty clinics or the ER.

Limitations

Limitations for this project were attributed to the current pandemic. The initial plan was to provide wound and stoma education to providers attending the California Association for Nurse Practitioners conference; however, the conference was cancelled and a new implementation site had to be identified. As a result, challenges were faced in accomplishing the project deliverables within the proposed timeline. Competing priorities within the hospital and outpatient primary care clinics delayed implementation of the final project. Some providers were reluctant to participate in the education workshop due to time constraints and limited resources available to provide stoma care to patients in their clinic. Furthermore, education pertaining to the novel covid-19 pandemic took precedence over wound and stoma care education. Though the education workshop was intended for primary care providers, a small group of NPs assigned to specialty clinics participated in the education workshop. The NPs indicated that they were either an expert or proficient in gastrostomy tube care, therefore bias should be considered.

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These limitations can be addressed by facilitating additional educational workshops with a larger sample size that includes PCPs as intended in the original concept of this DNP project.

Conclusion

Stoma creation surgeries are significant procedures that may have life-long implications for the well-being of patients and the health care system. Minor gastrostomy tube complications such as dislodgement, hypergranulation tissue, bleeding, or clogged tubes are common post-operative complications that can affect patients physically and psychologically as they adapt to their new life style. Given the current climate of limited providers with specialized wound and stoma care training in outpatient clinic settings, it is important to optimize use of available resources and provide additional education to enhance PCP knowledge and comfort with gastrostomy tube care.

Patients with stomas are commonly seen in primary care clinics, and having the skillset to provide care, education, and support to patients and their families will ensure that they receive proper stoma management to improve health outcomes and quality of life in community healthcare settings (Goldin et al., 2016; MacPhee, Wardrop, Campbell, & Wejr, 2011). The establishment of best practices for wound and stoma care by PCPs will ensure that patients receive optimal care after hospital discharge, foster efficient use of resources by decreasing referrals to specialty providers or higher-level care, and minimize unnecessary medical costs.

Enhanced PCP knowledge as well as patient and family education on stoma care can lead to preventable complications. Understanding the burden of stoma complications will help providers set realistic expectations for patients and improve outcomes in the outpatient clinic setting. The synergy between the competency level of the clinician and patient needs are

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necessary for adequate care which have shown to decrease hospital length of stay, ER visits and unnecessary healthcare costs.

The implementation of the wound and stoma education project produces short- and long-term implications. The establishment of timely evidence-based wound and stoma care practices that are cost effective is the most significant implication that will transpire as a result of this project. Additionally, PCPs will have more confidence in managing and caring for peristomal wounds in their clinic.

Section VI: Other Information

Funding

No funding was received for this project. This project team offered their time towards to this project during their work hours in support of the recognized need for enhanced wound and stoma care knowledge. There are no conflicts of interests to disclose.

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Section VIII: Appendices

Appendix A

Review of Evidence Table

Citation	Design/ Method	Measurement of Major Variables	Data Analysis	Study Findings	Appraisal
Corea, Fallon, Murphy, Victorian, Bisset, Vasudevan, S.A.,...Lee, T.C. (2014).	Retrospective review of data to characterize the incidence and indications for gastrostomy tube related emergency room visits and readmission rates in patients who had undergone gastrostomy placement from January 2011 to September 2012..	To quantify resource utilization the authors evaluated emergency room visits less than 30 days after hospital discharge, ER visits 30-365 days after discharge and unplanned clinic visits related to gastrostomy tube concerns.	Data analysis was descriptive and all data was reported as a mean or median.	During the study period, 247 patients had undergone surgery for gastrostomy tube placement. Of these patients 219 were discharged <30 days after surgery (89%). High rate (20%) of ER visits <30 days from discharge d/t issues that could have been avoided with a robust education program and can be treated in a standard clinic visit. Of these visits, 40% were avoidable and 60% were essential.	Level of evidence: II. Quality rating Limitations: retrospective review of data subject to bias related to data collection in comparison to a prospective review as patients may seek care at other hospitals.
Danielsen, Burcharth &	Case-control study of adult patients admitted	Ostomy Adjustment Scale (OAS),	Based on descriptive statistics and	Increase in health-related quality of life in	<u>Level of evidence: III</u>

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Rosenberg (2013)	to the surgical unit for stoma creation to evaluate the effect of a structured education program on health-related quality of life	with a mean OAS score set at 155 points, standard deviation at 23, type I error at 5%, and type II error at 20%. Comparison between the groups were done using Fisher's exact test, Friedman's test, and Mann Whitney test. Statistical significance was set at $p \leq 0.05$. A binary logistic regression performed for missing data.	non-parametric tests using IBM SPSS statistics version 20.	the IG ($P = 0.001$) and no significant change in the CG ($P = 0.144$). No significant differences between both groups at 3 and 6 months (respectively, $p = 0.12$ and $p = 0.63$)	<u>Quality rating: B</u> Limitations: Fewer patients at 6 months than power calculation demanded (13 patients vs 16 patients in the IG)
Faury, Koleck, Foucaud, Bailara, & Quintard (2017)	Systematic review of quantitative studies evaluating the outcomes of patient education for cancer patients with a stoma and the	Cochrane Collaboration bias assessment tool and the Quality Checklist for Healthcare Intervention Studies was used to assess bias for	Data extracted by one reviewer and verified by another.	Some psychosocial and self-management skills improved after patient education interventions but contrasting findings were reported for	<u>Level of evidence: II</u> <u>Quality rating: A</u> Limitations: Few studies identified on topic and heterogeneity of

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	impact on quality of life (primary outcome), psychosocial skills (secondary outcome), and self-management skills (secondary outcome).	non-RCT studies. Pre-post measures, RTC, and CBA studies were compared.		quality of life. Types of education intervention varied, making it hard to compare and recommend best practice.	methodologies used.
Goudarzi, Askari, Seyed-Fatemi, Asgari & Mehran (2016)	RCT to examine the effect of an educational program focusing on empowering the mothers of neonates having colostomy.	Depression Anxiety Stress Scales (DASS), personal information forms, Toki Line test, two-by-two comparison of means, equality of variance tested by the degree of deviation 5 with a CI of 95%	Depression Anxiety Stress Scales-21 (DASS-21) questionnaire and personal information form.	The educational program decreased level of stress, anxiety and depression in mothers of neonates and empowered them to provide better care.	<u>Level of evidence: I</u> <u>Quality rating: A</u> No significant difference in demographic indices between the experimental and control group. Reference of scientific evidence included to support findings of study.
Karabulut, Dinc, & Karadag (2014)	Quasi-experimental study that examined the	PAIS-SR scores and OAI scores	SPSS version 11.5 software used for analysis;	No changes for CG on ostomy adjustment. Gradual	<u>Level of evidence: II</u> <u>Quality rating: B</u>

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	effects of a planned group interaction on social adaptation for patients with an intestinal stoma		Friedman's and Kruskal-Wallis, Mann-Whitney U-test	improvement demonstrated with experimental group after planned group interaction. ($p<0.05$). Patients with lower educational levels received higher scores than those with higher education.	Limitations: Parametric tests assumptions for $n=60$ was not met. High drop-out rate. Withdrew due to health problems $n=7$ Data completion incomplete for $n=3$
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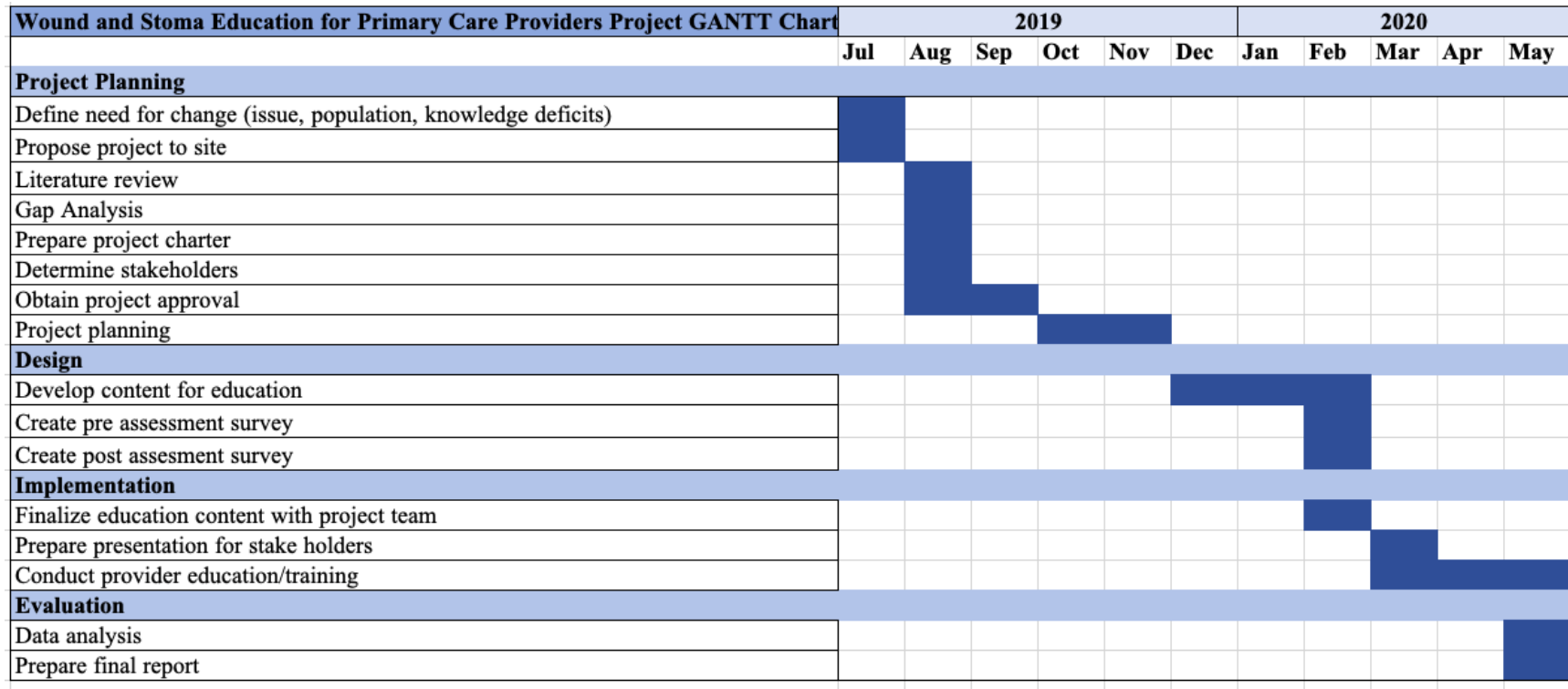
Appendix B

Gap Analysis Tool

REFERENCE NO.	CURRENT STATE	DESIRED STATE	ACTION ITEMS	PRIORITY	RISKS/LIMITATIONS
1	Increase in surgery referrals and provider calls related to peristomal wound management due to lack of knowledge.	Decreased referrals and calls by improving PCP knowledge and confidence in managing peristomalwounds and complications.	Deliver wound and stoma care education to providers in outpatient clinics within the community.	High	Limited participation d/t competing priorities.
2	NPs overburdened with the demand and doing basic wound care.	Enhance PCP knowledge to foster best practices for wound care that can be performed in primary care clinics.	Develop comprehensive wound and stoma education material	High	PCPs may not have the bandwidth to provide wound and stoma care in their clinics due to lack of resources and high volume of patients.
3	Delay in timely wound and stoma care leading to ER visits or hospital readmission	Improved use of resources to prevent unnecessary referrals to higher level of care.	Community assessment of external issues contributing to problem.	High	Limited resources in specialty and primary care clinics.
4	Primary wound champions/providers have left the organization, resulting in the delivery of inconsistent care and education in the hospital/clinics.	Delivery of hospital wide education on wound and stoma care to promote consistency in care and education.	Identify staff/providers with interest in becoming a team champion/leader for wound and stoma care within each respective unit.	High	Lack of support by new staff in becoming primary providers or champions within the hospital.
5	Outdated patient wound and stoma education materials.	Develop educational material for evidence-based wound and stoma care practices.	Literature review of current evidence on best wound and stoma care practices.	High	Not enough time to complete project within designated time frame.
6	Morbidity and mortality cases identified in three patients with one resulting in death.	No cases of morbidity and mortality.	Evaluate situation of events leading to issues.	High	HIPAA sensitive information mayrequire IRB to obtain access to patient records.

Appendix C

GANTT Chart



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Appendix D

SWOT Analysis

Strengths

- Availability of experts to assist in developing education program and toolkit.
- Multi-disciplinary collaboration and support for project development.
- Support from department leadership

Weaknesses

- Challenges in schedule for project team to meet.
- Limited time to complete project.
- Competing hospital/ clinic initiatives.
- Funding may not be sufficient enough.



SWOT

Opportunities

- Safe delivery of timely stoma care.
- Decrease/Prevent unnecessary referrals to the ER and mortality.
- Apply best practices for stoma care for patients in underserved areas.
- Improve patient satisfaction and health outcomes.

Threats

- Lack of implementation site due to competing initiatives and conflict with timing of project.
- Cancellation of presentation
- Delays in receiving assessment survey
- Difficulty obtaining provider participation

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Appendix E

Work Breakdown Structure

1.1 Initiation

- 1.1.1 Gap Analysis Evaluation & Recommendation
- 1.1.2 Stoma Care Project Charter Development
- 1.1.3 Deliverable: Stoma Care Project Charter/Submission
- 1.1.4 Project Sponsor (general surgeon) Reviews Stoma Care Charter
- 1.1.5 Stoma Care Project Charter Signed/Approved

1.2 Planning

- 1.2.1 Creation of Stoma Care Project Preliminary Scope Statement
- 1.2.2 Identify Stoma Care Project Team
- 1.2.3 Team Kick-Off Meeting
- 1.2.4 Development of Stoma Care Project Plan
- 1.2.5 Stoma Care Project Plan Submission
- 1.2.6 Milestone Stoma Care Project Plan Approved

1.3 Execution

- 1.3.1 Research Evidence-Based Care Material
- 1.3.2 Deliverable: Prepare for Wound/Stoma Care Education Presentation
- 1.3.3 Deliverable: Develop Pre/Post Assessment Surveys
- 1.3.4 Evaluate Education Material
- 1.3.5 Project Team Meeting Prior to Implementation
- 1.3.6 Stoma Care Education Project Implementation

1.4 Control

- 1.4.1 Stoma Care Project Management
- 1.4.2 Stoma Care Project Status Evaluation Meeting
- 1.4.3 Stoma Care Project Updates

1.5 Closeout

- 1.5.1 Review Feedback from Primary Care Providers
- 1.5.2 Evaluate Outcome Metrics
- 1.5.3 Summarize Findings and Recommendations
- 1.5.4 Present Results to Stakeholders
- 1.5.5 Write Final Report

Wound and Stoma Care Education Proposed Project Budget

Project Team	Education Materials (Hours worked)	Pre/Post Assessment (Hours worked)	Teaching (Hours worked)	Data Collection & Analysis (Hours worked)	Total Hours Worked	Cost/hour	Total Costs
Project Manager/ RN	60	8	1	16	85	\$78.00	\$6,630
NP	12	2		8	22	\$84.00	\$1,848
Wound Care RN	12	2		8	22	\$78.00	\$1,716
	TOTAL						\$10,194

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Appendix G

Communication Plan/Matrix

_PROJECT TEAM			
Task	Project Manager/RN	Nurse Practitioner	Wound Care Nurse
Gap analysis development	R	S	S
Project charter development and submission	R	S	S
Project scope statement	R	S	S
Project team creation	R	S	S
Project plan and submission	R	S	S
Research wound and ostomy education material	R		
Deliverable: Wound/stoma care workshop	R	S	S
Deliverable: Wound/stoma care toolkit	R	S	S
Project implementation	R	S	
Project status evaluation	R	S	
Project updates	R	S	S
Outcome metrics	R	S	S
Project update implementation	R	S	

R= responsible
S= support/assist

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Appendix H

DNP Statement of Non-Research Determination Form

Title of Project: Wound and Stoma Care Education for Primary Care Providers

Brief Description of Project:

A) Aim Statement: By May 2020, I will develop, implement, and evaluate a teaching tool for providers in outpatient clinic settings to effectively manage peristomal wounds and provide patient education to align clinical competencies with system initiatives in the outpatient setting. The goal of this initiative is to provide wound and ostomy education to increase access to optimal care and prevent stoma complications.

B) Description of Intervention:

Provide education and create a stoma educational tool to help providers in outpatient clinic settings enhance their knowledge in identifying, managing, and supporting patients with stoma-related wounds in their clinics.

C) How will this intervention change practice?

Providing education and developing a comprehensive stoma educational tool will provide providers with specialized knowledge to manage, treat, educate and prevent peristomal complications. This will also increase access to care for patients with stomas in outpatient clinic settings; reducing unnecessary emergency room visits, hospital readmissions, and healthcare costs.

D) Outcome measurements:

Every provider will complete a pre and post assessment questionnaire regarding the educational content covered after receiving the education. The outcome measures will be analyzed using 90% of clinicians will have the skillset to assess, manage, educate, and support patients with a stoma.

To qualify as an Evidence-based Change in Practice Project, rather than a Research Project, the criteria outlined in federal guidelines will be used: (<http://answers.hhs.gov/ohrp/categories/1569>)

☒ This project meets the guidelines for an Evidence-based Change in Practice Project as outlined in the Project Checklist (attached).

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Student may proceed with implementation.

☐ This project involves research with human subjects and must be submitted for IRB approval before project activity can commence.

Comments:

EVIDENCE-BASED CHANGE OF PRACTICE PROJECT CHECKLIST *

Instructions: Answer YES or NO to each of the following statements:

Project Title: Wound and Stoma Care Education for Primary Care Providers	YES	NO
The project aims to improve the process or delivery of care with established/ accepted standards or to implement evidence-based change. There is no intention of using the data for research purposes.	X	
The specific aim is to improve performance on a specific service or program and is a part of usual care . All participants will receive standard of care.	X	
The project is NOT designed to follow a research design, e.g., hypothesis testing or group comparison, randomization, control groups, prospective comparison groups, cross-sectional, case-control). The project does NOT follow a protocol that overrides clinical decision-making.	X	
The project involves the implementation of established and tested quality standards and/or systematic monitoring, assessment or evaluation of the organization to ensure that existing quality standards are being met. The project does NOT develop paradigms or untested methods or new, untested standards.	X	

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The project involves implementation of care practices and interventions that are consensus-based or evidence-based. The project does NOT seek to test an intervention that is beyond current science and experience.	X	
The project is conducted by staff where the project will take place and involves staff who are working at an agency that has an agreement with USF SONHP.	X	
The project has NO funding from federal agencies or research-focused organizations and is not receiving funding for implementation research.	X	
The agency or clinical practice unit agrees that this is a project that will be implemented to improve the process or delivery of care, i.e., not a personal research project that is dependent upon the voluntary participation of colleagues, students and/ or patients.	X	
If there is an intent to or possibility of publishing your work, you and supervising faculty and the agency oversight committee are comfortable with the following statement in your methods section: <i>“This project was undertaken as an Evidence-based change of practice project at X hospital or agency and as such was not formally supervised by the Institutional Review Board.”</i>	X	

ANSWER KEY: If the answer to **ALL** of these items is yes, the project can be considered an Evidence-based activity that does NOT meet the definition of research. **IRB review is not required. Keep a copy of this checklist in your files.** If the answer to ANY of these questions is **NO**, you must submit for IRB approval.

*Adapted with permission of Elizabeth L. Hohmann, MD, Director and Chair, Partners Human Research Committee, Partners Health System, Boston, MA.

STUDENT NAME (Please print): Deanna Garza

Signature of Student: Deanna Garza **DATE:** 3/9/2019

SUPERVISING FACULTY MEMBER (CHAIR) NAME (Please print): Jo Loomis

Signature of Supervising Faculty Member (Chair):

Jo Loomis, DNP, FNP-C, CHSE, NCMP, CNL

DATE

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Appendix I

Wound and Stoma Care Education Power Point Slides



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Transforming Stoma Care Practices in Pediatric Outpatient Settings

Deanna Garza, MSN, RN
Jo Loomis, DNP, FNP-C, CHSE, CLC, ANLC, NCMP, CNL

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Disclosure

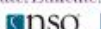

I disclose that I have no financial relationships nor commercial interests.

Photos or drawings used in this presentation have been approved for educational use and are not to be duplicated or distributed.

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Objectives

1. Discuss robust stoma management skills to prevent stoma complications.
2. Distinguish three common stoma complications seen in patients with gastrostomy tubes.
3. Recommend at least two methods for treating stoma complications.
4. Primary care providers will be comfortable caring for gastrostomy tubes in their clinical setting.

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Background

- Stoma creation is a standard procedure used to treat patients with swallowing disorders, neurological deficits, upper gastrointestinal (UGI) or respiratory tract pathology.
- Approximately 250,000 surgeries completed annually in the United States. (Huci & Spicak, 2016).
- Reported complication rates vary from 16 to 70 percent (DeLegge, 2019).
- Patient education and early intervention is key to reducing complications in the outpatient setting (Zeller, Nair, & McComiskey, 2018).

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Feeding Tubes With Stoma

Main types include:

- Low profile gastric tubes or gastric buttons-
- Gastro-jejunostomy tubes (GJ-tubes or low-profile GJ buttons)
- Jejunostomy tubes (J-tubes)

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Gastrostomy Tube Devices

- Non-balloon
- Balloon

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Gastrostomy Tube Devices

Non-balloon

- Ideal for patients who do not tolerate a balloon GT due to their anatomy or gastric environment differences.
- Secured by an internal retention device or dome inside the stomach and an external retention device at the surface of the skin.
- Frequent placement is not necessary
- Sedation is needed for removal and replacement.

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Gastrostomy Tube Devices

Balloon

- Easily distinguished from the non-balloon by identification of the balloon port.
- Secured by a balloon or an internal bumper within the stomach and an external bumper or external retention device at the skin level.
- Balloon devices require more frequent changes due to the internal bumper

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Assessment

- Erythema
- Swelling
- Drainage
 - Amount
 - Color
 - Odor
 - Frequency
- Pain
- Proper fit of gastrostomy device
- Abdominal distention
- Rebound tenderness

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Complications

- Gastroparesis and Ileus
- Bleeding
- Buried Bumper Syndrome
- Tube displacement or Migration
- Tube Blockage
- Peristomal Leakage
- Infection
- Irritant Contact Dermatitis
- Ulcerations
- Granulation Tissue

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Gastroparesis and Ileus

- Post-operative delayed gastric emptying (DGE) is associated with GERD and patients with leakage and feeding intolerance.
- Patients with normal pre-op gastric emptying have a 50% chance of developing DGE.
- Patients present with nausea and vomiting, which is usually transient.
- In rare situations, progression to an ileus may occur, and tube feeding is held until it is resolved.
- Clinical recognition of an ileus includes persistent abdominal distention with pain and absent bowel sounds.

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Bleeding

- Rare post-procedural complication
- Etiology can originate in the abdominal wall as a result of a significant vessel injury.
- Early complication that presents as oozing of blood around the gastrostomy site and leads to hematemesis, melena, low hemoglobin, or signs of unexplained hypotension.
- Early recognition of intraluminal or intraperitoneal bleeding is imperative

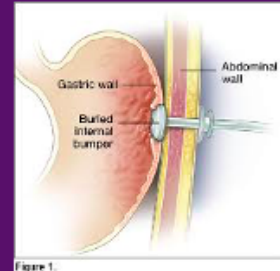
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Buried Bumper Syndrome

- Occurs from excessive pulling on the internal bumper of the GT caused by tight fit, weight loss, or weight gain.
- The tube will migrate from the gastric lumen and become lodged in the abdominal wall, leading to gastric ulceration or mucosal overgrowth at the bumper site.



Figure

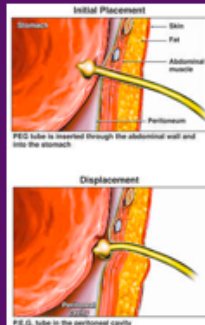
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Tube Displacement or Migration

- Can accidentally occur with activity, transport, coughing, or gagging.
- Internal displacement of a gastrostomy tube (GT) can lead to migration of the tube distally into the gastrointestinal tract.
- External displacement transpires when a GT is positioned outward without complete dislodgement.



Nucleus Medical Media (2015). Retrieved from <https://shape.smartmembers.com/medicaid.asp?form=ny-subscribe-item/itemID=11439>

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Tube Blockage

- Evident when difficult to flush or feeding pump occlusion alarm is triggered.
- Common complication that is costly and often caused by medication delivery of crushed tablets, especially potassium and iron supplements.
- Tube change is often necessary if the tube cannot be cleared.

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Peristomal Leakage

- Commonly seen in the first few days after placement of PEG tube and can also occur with a mature tract.
- Most leakage is due to intolerance of the amount of feeding and rate.
- Tightly placed tubes against the external bolster and abdominal wall can contribute to poor tissue perfusion, wound deterioration, and ultimately peristomal leakage.

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Case Study

Parents of a 2 year-old female patient with hx of feeding difficulties and poor weight gain secondary to cleft palate, s/p GT placement x3 weeks ago presents with c/o large amount of serosanguineous leakage from GT site x5 days.

They were seen in the ED x10 days ago due to dislodged GT. She is tolerating her feeds and does not appear to be in any pain. Parents fever and vomiting.

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Assessment

- Abdomen- soft, non-tender, non-distended, no masses or organomegaly. 14 Fr, 1.0 MicKey button loosely fitted with mild peristomal erythema, large friable granulation tissue from 7 o'clock to 4 o'clock position.



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Treatment

- Surrounding skin protected with Vaseline and silver nitrate applied directly to granulation tissue.
- No bleeding occurred during procedure
- Patient tolerated treatment well without distress and after 5 minutes of observation left the clinic with her parents.

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Infection

- Patients with diabetes, poor nutritional status, and those who are immunocompromised are at increased risk of infection.
- Stoma site can become red without the presence of an infection.
- *Staphylococcus aureus*, *Pseudomonas*, and *Candida* species are common microorganisms found in peristomal infections.
- Fungal-related gastrostomy infectious complications are less common. These include fungal peristomal cellulitis, candidal peritonitis, and intra-abdominal abscesses.

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Irritant Contact Dermatitis

- Most common cause of peristomal skin complications.
- Condition is caused by exposure of skin to the intestinal effluent and improper fit of the stoma.

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Ulcerations

- Pressure of the external bumper against the abdominal wall can lead to ulceration underneath the internal fixation device.
- Can develop contralateral to the gastric wall as a result of mechanical damage from an internal bumper that is too long or due to the replacement of gastrostomy tubes in which the tip is compromised

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Granulation Tissue

- Common problem that occurs with prolonged stimulation of fibroplasia and angiogenesis.
- About 25% to 68% of patients are affected by this complication.
- Characterized as moist, red friable, and shiny skin that is raised above the surface of the level of the skin.



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MANAGEMENT & PREVENTION OF COMPLICATIONS

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Gastroparesis and Ileus

MANAGEMENT

- PEG tube should be unclamped to allow for gastric decompression.
- Feedings are withheld for 24-48 hours.
- Associated clinical symptoms of a perforated viscus should always be ruled out by x-ray or CT imaging.

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Bleeding

MANAGEMENT

- Determine cause of the bleed, endoscopic inspection, CT of the abdomen, or surgical exploration may be indicated.
- Minor bleeding usually ceases spontaneously
- If bleeding does not stop, apply pressure to the abdominal wound or tighten the external bolster for no more than 48 hours to avoid pressure injury.

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Buried Bumper Syndrome

MANAGEMENT

- When BBS is presumed, stop all feedings and urgently refer to ER or surgeon.
- BBS is detected by abdominal computed tomography (CT) scan or endoscopic contrast injection.
- Removal is required if the bumper is entirely enclosed by the gastric mucosa.

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Buried Bumper Syndrome

PREVENTION

- BBS can be prevented with by proper surgical technique and maintaining 1-2 cm between the external bumper and the abdominal wall.
- Routine care of the PEG includes gentle rotation of the outer tube initially every day, then weekly once the tract has formed, and the stoma is fully healed.

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Dislodgement

MANAGEMENT

- Intervention depends on when gastrostomy tube was placed
- Replacement tube must be reinserted within 3 hours to prevent tract from closing.

Dislodgement 7-10 days post-op

- At risk for closure and leakage of gastric contents into peritoneal cavity
- Advise caregiver to:
 1. Place a new tube into the opening and tape in place to keep opening patent
 2. Do not infuse anything into the tube
 3. Go to ER to confirm correct placement

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Dislodgement

- Gastrostomy placed less than 8 weeks
 - Must be replaced by a medical professional to ensure the tube is inserted in the correct location.
- Gastrostomy placed more than 8 weeks
 - Trained caregivers can attempt to safely replace the gastrostomy tube if has been in place for more than 8 weeks.

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Dislodgement

PREVENTION

- *Keep the tube stable and prevent from shifting.*

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Tube Blockage**MANAGEMENT**

Blocked tubes can be cleared either by:

1. Rolling the tube to disrupt the occlusion and aspirating the tube contents
2. Attempting to flush the tube with 30 ml of tepid water while moving the syringe plunger back and forth several times
3. Instilling an alkalized enzyme to de-clog the tube and clamp for 5 minutes.

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Tube Blockage**PREVENTION**

- Regularly flushing the tube with 30 ml of tepid water every 4-6 hours for continuous feeding, before and after intermittent bolus feedings or medication administration, and after checking residuals can prevent blockage
- Each medication administered should be given separately and followed by a flush of 10ml of water in between.
- Medicines should not be mixed with tube feeding formulas, and buccal or sublingual medications should not be administered via a feeding tube

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Peristomal Leakage**MANAGEMENT**

- Treatment of comorbidities such as hyperglycemia and malnutrition.
- Loosening the external bolster
- Utilizing absorbing agents or a skin protectant to address skin breakdown
- Placement of larger gastrostomy will not help with leakage.

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Peristomal Leakage**PREVENTION**

- Proper surgical construction and care
- Ensure proper fit of gastrostomy tube

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Infection**MANAGEMENT**

- Local infections can be treated devoid of systemic antibiotics with use of an impregnated antiseptic dressing such as silver, honey, or iodine.
- Culturing the site is generally not helpful.
- Broad-spectrum oral antibiotics for 5-7 days may be all that is necessary to treat the infection.
- Topical antibiotics are not indicated for treating peristomal wounds that are colonized or infected and are of limited value.

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Infection**PREVENTION**

- Antibiotic prophylaxis at the time of the procedure has been shown to reduce wound infections.
- Proper peristomal skin care.
 - Clean site daily with soap and water.

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Irritant Contact Dermatitis**MANAGEMENT**

- *Protect skin from irritants*
- *Use unscented skin care and monitor for changes in skin.*
- *Barrier cream such as zinc oxide to protect skin around stoma if caused by leakage.*
- *Hydrocortisone 0.5% - 1% cream*
- *Foam or split gauze*

PREVENTION

- Close attention to changes in the abdominal wall and the need for adjustment in the size of the device.

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Ulcerations**MANAGEMENT**

- Assess gastrostomy and ensure proper fit and function

PREVENTION

- Appropriate tension between the internal bumper or balloon and the external retainer helps to lessen this complication.

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Granulation Tissue

MANAGEMENT

- Topical corticosteroid cream (triamcinolone 0.025%) for 7-10 days.
- Consider silver nitrate if it does not resolve.
 - Can be applied every 2–3 days until it resolves.
 - Protect surrounding skin with a barrier cream before applying silver nitrate to avoid burning normal skin.

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Granulation Tissue

PREVENTION

- Priority is to minimize external tube friction by ensuring that the bumper of the tube is flushed against the inner stomach wall.
- Outer ring of the tube should be about 1/8 inch from the skin.
- Gauze can be placed between outer flap of device and abdomen to obtain appropriate fit.

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Anticipatory Guidance

- Parents support and education is necessary to develop acceptance of tube feeding.
- Stigmas associated with tube feeding such as failure can lead to physical, emotional, and psychosocial challenges for the patient and their family.
- Providers can help parents recognize the benefits such as weight gain and improved quality of life.
- Parents who have a better understanding of tube feeding can offer their child a sense of normalcy by including their child in mealtimes through meal preparation and feeding while also allowing the family to feel in control.

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Summary

- The weight of stoma maintenance related issues is significant and is the main reason for emergency room (ER) visits or hospital readmission.
- Stomas are commonly seen in outpatient clinic settings and having the skillset to provide care, education, and support to patients and their families will ensure that they receive proper stoma management to improve outcomes and quality of life.
- These issues could be minimized or prevented through patient education, proper maintenance, and treatment (Goldin et al., 2016).

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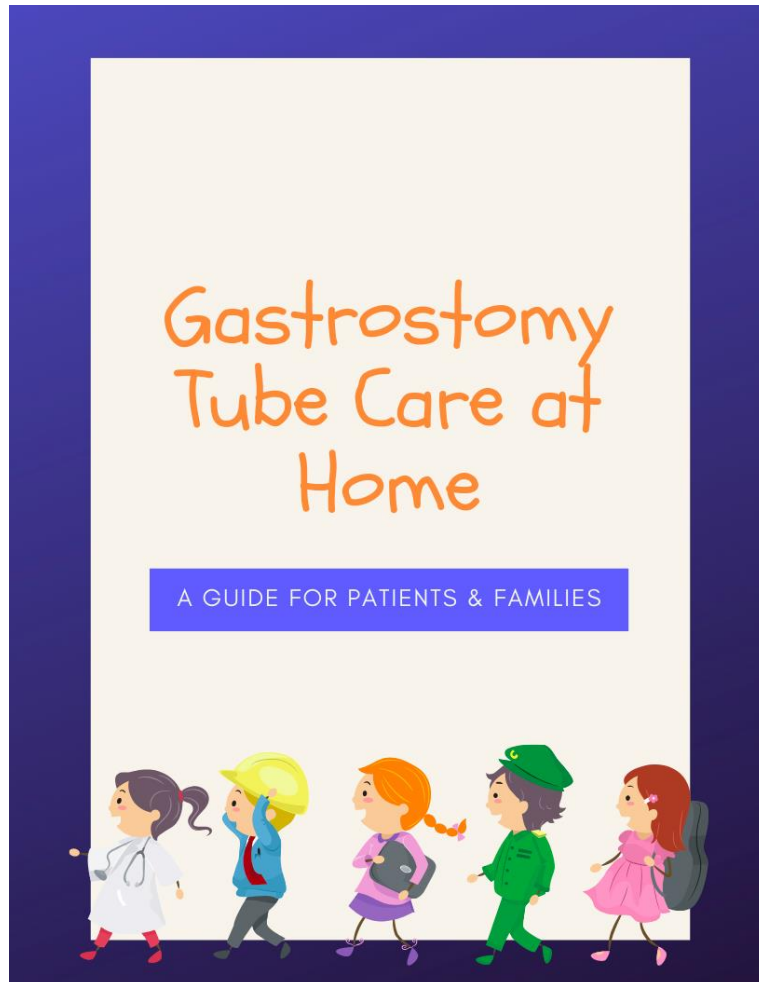
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Appendix J

Gastrostomy Tube Patient Education Tool



GASTROSTOMY TUBE DISLODGEEMENT & REPLACEMENT

PROBLEM SOLVING COMMON GASTROSTOMY TUBE ISSUES**What if the gastrostomy tube falls out?**

If the tube was placed less than 6 weeks:

1. Place a new tube into the opening and tape in place to keep the opening patent.
2. Do not infuse anything into the tube.
3. Go to the Emergency Department to confirm correct placement by an x-ray dye study.

If the tube has been in place for more than 6 weeks:

1. Replace with a new tube within 1 to 2 hours. Follow instructions on how to place tube.
2. If tube is difficult to replace, do not use until placement is confirmed by an x-ray dye study. Go to the Emergency Department.

Key Points to Remember:

- Correct placement of g-tube must be confirmed with every single change. **DO NOT USE IF UNABLE TO CONFIRM PLACEMENT.**
- Placement must be confirmed using x-ray dye study before it is used if:
 - Tube was pulled out with force to cause bleeding.
 - Tube has been out of the stoma for more than 3 hours.
 - Tube was difficult to replace.
 - Child has pain when you infuse formula or fluids.

How to replace the gastrostomy tube:

1. Wash hands with soap and water.
2. Gather supplies together:
 - ☐ gastrostomy tube
 - ☐ water-based lubricant
 - ☐ 4x4 gauze
 - ☐ two 6 ml syringes
 - ☐ 60 mL catheter tip syringe
 - ☐ water (tap, distilled or sterile)
3. Fill syringe with 4-5ml of water as instructed.
4. Check the new gastrostomy tube for a leak by filling the balloon with 4-5 ml of water into the balloon port.
5. Remove the water from the balloon.
6. Moisten the tip of the g-tube with the water-based lubricant.
7. If applicable, remove the old g-tube.
8. Place the tip of the g-tube into the stoma and gently push the tube into the stomach.
9. Insert syringe with into balloon port.
10. Fill the balloon with the correct amount of water.
11. Remove Syringe from balloon port.

How to check correct placement of tube:

1. Insert extension set tubing into the feeding port.
2. Connect 60 mL catheter tip syringe to extension set and pull plunger back until you see gastric secretions or formula.

WOUND AND STOMA CARE EDUCATION

PROBLEM SOLVING COMMON GASTROSTOMY TUBE ISSUES

Feeding Problems

FEEDING PROBLEMS	Symptoms	What to do
	Vomiting Dehydration	<ul style="list-style-type: none"> Stop the feeding Place your child in sitting position with head tilted forward or lying on their side. Flush feeding tube with water to prevent clogging. Wait until child feels better before feeding again. Call the doctor if vomiting continues.
	Gas Retching	<ul style="list-style-type: none"> Give more frequent but slower feeding. If slowing feeds does not help, stop the feed and vent the tube. Start feeding again when child feels better. Call the doctor if gas or retching continues.
	Cramping Diarrhea	<ul style="list-style-type: none"> Ensure formula has not been open longer than 24 hours. Check for correct formula concentration and pump rate. Warm formula to room temperature if cold. Stop feeding and vent the tube. Flush feeding tube with water to prevent clogging. Start feeding again at the next scheduled time if child feels better. Call the doctor if diarrhea last for more than 24 hours.
	Increase in abdomen size	<ul style="list-style-type: none"> Keep tube open to air. Call the doctor if it does not improve.

Stoma Problems

STOMA PROBLEMS	Issue	What to do
	Leaking around g-tube site (stoma)	<ul style="list-style-type: none"> A small amount of clear yellow or light brown drainage is normal. Keep skin clean and dry. Can use 2x2 gauze to protect skin from drainage. For large drainage, check volume of water in balloon. If volume of water is less than 4-5mL, may add 1 mL of water to provide a better seal. Call the doctor if leaking does not stop or if skin breakdown occurs.
	Redness on skin	<ul style="list-style-type: none"> Keep area clean and dry. Call the doctor if redness that is greater than 2.5 cm in diameter, continues for more than 3 days, or there is pain or swelling in area.

STOMA PROBLEMS	Granulation tissue	<ul style="list-style-type: none"> Granulation tissue is a build up of wet, soft, pink or red shiny tissue around the g-tube site. Tissue build up can occur due to improper fit of the g-tube, repeated tugging or movement of the device. Call the doctor if this occurs. Medications such as silver nitrate or a steroid cream can be prescribed to help with granulation tissue.
	Skin breakdown around g-tube site (stoma)	<ul style="list-style-type: none"> This can be caused by pressure, infection, or skin irritation from drainage. Clean skin with gentle soap and water. Do not use alcohol or products that can cause further irritation to the skin. Call the doctor for further advice.
	Bleeding	<ul style="list-style-type: none"> A small amount of bleeding is not uncommon with tube change. It may be a sign of irritation from the tube or inside the stomach and should stop quickly with pressure to the site. Call the doctor if not sure or if bleeding persists.

Tube Problems

TUBE PROBLEMS	Issue	What to do
	Clogged Tube	<ul style="list-style-type: none"> Best prevented by flushing the tube with water before and after each feed or medication. Check tube for kinks or closed clamps. Try to adjust tube and slowly flush warm water into the tube with a 60 ml catheter tip syringe. Replace tube. Call the doctor if you still cannot unclog the tube.
	Tube accidentally pulled out and you do not know how to replace it.	<ul style="list-style-type: none"> Place back-up g-tube in stoma and DO NOT USE. Cover the stoma with a clean gauze or soft cloth and secure with tape to prevent tube from coming out. Call the doctor to have tube replaced within 2 hours. An x-ray dye study must be done to confirm placement in stomach before the g-tube can be used. Take your gastrostomy kit with you. The opening can close within 2 hours so you must seek care immediately!

WOUND AND STOMA CARE EDUCATION

Appendix K

Pre-Assessment Workshop Questionnaire

Wound and Stoma Care Pre-Education Workshop Questionnaire

1. Do you currently see patients with gastrostomy tubes in your practice?

- ☐ Yes
☐ No

2. How would you rate your current knowledge in gastrostomy tube care?

- ☐ 1- High- consider myself very knowledgeable- EXPERT
☐ 2- Moderate- have basic knowledge; there is more to learn- PROFICIENT
☐ 3- Low- very little- ADVANCED BEGINNER
☐ 4- None- NOVICE

3. How comfortable do you feel in managing gastrostomy tubes in the outpatient clinic setting?

- ☐ 1- Extremely comfortable
☐ 2- Very comfortable
☐ 3- Somewhat comfortable
☐ 4- Not at all comfortable

4. How often do you refer patients to the emergency room for gastrostomy tube complications?

- ☐ 1- Never
☐ 2- Rarely
☐ 3- Often
☐ 4- Always

5. How often do you refer a patient with a gastrostomy tube to a specialty clinic for wound and stoma care?

WOUND AND STOMA CARE EDUCATION

- ☐ 1- Never
- ☐ 2- Rarely
- ☐ 3- Often
- ☐ 4- Always

6. Please indicate reason for referral to the ER or specialty clinic related to gastrostomy tube issues?

- ☐ 1- I never refer. I am able to provide gastrostomy tube related care in the clinic.
- ☐ 2- Sometimes refer when necessary care cannot be provided in the clinic.
- ☐ 3- I refer to prevent complications.
- ☐ 4- Do not feel comfortable providing care for gastrostomy tube

Appendix L

Pre-Assessment Questionnaire Results

Q1

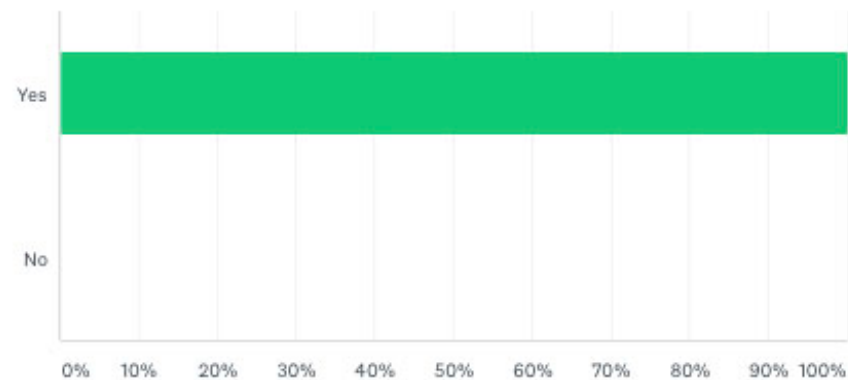


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Do you currently see patients with gastrostomy tubes in your practice?

Answered: 6 Skipped: 0



ANSWER CHOICES	RESPONSES	
Yes	100.00%	6
No	0.00%	0
TOTAL		6

WOUND AND STOMA CARE EDUCATION

Q2

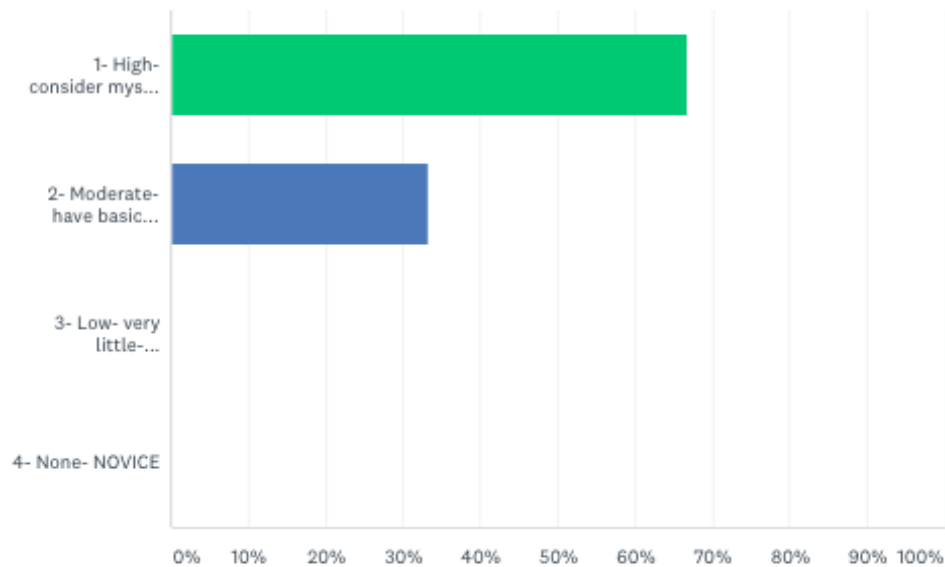


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How would you rate your current knowledge in gastrostomy tube care?

Answered: 6 Skipped: 0



ANSWER CHOICES ▼	RESPONSES ▼	
▼ 1- High- consider myself very knowledgeable- EXPERT	66.67%	4
▼ 2- Moderate- have basic knowledge; there is more to learn- PROFICIENT	33.33%	2
▼ 3- Low- very little- ADVANCED BEGINNER	0.00%	0
▼ 4- None- NOVICE	0.00%	0
TOTAL		6

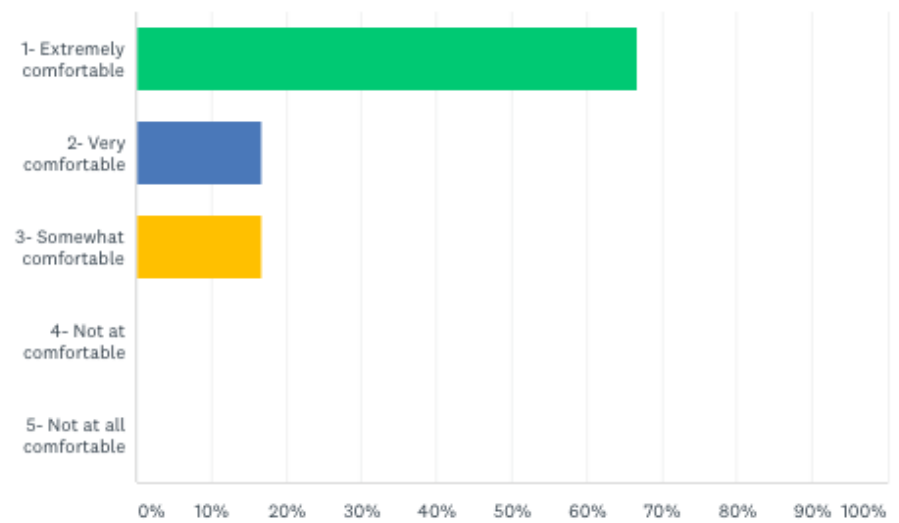
WOUND AND STOMA CARE EDUCATION

Q3

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How comfortable do you feel in managing gastrostomy tubes in the outpatient clinic setting?


Answered: 6 Skipped: 0



ANSWER CHOICES ▼	RESPONSES ▼	
▼ 1- Extremely comfortable	66.67%	4
▼ 2- Very comfortable	16.67%	1
▼ 3- Somewhat comfortable	16.67%	1
▼ 4- Not at comfortable	0.00%	0
▼ 5- Not at all comfortable	0.00%	0
TOTAL		6

WOUND AND STOMA CARE EDUCATION

Q4

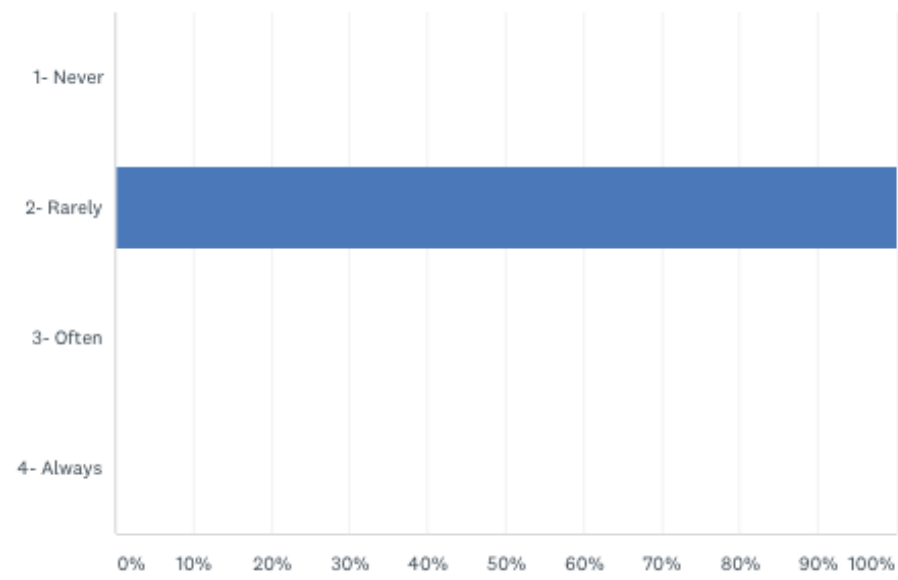


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How often do you refer patients to the emergency room for gastrostomy tube complications?


Answered: 6 Skipped: 0




ANSWER CHOICES	RESPONSES	
▼ 1- Never	0.00%	0
▼ 2- Rarely	100.00%	6
▼ 3- Often	0.00%	0
▼ 4- Always	0.00%	0
TOTAL		6

WOUND AND STOMA CARE EDUCATION

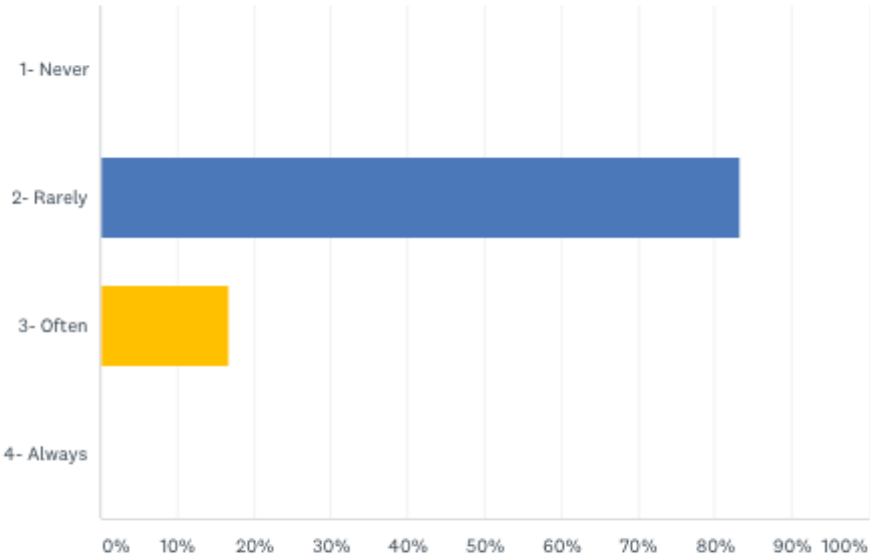
Q5

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How often do you refer a patient with a gastrostomy tube to a specialty clinic for wound and stoma care?

Answered: 6 Skipped: 0



ANSWER CHOICES	RESPONSES	
▼ 1- Never	0.00%	0
▼ 2- Rarely	83.33%	5
▼ 3- Often	16.67%	1
▼ 4- Always	0.00%	0
TOTAL		6

WOUND AND STOMA CARE EDUCATION

Q6

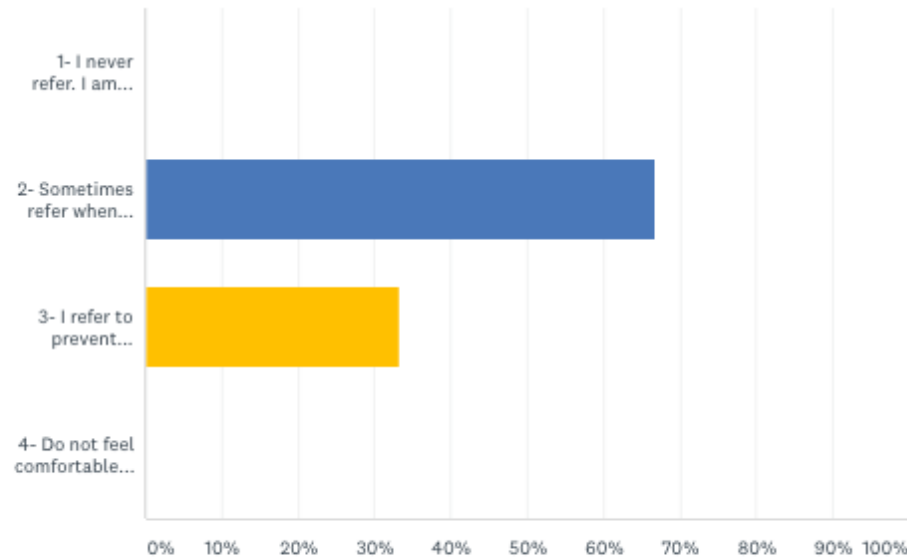


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Please indicate reason for referral to the ER or specialty clinic related to gastrostomy tube issues?

Answered: 6 Skipped: 0



ANSWER CHOICES	RESPONSES	
▼ 1- I never refer. I am able to provide gastrostomy tube related care in the clinic.	0.00%	0
▼ 2- Sometimes refer when necessary care cannot be provided in the clinic.	66.67%	4
▼ 3- I refer to prevent complications.	33.33%	2
▼ 4- Do not feel comfortable providing care for gastrostomy tube	0.00%	0
TOTAL		6

WOUND AND STOMA CARE EDUCATION

Appendix M

Pre and Post Survey Knowledge Evaluation Tool

Wound and Stoma Care Education for Patients with Gastrostomy Tubes Evaluation Survey

1. A 3 year-old female patient with history of feeding difficulties and poor weight gain, s/p g-tube placement 4 months ago c/o large amount of red friable tissue surrounding the g-tube site x5 days. Which of the following complications would she be susceptible to?

(select all that apply)

- ☐ Buried Bumper Syndrome
- ☐ Granulation Tissue
- ☐ Peristomal Leakage
- ☐ Tube blockage or migration
- ☐ Infection

2. Which of the following are the most common mechanical tube feeding complications?

- ☐ Tube dislodgement
- ☐ Tube clogging
- ☐ Skin irritation and infection
- ☐ Granulation tissue
- ☐ Tube dislodgement & Tube Clogging

3. What are ways to treat peristomal granulation tissue?

- ☐ Silver nitrate
- ☐ Triamcinolone cream
- ☐ Topical antibiotics
- ☐ Medicated honey
- ☐ Silver nitrate or triamcinolone cream

4. What methods can be done to unclog a gastrostomy tube?

- ☐ Flush with water with 30ml of water
- ☐ Hot water

WOUND AND STOMA CARE EDUCATION

- ☐ Clog zapper
- ☐ Flush with water or Clog-zapper

5. Which of the following is TRUE? select all that apply

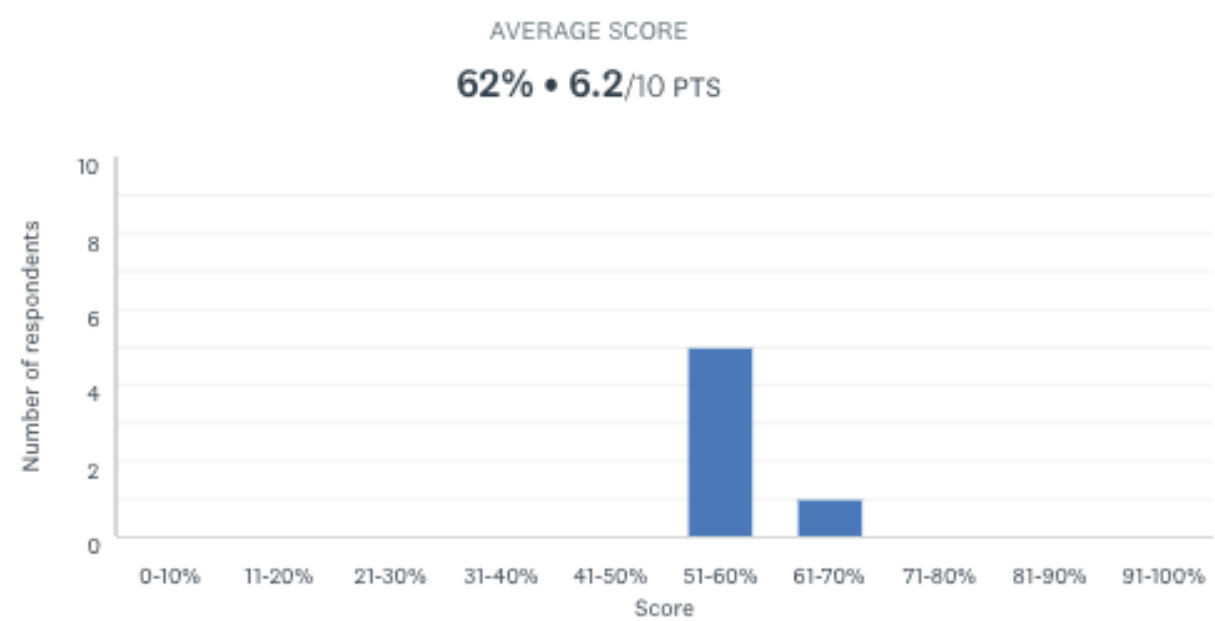
- ☐ Local infections should always be treated with systemic antibiotics to prevent complications.
- ☐ Local infections can be treated devoid of systemic antibiotics with use of an impregnated antiseptic dressing such as silver, honey, or iodine.
- ☐ When dislodged, a replacement g-tube must be reinserted within 8 hours to prevent tract from closing.
- ☐ Buried Bumper Syndrome is caused by excessive pulling g-tube caused by tight fit, weight loss, or weight gain.
- ☐ Irritant contact dermatitis and granulation tissue common in patients with g-tubes.

WOUND AND STOMA CARE EDUCATION

Appendix N

Pre-Education Workshop Evaluation Results

Quiz Summary



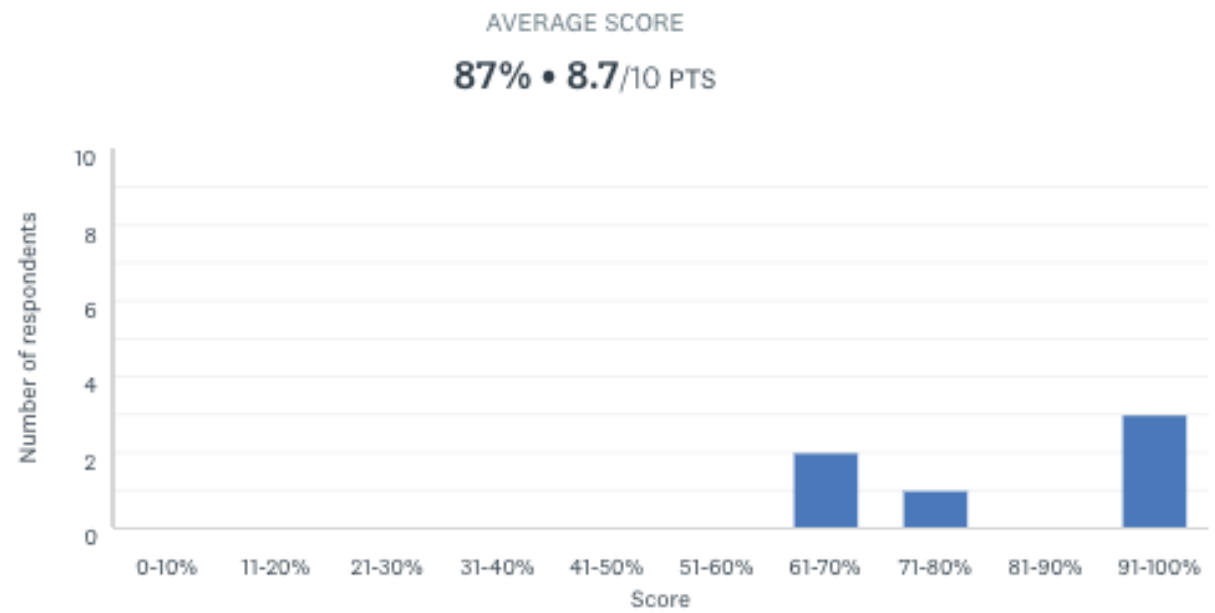
STATISTICS		
Lowest Score	Median	Highest Score
60%	60%	70%
Mean: 62%		
Standard Deviation: 4%		

WOUND AND STOMA CARE EDUCATION

Appendix O

Post- Education Workshop Evaluation Results

Quiz Summary



STATISTICS		
Lowest Score	Median	Highest Score
70%	90%	100%
Mean: 87%		
Standard Deviation: 15%		