



Surgery

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Perioperative Care of Patients with an Ostomy

A Clinical Practice Guideline developed by the
University of Toronto's Best Practice in Surgery

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Provincial ERAS Enterostomal Therapy Nurse Network

Release date: April 2016

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Acknowledgements

We would like to thank all members of the Provincial ERAS ETN Network who contributed to the development of these guideline recommendations:

Kathleen Callaghan – Health Sciences North Sudbury
Shelley Chisolm – Thunder Bay Regional Health Sciences Centre
Leslie Heath – St. Joseph’s Healthcare Centre
Jo Hoeflok – St. Michael’s Hospital
Lina Martins – London Health Sciences Centre
Joanne McKeown – Toronto East General Hospital
Vicki Meyouhas – The Ottawa Hospital
Debbie Olson –Thunder Bay Regional Health Sciences Centre
Nancy Parslow – University Health Network
Kina Pelletier-Carson – Kingston General Hospital
Anne Voll-Reitzel – Health Sciences North Sudbury
Sarah Suresh – Hamilton Health Sciences
Suzanne Sandhu – St. Joseph’s Hospital Hamilton
Julie Tjan Thomas – Mount Sinai Hospital
Linda Thomas – North York General Hospital
Cheryl Thompson – CCAC North Sudbury

Section 1. General information

Aim

The aim of this guideline is to make recommendations for the preoperative, postoperative and discharge care of patients with an ostomy following elective colorectal surgery receiving care within an Enhanced Recovery After Surgery (ERAS) program.

Outcomes of interest

Well-constructed stomas; prevention of stoma and peristomal skin complications; enhanced patient education, quality of life and participation in self-care; improved coordinated service delivery by all health care professionals involved in the care of people with an ostomy.

Target population

All adult patients undergoing elective colorectal surgery (including benign and malignant disease) who require an ostomy as a part of their surgical management.

Intended users

Enterostomal Therapy Nurses (ETNs), nurses, community nurses, general and colorectal surgeons and other health care professionals involved in the management and care of these patients.

Rationale

The *Implementation of an Enhanced Recovery After Surgery (iERAS)* program was initiated by the University of Toronto Best Practice in General Surgery in 2008. To date, the iERAS program has been successfully implemented in over 15 hospitals across Ontario. iERAS is a multimodal program which aims to improve patient recovery, decrease postoperative complications, and promotes early discharge in patients having elective colorectal surgery with or without an ostomy.

Within the iERAS program the targeted length of stay for patients having colon surgery is 3 days and 4 days for patients having rectal surgery. With the shortened hospital stay, ETNs identified a gap in care for patients requiring ostomy care and education. Furthermore, there was a lack of information specific to patients requiring a stoma who were managed within an ERAS program. Thus, a provincial ERAS ETN Network was formed to develop a patient centered guideline specifically for this cohort of patients.

Overview of process

A one-day provincial consensus meeting was held with ETNs from 15 hospitals who have implemented the iERAS program to discuss guideline recommendations for the preoperative, postoperative and post-discharge phases of care. Subsequently, three sub-groups led by experienced ETNs were formed to develop recommendations related to each phase of care.

Each subgroup conducted an independent literature search to develop recommendations for their respective phases of care. All searches were conducted using Medline and CINAHL. The key terms searched included: ileostomy, colostomy, ostomy, stoma, enhanced recovery after surgery, fecal diversions, preoperative ostomy education, stoma site marking and/or postoperative complications. In addition, each subgroup carried out more specific searches where necessary. The members of the

subgroups then reviewed and summarized the literature and created recommendations for their respective phase of care. These documents were then reviewed by the entire group and consensus on recommendations was reached. Where evidence was weak-to-moderate, expert opinion and current practice were used to create the guideline recommendations.

Section 2. Guideline recommendations

1. Preoperative care

- 1.1** Patients who may or will have an ostomy constructed during surgery and their families should be referred to an Enterostomal Therapy Nurse (ETN). (Level of Evidence: Low-Moderate). The ETN referral should include:
- 1.1.1 Stoma Site Marking**
Patients should have the stoma site(s) selected using established principles of stoma site marking. Marking should be performed by an ETN, surgeon or a health care professional who has received training in this procedure. (Level of Evidence: Moderate)
- 1.1.2 Preoperative Education**
Patients and their families should receive preoperative education either individually or in a group setting. Information should be provided in a variety of modalities including, but not limited to, verbal, written and digital formats. Multi-lingual educational resources should be available for non-English speaking patients and families. (Level of Evidence: Moderate-High). At a minimum the following should be included in the teaching:
- Basic anatomy and physiology of the GI/GU tract
 - The surgical procedure and type of stoma, location and anticipated functional expectations
 - Psychological preparation and lifestyle adjustment
 - Introduction to pouching system options
 - A demonstration on how to empty and change a pouching system. A return demonstration of pouch emptying should be done by the patient or family member. Patients should be encouraged to practice wearing and emptying their pouch and doing a pouch change at home prior to surgery.
 - Postoperative expectations related to self-management of the ostomy (See recommendation 2.3)
 - Possible complications related to dehydration, small bowel obstruction, stoma and peristomal skin health, development of parastomal hernia formation and pouching system wear times (See recommendation 3.4)
 - Offer to pair individuals with a person with an ostomy (“ostomy buddy”)
 - Information about industry sponsored programs

2. Postoperative Care

- 2.1** Supporting rods are usually unnecessary. If used, timing for removal of the supporting rod should be decided in collaboration with the surgeon. (Level of Evidence: Moderate)
- 2.2** Information provided to patients and their families in the preoperative phase should be reinforced postoperatively. (Level of Evidence: Low)
- 2.3** Patients should be taught a minimum skill set specific to their ostomy needs prior to discharge from hospital:
- Patients should be encouraged to look at their ostomy on post-op day (POD) 0. (Level of Evidence: Low)
 - Patients should be encouraged to participate in emptying their pouch on POD 1 and empty their pouch independently on POD 2. (Level of Evidence: Moderate)
 - Patients should be encouraged to participate in changing their pouching system on POD 2 and fully participate in changing their pouching system on POD 3 or 4. Patients should have a minimum of 2 pouching system changes by POD 3 or 4. (Level of Evidence: Low)
- 2.4** Families and caregivers should be encouraged to participate in the care and management of the patient’s ostomy. (Level of Evidence: Moderate)
- 2.5** After ostomy surgery, patients should be discharged with community care support, which includes referral to a community ETN. (Level of Evidence: Moderate)

3. Post-discharge care

- 3.1** Patients with an ostomy should have the recommended and required supplies and community care support. This includes follow-up care by an ETN in the acute care setting or in the community. (Level of Evidence: High)
- Minimum intervals of 2, 4, 6 weeks visits with an ETN
 - Minimum of 6 visits by the community nurse
 - Frequency of visits will be based on patient/family needs
- The patient should receive the following:
- Reinforcement of recommended ostomy care education and general support through their local community care team (e.g. CCAC) (Level of Evidence: High)
 - Regular evaluation of the patient's stoma and peristomal skin, the ability to achieve a predictable seal, and the ability to maintain peristomal skin health (Level of Evidence: Low-High)
 - Ongoing information and support to the patient about adaptation to an ostomy (Level of Evidence: Moderate-High)
 - Follow-up to ensure the patient (or primary care giver) is independent with pouch changes by postoperative week 2 (Level of Evidence: Low-Moderate)
- 3.2** Patients should be provided with information on support services to facilitate their adaptation to a new ostomy including how to access ostomy support groups/resources, and programs sponsored by industry (Level of Evidence: High)
- 3.3** Patients should receive a follow-up phone call from an ETN within 7-10 days after discharge from the hospital to assess their adaptation to a new ostomy. (Level of Evidence: Low)
- 3.4** Patients should be able to identify potential complications post-discharge related to dehydration, small bowel obstruction, stoma and peristomal skin health, development of parastomal hernia formation and pouching wear-times. Patients must be able to recognize potential complications and identify resources to contact for the following: (Hydration status through monitoring expected volume of ostomy effluent, oral fluid intake and urine volume for 2 weeks post-discharge (Level of Evidence: Moderate)
- Signs and symptoms of obstruction which include abdominal pain, cramping, distention, high velocity watery output or no output, and/or vomiting (Level of Evidence: High).
 - Normal and common abnormal peristomal skin conditions, such as Peristomal Moisture Associated Skin Damage (PMASD) (Level of Evidence: High)
 - Signs and symptoms of a parastomal hernia include bulging of the abdomen around the stoma, pain and discomfort (Level of Evidence: Low)
 - Wear-times for their pouching system are less than expected (Level of Evidence: Low)

* For a complete list of topics to be covered see the Patient Education Checklist (Appendix 1)

Section 3. Supporting evidence

1. Preoperative Care

1.1 Patients who may or will have an ostomy constructed during surgery and their families should be referred to an Enterostomal Therapy Nurse (ETN). (Level of Evidence: Low-Moderate)

Various studies and professional nursing organizations have shown that preoperative education for patients requiring an ostomy by a nurse with specialized training increases postoperative outcomes, allows for better skill acquisition and better prepares the patient and their family.¹⁻⁵ A systematic review by Colwell et al included 3 studies (one RCT, one cross sectional survey and one case control study) that assessed the effect of preoperative education by a nurse with specialized training. The review found that preoperative education facilitated by a Wound, Ostomy, Continence Nurse (WOCN) lead to improved postoperative outcomes (i.e. shorter postoperative hospital stays [median: 8 days vs. 10 days, $p=0.029$]), fewer unplanned visits for ostomy-related issues (median: 0.0 vs. 0.5, $p=0.0309$), enhanced skill acquisition, and better long-term adjustment to an ostomy.² The Canadian Association for Enterostomal Therapy (CAET), in their Position Statement for Enterostomal Therapy Nursing and the Wound, Ostomy, and Continence Nurses Society, advocate for the specialized role of ETNs and WOC nurses. In this role, a provision is made for the delivery of education across the continuum of care for patients and families living with ostomies, starting in the preoperative phase.^{6,7} Thus, it is recommended that patients are referred to an ETN for preoperative assessment and counselling prior to surgery.⁸

1.1.1 Stoma Site Marking: Patients should have stoma site(s) selected using established principles of stoma site marking. Marking should be done by an ETN, surgeon or a health care professional who has received training in this procedure. (Level of Evidence: Moderate)

There is moderate evidence to support having stoma site(s) selected and marked prior to surgery by an ETN or a healthcare professional who has received specialized training. Parmar et al conducted a prospective study of 192 patients which identified the frequency of early stoma or peristomal skin complications after colorectal cancer surgery, noting predisposing factors, the effect on hospital discharge and the need for community care. Overall, 27% of stomas were identified as being problematic with a lack of preoperative site marking identified as one of the most common factors. Patients who had a stoma created at the marked site were at a significantly lower risk of developing complications than those who were not marked or those who had a stoma fashioned at an alternative site (20%, 56%, and 42.9% respectively, $P > 0.001$). Delayed discharge, the need for extra home visits and the inability of patients to participate in the care of their stoma within the first three weeks were more likely to occur in patients with a complication.⁹ A prospective study by Millan et al included 247 patients from 12 colorectal surgery units in Spain over an 8 month period who were visited by their stoma therapist after colorectal cancer surgery and completed a questionnaire about their stoma care. Forty six percent ($n=114$) of patients were seen preoperatively by a stoma therapist for teaching and marking. Emergency and elective patients who were sited preoperatively had significantly less early skin irritation, dermatitis and lower rates of anxiety during the first 3 months postoperatively than non-sited patients ($p<0.001$).¹⁰ Similar findings were reported by Baykara et al who conducted a multicentre retrospective chart review on 748 patients to evaluate the effect of preoperative ostomy site marking on stomal and peristomal skin complications. Overall, 35% ($n=261$) of patients developed complications including peristomal skin problems, mucocutaneous separation and retraction. Complication rates in patients who did not have stoma sites marked preoperatively were 46% compared to 23% for those who were marked.¹¹

In a survey study conducted by Person et al, 105 patients were asked to evaluate the impact of preoperative site marking on their quality of life, independence and complication rates. Fifty percent of the participants were marked by an ETN and had significantly better quality of life in 18 out of 20 parameters using a structured, validated stoma quality of life (QOL) questionnaire (The Stoma QOL). Independence and confidence were significantly higher in the marked group. As well, the occurrence of complications were significantly less in those marked versus those not marked ($p < 0.05$).¹² A cross-sectional study conducted by Mahjoubi et al examined the quality of life of patients who had an appropriate stoma site versus those with an inappropriate stoma site using the European Organization for Research and Treatment of Cancer Quality of Life Questionnaire (EORTC QLQ)-C30 and EORTC QLQ-CR38 questionnaires. Sexual enjoyment, physical functioning and role functioning were noted to be significantly higher in patients with an appropriately positioned stoma site. The authors concluded that a well-placed stoma strongly correlates with good quality of life.¹³

Due to the known benefits of preoperative stoma site marking, the Registered Nurses Association of Ontario (RNAO) Clinical Best Practice Guidelines for Ostomy Care¹⁴, WOCN Society and the American Society of Colon and Rectal Surgeons (ASCRS) position statement¹⁵, World Council of Enterostomal Therapists (WCET) International Ostomy Guidelines¹⁶ and Clinical Practice Guidelines for Ostomy Surgery⁸ recommend that stoma marking should be done preoperatively by an experienced, educated and competent clinician (ETNs, colorectal surgeons or other health care professionals). They identified stoma site selection as a priority during the preoperative visit at which time proper and thorough assessments can be conducted following the principles of stoma site marking.¹⁷ Selecting a stoma site after the patient is anesthetized precludes the assessment of the abdomen in multiple positions, making it difficult to identify abdominal skin folds and their effect on ostomy product placement.¹⁸ Creating a stoma between creases compromises pouch and skin barrier adherence and may cause leakage, which negatively affects the complication rate and the patients overall quality of life.¹¹

1.1.2 Preoperative Education: Patients and families should receive preoperative education either individually or in a group setting. Information should be provided in a variety of modalities including but not limited to verbal, written and digital formats. Multi-lingual educational resources should be available for non-English speaking patients and families. (Level of Evidence: Moderate-High) At a minimum the following should be included in the teaching:

- Basic anatomy and physiology of the GI/GU tract
- The surgical procedure and type of stoma, location and anticipated functional expectations
- Psychological preparation and lifestyle adjustment
- Introduction to pouching system options
- A demonstration on how to empty and change a pouching system. A return demonstration of pouch emptying should be done by the patient or family member. Patients should be encouraged to practice wearing and emptying their pouch and doing a pouch change at home prior to surgery.
- Postoperative expectations related to self-management of the ostomy (See recommendation 2.3)
- Possible complications related to dehydration, small bowel obstruction, stoma and peristomal skin health, development of parastomal hernia formation and pouching system wear times (See recommendation 3.4)
- Offer to pair individuals with a person with an ostomy ("ostomy buddy")
- Information about industry sponsored programs

Preoperative education allows patients and their families to be empowered and assists in alleviating fears and anxiety about their surgery and having an ostomy.^{4,12,25} It may lead to fewer complications in the initial postoperative phase as well as clarify expectations of the patient and their family.⁴ As well, preoperative ostomy education has been shown to be effective in improving overall recovery including reduced length of stay, long-term psychological adjustment, skill set acquisition, prevention of complications and improving self-care post discharge.²⁻⁴ In order to provide appropriate preoperative education, the ETN needs to establish a therapeutic relationship with the patient and their families. Comprehensive assessment of the patient and their families should be performed and should include a preoperative history, physical/psychosocial assessment and exploration of cultural, spiritual and religious norms.^{14,19} The assessment should also include the availability of support networks (e.g. family, significant others and community resources) to facilitate the patient's psychosocial adaptation and to determine the impact of the illness/surgery on the patient and their family.^{19,20} Teaching should occur in a supportive environment free of distractions, where the patient and family are able to understand the details surrounding his/her surgery and are able to make an informed decision about his/her care.²¹

Erwin-Toth et al reported that the provision of comprehensive information leads to lower rates of anxiety regarding ostomies, and that patients are more likely to be an active participant in their care if they truly understand what is being asked of them.²² To date, the literature suggests that patients need to recognize the effects of dietary and fluid intake on the effluent as well as the ways to manage potential complications such as constipation, dehydration and fluid and electrolyte imbalances.²² Patients may also benefit from information regarding activities of daily living.^{23,24} Common stomal and peristomal skin complications can be introduced in this phase to make the patient more aware of the possible complications and to recognize the appropriate response required for these changes.

While there is some evidence identifying what should be covered during the preoperative phase, best practice guidelines from the RNAO and the WOCN Society have also identified topics that should be considered during preoperative teaching sessions which are based on consensus of ETN expert opinion.^{7,14} There is recognition that some patients/families will require modification of the volume of information provided preoperatively, thus critical topics have been identified below and are based on consensus of the Provincial ERAS ETN Network. The minimum amount of information to be covered is listed below, and a complete list of all relevant topics can be found in Appendix 1.

- Basic anatomy and physiology of the GI/GU tract
- The surgical procedure and type of stoma, location, and anticipated functional expectations
- Psychological preparation and lifestyle adjustment
- Introduction to pouching system options
- A demonstration on how to empty and change a pouching system. A return demonstration of pouch emptying should be done by the patient or family member. Patients should be encouraged to practice wearing and emptying their pouch and doing a pouch change at home prior to surgery
- Postoperative expectations related to self-management of the ostomy (See recommendation 2.3)
- Possible complications related to dehydration, small bowel obstruction, stoma and peristomal skin health, development of parastomal hernia and pouching system wear times (See recommendation 3.4)
- Offer to pair individuals with a person who has an ostomy ("ostomy buddy")
- Information about industry sponsored programs

In addition to discussing the RNAO and WOCN Society recommendations, experiential learning, described as learning by "trying it out" and "experiencing it" is important to this patient population. People who have learned experientially will have significantly greater recall of the information or task over a specified time period.²⁵ Patients undergoing ostomy surgery must learn a new skill set related to the management of an ostomy including pouch emptying and pouching system application. Colwell et al identified pouch emptying, a return demonstration, and an introduction to pouch changing as a minimum skill set for the

new ostomy patient.² Pouch and stoma education not only prepares the patient for surgery but also can clarify the expectations in the postoperative phase.

There is limited evidence on the preferred type of materials that should be used to educate patients. The use of audio-visual materials that demonstrate the care of the pouching system and the emptying of a pouch has been shown to decrease hospital length of stay by increasing proficiency.²⁶ The use of this educational aid is in keeping with important principles of adult education, such as learning by doing, and learning what is needed to be known. Industry sponsored educational materials are available including practice kits, a wide variety of written and audio-visual information, and ostomy products for hands on practice. A Cochrane review discussed the effectiveness of providing written and verbal health information to verbal information alone to patients being discharged home from acute hospital settings.²⁷ Providing both written and verbal information was found to be more effective in improving knowledge and satisfaction among hospitalized patients than providing verbal information alone. Information that meets the needs of patient and families with limited English proficiency is important. If not available, it may result in longer hospital stays, increased postoperative complications and a greater chance of readmission.²⁸

2. Postoperative Care

2.1 Supporting rods are usually unnecessary. If used, timing for removal of the supporting rod should be decided in collaboration with the surgeon. (Level of Evidence: Moderate)

Overall, the literature suggests that there are minimal benefits to the routine use of a supporting rod. Using a supporting rod increases the likelihood of stoma and peristomal skin complications and decreases the patients' ability to care for the stoma. There is no conclusive evidence about the timing of rod removal as the reported time varies from three to 31 days.²⁹⁻³⁴ The decision of when to safely remove the supporting rod should be made in collaboration with the surgeon after careful consideration of tension on the supporting rod.

2.2 Information provided to patients and their families in the preoperative phase should be reinforced postoperatively prior to discharge from hospital. (Level of Evidence: Low).

In addition to preoperative teaching, patients and their families should continue to receive education in the postoperative period. The education provided in the immediate postoperative period focuses on teaching the skills required to achieve independence in ostomy care. A systematic review by Recalla et al identified 2 studies that discussed the importance of self-efficacy and the patient's ability to master daily care as a key role in optimal ostomy adjustment.³⁵ Successful transition to self-care management is likely to occur with instruction in self-care and psychological support. This was also supported by Wu et al who found that subjects with a higher self-efficacy in ostomy care had higher health related quality of life scores.³⁶ The importance of persons with a new ostomy acquiring a skill set that includes pouching system change and pouch emptying was reinforced by a cross-sectional study by Werth, who found that 90% of respondents ranked education in ostomy self-care as the most useful information.³⁷

When incorporating ERAS principles in teaching individuals with an ostomy it is essential to focus on independence and the promotion of self-care starting on the first day after surgery. This can be achieved if preoperative preparation is implemented alongside intensive postoperative ostomy care teaching and reinforcement.³⁸ Delaney et al and Hignett et al argue that the length of hospital stay need not be prolonged among patients with an ostomy if adequate patient information is provided.^{39,40} Furthermore, Younis et al suggest that the number of patients experiencing a delay in discharge due to ostomy self-care can be significantly reduced following the introduction of intensive preoperative stoma education as part of an enhanced recovery program.²⁶

2.3 Patients should be taught a minimum skill set specific to their ostomy needs prior to discharge from hospital.

- **Patients should be encouraged to look at their stoma on post-op day (POD) 0. (Level of Evidence: Low)**
- **Patients should be encouraged to participate in emptying their pouch on POD 1 and empty their pouch independently on POD 2. (Level of Evidence: Moderate)**
- **Patients should be encouraged to participate in changing their pouching system on POD 2 and fully participate in changing their pouching system on POD 3 or 4. Patients should have a minimum of 2 pouching system changes by POD 3 or 4. (Level of Evidence: Low)**

A RNAO expert consensus panel recommends that a minimum skill set including the ability to manipulate the closure mechanism, independence with pouch emptying and observation of at least one complete pouching system change must be accomplished prior to discharge from hospital.¹⁴ Patients should be taught different skills on each postoperative day to assist with the transition to having an ostomy.⁴¹ Teaching skills of pouch change and emptying in the postoperative phase were identified as having an important influence on the adaptation process which begins when the patient starts to master the basic skill set of ostomy care.⁴² Breaking down tasks into smaller segments has been shown to increase motivation and self-confidence resulting in more positive outcomes.⁴¹ This was supported by a retrospective study conducted by Bryan et al that found that patients become partners in their care when the expectations are laid out clearly and are achievable.⁴³ Ensuring that expectations are realistic, tailored to each patient's ability, and follow a simple, task-oriented approach to care was described as being important.³⁸ A retrospective audit of 2 cohorts of 20 patients before and after implementation of ERAS demonstrated a reduction in the mean length of stay from 20 to 7 days, with 60% of patients being discharged at 5 days or less.⁴³

It is recommended that patients be taught the following skills on the following postoperative days. On POD 0, patients should look at their stoma.³⁸ On POD 1 patients should participate in emptying their pouch and empty their pouch independently on POD 2. Walker et al suggest the only achievable skill that patients may learn during shortened hospital stays is successful pouch emptying.⁴⁴ Williams et al recommend that daily or twice daily educational sessions are required beginning the day of surgery for the patient to achieve independence and be prepared for discharge after 3-5 training sessions.⁴¹ Patients should also participate in their pouching system change on POD 2 and fully participate by POD 3 or 4. Although there is limited evidence specific to the frequency of patient participation in the pouching system change prior to discharge, it is suggested that these timelines are feasible for patients and caregivers.^{35,45} The ERAS protocols also focus on the early introduction of fluids, diet and mobilization, which result in early fecal output. This enables patients to practice the skills of emptying and changing the pouch and allowing for repetition of acquired skills that will influence their ability to cope on discharge.⁴⁶

2.4 Families and caregivers should be encouraged to participate in the care and management of the patient's ostomy. (Level of Evidence: Moderate)

Shorter hospital stays have increased the need for detailed information to be given to patients and their families to support effective management of the ostomy at home. During the period of adaptation, patients with an ostomy are faced with various physical, psychological and emotional challenges. The literature suggests that family and significant others can be an important source of support for patients learning to accept and adjust to life with an ostomy.⁴⁷⁻⁴⁹ Family members can assist the patient with building confidence when performing self-care and provide support for physical, psychological, and emotional concerns.^{49,50} Emotional support and encouragement from families assist the patient to recover a partial sense of autonomy⁵¹, strengthen the patient's self-esteem and self-image⁴⁹, and promote

independence by encouraging the patient to achieve self-care.^{52,53} Berwick described “patient and family centered care” and the importance of including family and caregivers in all aspects of care to improve patient experiences within the health care system.⁵⁴ A cross-sectional study by Persson et al emphasizes the need to provide both the patient and their relatives with information and an opportunity to participate in the care of the new ostomy.⁵⁵

2.5 After ostomy surgery patients should be discharged with community care support, which includes referral to a community ETN. (Level of Evidence: Moderate)

On average, patients with an ostomy within an ERAS program leave hospital four to five days after surgery.⁵⁶ Shorter hospital stays challenge a nurse’s ability to assess, educate, evaluate, and reinforce patients’ knowledge and skills about ostomy pouching system management while in hospital. Because there is less time to gain the knowledge and to learn the practical skills necessary to care for their stoma in the inpatient setting, patients with a new ostomy often require additional education after discharge from hospital.⁵⁷⁻⁵⁹ Consequently, a safe and effective discharge process for patients following ostomy surgery should include access to community nursing services.⁴⁴

Community nurses should be able to provide skilled ostomy care to the patient that includes pouching system change, peristomal skin management, and product selection until self-management is attained.⁶⁰ Support and education provided by community nurses enable patients with an ostomy to become independent sooner, reduce unnecessary costs, and increase overall patient satisfaction.^{60,61} Follow-up from community nurses in the first six weeks after discharge have been shown to improve ostomy self-care and increased quality of life.⁶² Moreover, community nurses play a key role in the early identification of ostomy-related problems, which may prevent complications or hospital readmissions.⁵⁸

The RAO Clinical Best Practice Guidelines for Ostomy Care and Management recommends discharging patients with a new ostomy with community support.¹⁴ The recommendation is based on a single randomized controlled trial (RCT) of 50 patients with newly created colostomies or ileostomies. The study demonstrated that visits from community nurses improve both ability for self-care and quality of life for patients living with an ostomy.⁶² Walker et al used a case study approach to identify gaps in ostomy care from the preoperative period until discharge.⁴⁴ The study suggests that a fragmented discharge process can result in failure to provide competent and safe care during the transition from hospital to home.

A descriptive study by Jones and colleagues suggests that education and support provided by community nurses play a critical role in promoting ostomy patients’ self-care skills and facilitating long-term adjustment.⁶⁰ Furthermore, Pringle et al conducted a descriptive multicentre study that highlighted the value of home visits by community nurses following discharge from hospital.⁵⁹ The authors suggest that patients should be seen by a nurse with specialized training within seven days of being discharged and again at six months and one year following surgery so that any issues can be identified and addressed.⁵⁹ Burch also found that community nurses may have an important role in the identification of ostomy-related concerns, problem solving, and providing a referral to a clinician specialized in ostomy care if required, resulting in fewer complications and readmission to hospital.⁵⁷ This was supported by a descriptive study, which indicated that the community nurse plays a major role in supporting the patients with an ostomy after discharge from hospital.⁶³

While community care support is recommended, it is acknowledged that many community nurses have minimal stoma care knowledge and do not feel confident to teach stoma management skills and/or provide psychological support and counselling to newly discharged ostomy patients.⁶⁴⁻⁶⁶ Community care agencies should utilize the expertise of an ETN when educating community nurses.

3. Post-Discharge Care

3.1 Patients with an ostomy should have recommended and required supplies and community care support. This includes follow-up care by an ETN in the acute care setting or in the community. (Level of Evidence: High)

- **Minimum intervals of 2, 4, 6 weeks visits with an ETN**
- **Minimum of 6 visits by the community nurse**
- **Frequency of visits will be based on patient/family needs**

The patient should receive the following:

- **Reinforcement of recommended ostomy care education and general support through their local community care team (e.g. CCAC) (Level of Evidence: High)**
- **Regular evaluation of the patient's stoma and peristomal skin, the ability to achieve a predictable seal and the ability to maintain peristomal skin health (Level of Evidence: Low-High)**
- **Ongoing information and support to the patient about adaptation to an ostomy (Level of Evidence: Moderate-High)**
- **Follow-up to ensure that the patient (or primary care giver) is independent with pouch changes by postoperative week 2 (Level of Evidence: Low-Moderate)**

Ongoing ETN support, counseling and education are required to assist patients with return to usual lifestyle and activities. The literature is replete with reports of patient issues and needs related to adaptation to a new stoma. Burch reported that the ability of patients with a new stoma to focus on learning tasks beyond emptying and changing the pouching system is not likely realistic prior to discharge home.⁶⁷ Education about usual activities and ongoing self-care needs to be reinforced and addressed in the patients home.⁶⁷ The Montreux Study measured quality of life using the Stoma Quality of Life Index [SQLI] for over 4,700 patients with an ostomy across Europe immediately after surgery, and every 3-months for up to one year.⁶⁸ The authors noted that the initial weeks after discharge were the most critical for improvement in the patients' overall quality of life, observing that the most significant improvement occurred within the first 3 months after discharge. More significantly, quality of life scores were higher for patients who received and were satisfied with the care of a stoma care nurse. Patients who reported confidence with changing their pouching system, and who stated having a good relationship with their ETN had better SQLI scores than those who reported a lack of confidence and had poor relationships.⁶⁹ This notion of self-sufficiency in care resulting in improved adaptation to the stoma was reinforced in a study by Simmons et al.⁶⁹ Positive adjustment to the stoma was strongly correlated with acceptance of the stoma overall, as well as self-care ability and improved personal relationships.

Given the significant changes to body function and to usual activities that a patient with a new ostomy endures, and the literature supporting the challenges that this population faces, regular follow-up and education are required to assist the patient with adaptation. The RNAO Clinical Best Practice Guidelines for ostomy care and management recommends the use of homecare nursing visits to help support new patients with a stoma and their caregivers.¹⁴ Addis et al report the results of a randomized controlled trial in which 50 patients with new ostomies were randomized to receive two homecare visits, one at twelve weeks and another at six months after discharge from hospital or 6 homecare visits. Patients in the intense follow-up group had significantly higher quality of life scores at three months compared to the control group. In addition, patients in the intense follow-up group experienced significantly greater independence with self-care of their ostomies at six months.⁶²

Due to the reduced length of hospital stay for ERAS patients there is limited time for hospital based ETNs to teach patients all they need to know to manage self-care of their ostomies.⁶³ On discharge home, new patients with an ostomy rely heavily on the ongoing teaching and support provided by homecare nurses and community based ETN's.^{42,62,70} Piwonka et al found that the most important variable in adjustment to a new ostomy is independence with self-care.⁵⁰ The authors contend that patient participation in self-care, include looking at the stoma, talking about the stoma, and letting significant others view the stoma and pouch indicate greater self-acceptance. Significant others should also be involved in the education

as their support and empathy also aids in self-acceptance. Providing nursing and ETN support to encourage independence within 2 weeks of discharge from hospital could help promote self-acceptance. Additionally, Werth and colleagues examined the content of ostomy education after discharge; asking patients to rank the usefulness of information that was shared with them.²⁴ Ninety percent of patients identified self-care of the pouching system as the most useful, while 55% felt that information on resumption of usual activities as being the most helpful.

Protecting peristomal skin and ensuring regular, predictable seals of the pouching system are fundamental to ostomy care. Expected changes to the stoma in the early postoperative weeks require regular reassessment and resizing of the pouching system to maintain these principles. Newly constructed stomas are expected to be edematous postoperatively.⁷¹⁻⁷³ Swelling of the stoma can be evident within 4-6 hours after surgery, can continue to increase for 48 hours after surgery and will settle by 5 days postoperatively.⁷¹ Subsequent to the initial enlargement the stoma will gradually subside in size 6-8 weeks after surgery.⁷¹ In a study by Salvadalena, changes to the stoma size and height were tracked during the first three months after surgery, and found that the most significant change occurred between the initial postoperative assessments (0-20 days) and the final assessment (41-60 days) of the study.⁷³ The mean size for the initial assessment was noted to be 1.22 inches, while the width at 41-60 days was 1.07 inches.⁷³

Correct sizing of the aperture (barrier opening) of the ostomy barrier is critical to protect the peristomal skin. As the stoma size changes, the aperture will require regular reassessment to ensure appropriate peristomal skin protection and to prevent trauma to the stoma itself.⁷⁴ Determination of the correct barrier aperture is dependent on the characteristics of the barrier and the size and shape of the stoma. Product information guides should be consulted to ensure appropriate sizing. The traditional cut-to-fit ostomy barrier should be cut with an opening sized to fit the skin-stoma junction, thereby protecting the skin from stoma effluent.⁷⁵ Comparatively, conformable barriers are not required to be larger than the base of the stoma, as the barrier properties allow for customized openings.⁷⁴

3.2 Patients should be provided with information on support services to facilitate their adaptation to a new ostomy including how to access ostomy support groups/resources, and programs sponsored by industry (Level of Evidence: High)

To improve patients' quality of life, long term ETN follow-up care, counselling and support should be offered.^{76,77} Juul et al contend that an ETN must be proficient in recognizing signs of depression and provide patient education on how to recognize depression and instructions on how to seek help. Patients with an ostomy desire assistance with these problems and benefit from long-term follow-up by an ETN to optimize their functional recovery.⁷⁶ Alternative methods of providing ongoing support may be necessary to meet the needs of the ERAS ostomy population.²² Ang et al advocate that health care professionals should assist patients and families to build social networks.⁷⁷ Such social platforms may include: regular appointments with ETNs, a 24 hour helpline, home visitation programs, organized outings to build social systems among patients with an ostomy and ostomy support groups.

To address the social adjustments necessary for patients with an ostomy, various studies have documented the benefits of group interaction and the important role played by ETNs. As a component of ETN post discharge practice, the results of a recent study by Karabulut et al showed planned group interaction guided by an ETN facilitated the social adjustment of patients living with intestinal stomas.⁷⁸ Group learning was further supported by Danielsen et al who found the timing of the teaching as well as the individual's ability to receive the information as being important for successful self-management. They identified the involvement of a "lay" leader as valuable educators.⁷⁹ To meet the need for sufficient information, Tao et al suggested that the patient's resource team should include health care professionals, family members and stoma support group members, all who could provide education and emotional support.⁸⁰

Telehealth is another support option which has shown improved patient outcomes. However, to utilize this technology additional training, funding, and education must be available to the nurse providers.⁸¹ Bohnenkamp et al utilized telehealth in their study of 28 cancer patients with an ostomy. The participants were divided into two non-randomized groups.⁸² One group received homecare-nursing visits and the second group received home care nursing visits and telemedicine interactions with an ostomy nurse. The study monitored the number of home care and telemedicine services that were required, amount of supplies utilized, the date when the patients care needs were met, as well as distance travelled. The authors found that patients receiving telemedicine services had their care needs met with one fewer visit, experienced higher satisfaction with the care they received, reported higher QOL scores, provided more accessible ostomy support, and used less ostomy pouches.⁸² The authors concluded that the use of both traditional homecare visits and telemedicine would improve transition of patients from hospital to home, improve patient outcomes, and provide support for homecare nurses.⁸² For ostomy patients living in rural areas, telemedicine provides quick quality care without the patient needing to come to see their ETN in person. Hoeflok asserts that telemedicine has solved the problem of access to specialized information and has raised the standard of care in the field of Enterostomal Therapy.⁸³ In addition telemedicine has increased continuing education opportunities and reduced expenses and travel time to Toronto for patients and healthcare professionals. Ideally telemedicine ostomy services could be provided by all acute care hospitals thus providing support to community nurses, but more importantly to new and old ostomy patients both in urban and rural settings.⁸³

3.3 Patients should receive a follow-up phone call from an ETN within 7-10 days after discharge from the hospital to assess their adaptation to a new ostomy. (Level of Evidence: Low)

Beaver and colleagues exploratory qualitative study on 27 patients treated for colorectal cancer revealed the importance of ongoing follow up for the new patients with an ostomy. In depth interviews of the study group elicited the view that traditional hospital physician led follow-up did not necessarily meet the information, clinical, and psychosocial needs in this population. Telephone follow-up by ETN or nurse led clinics were favored in providing patient specific plans of care and addressing urgent patient concerns.⁸⁴ A study conducted by Zhang et al further supports the benefit of telephone follow up with an ETN for new colostomy patients. The 25 telephone conversations were subject to qualitative content analysis and five themes emerged; 1) access to stoma care, 2) resumption of normal living, 3) stoma self-care, 4) need for education for stoma care and 5) general postoperative problems. The authors concluded that telephone follow-up by an ETN effectively met the patient's needs for information and aided in their adjustment to a permanent stoma.⁸⁵ Similarly, the results of a small qualitative study by Zheng et al, demonstrated the valuable psychological support (as well as stoma care) gained by patients when they received up to three follow-up phone calls within one month after hospital discharge.⁸⁶

More specifically, the timing of the ETN follow-up call should occur within seven to ten days post discharge to answer patient questions, identify early social difficulties or health related concerns, to prevent possible readmissions and promote psychological well-being and adaptation.^{42,87,88}

3.4 Patients should be able to identify potential complications post-discharge related to dehydration, small bowel obstruction, stoma and peristomal skin health, development of parastomal hernia formation and pouching wear-times. Patients must be able to recognize potential complications and identify resources to contact for the following: Hydration status through monitoring expected volume of ostomy effluent, oral fluid intake and urine volume for 2 weeks post-discharge (Level of Evidence: Moderate)

- **Signs and symptoms of obstruction which include abdominal pain, cramping, distention, high velocity watery output or no output, and/or vomiting (Level of Evidence: High)**
- **Normal and common abnormal peristomal skin conditions, such as Peristomal Moisture Associated Skin Damage (PMASD) (Level of Evidence: High)**

- **Signs and symptoms of a parastomal hernia include bulging of the abdomen around the stoma, pain and discomfort (Level of Evidence: Low)**
- **Wear-times for their pouching system are less than expected (Level of Evidence: Low)**

The creation of an ostomy, whether temporary or permanent, creates both a physical and psychological need for adaptation. These needs may extend and/or cause repeat hospitalizations if the new patient with an ostomy or their caregiver does not feel comfortable and confident with ostomy management.⁸⁹ Patient and family education regarding the physical care of the stoma and any specific dietary modifications is continued in the post discharge phase to facilitate transition and adaptation. Patients may benefit from additional counselling from a Registered Dietician.⁷⁵

A frequently seen complication following ileostomy creation is dehydration due to more liquid output at higher volumes (defined as a range of 1200-2000L/day).^{90,91} In a retrospective study conducted by Paquette et al, readmission rates of 17% were reported within 30 days postoperatively for dehydration or renal failure, with the average day of readmission being POD 13.⁹² The study found that routine counseling on ostomy monitoring, frequent postoperative visits and a daily output diary would trigger warnings to both the patient and their caregivers of the risk of developing dehydration.⁹²

Nagle et al implemented an "Ileostomy Pathway" to address readmissions due to dehydration. Through the creation of a perioperative management pathway for patients with new ileostomies patients were expected to perform ostomy care and to learn how to record their own intake and output records while in hospital and at home. In addition, increased education on diet and foods that will thicken ostomy output, as well as understanding of normal volume status (output target being 1200ml/day) were taught via an educational checklist. The authors found that pre-pathway, patients overall 30 day post discharge readmission rates were 35.4%, whereas post implementation, readmission for dehydration alone decreased to 0%. This was felt to be attributed to the patient's pre-emptive self-management of potential dehydration.⁸⁹ The most common intake recommendation is 2-3L/day for persons with an ileostomy.⁹³⁻⁹⁵ Water should be the primary source of intake, and caffeine intake should be limited.⁹⁶ ETNs and caregivers should encourage patients with ileostomies to monitor their fluid intake and losses on a daily basis.

Small bowel obstruction (SBO) is another common cause of readmission to hospital following abdominal surgery.⁹⁷⁻⁹⁹ Patient education to help identify awareness of symptoms and how to avoid occurrence, may help prevent emergency room visits and potential admissions. Patients also need to be taught when to seek medical attention and by whom. Education of early warning signs of small bowel obstruction such as abdominal pain, cramping, distension, high velocity watery output or no output, and/or vomiting is an important part of every patient's education plan both in hospital and upon discharge. Teaching patients how to identify these symptoms and when to go to their hospitals emergency department and to contact their surgeon can possibly prevent admissions. It is also important to review with patients what might have caused this obstruction and if it is a preventable occurrence in the future or needs possible surgical intervention.⁹⁷⁻⁹⁹

Peristomal skin problems secondary to leakage are the most commonly reported complication in the literature. They affect barrier wear time and ultimately the patient's quality of life. The higher cost in the number and the variety of supplies is often overlooked but can have a devastating impact on the patient.¹⁰⁰ Overall, skin complications occur in about 6-80% of patients.¹⁰¹ Many studies have shown that patients often do not realize they are living with a peristomal skin condition and often think abnormal skin is normal.^{73,93} Herlufsen and colleagues similarly found that of 202 people assessed, 45% were found to have peristomal skin damage but 62% described themselves as not having any problems.¹⁰² It is important to educate patients about self-assessment and the different types of skin issues whether dermatitis or ulceration, or allergy and the need to contact the ETN for professional assistance.¹⁰² Early

identification and fewer peristomal skin problems ultimately help to create a better skin surface which in turn will allow barrier adhesion and prevention of leakage.

Parastomal hernia formation is a frequent, and potentially serious complication which affects approximately 20-50% of patients undergoing an ostomy forming surgery.¹⁰³ Limited studies have shown the incidence of parastomal hernias may be higher than reported due to inconsistencies in follow-up and timing of the parastomal hernia development. Factors contributing to the development of parastomal herniation include obesity, gender, age, siting of stoma, abdominal distention and chronic cough. Surgical repair results in a high recurrence rate, and is therefore avoided unless an emergent situation arises.¹⁰⁴ Thompson reported on the effectiveness of a parastomal hernia prevention programme which recommended three key prevention strategies: 1) early patient education regarding an awareness of the potential for parastomal hernia development; 2) abdominal exercises (on the advice of ETN) to strengthen the abdominal muscles; and 3) the use of abdominal support belts while undertaking heavy lifting and heavy work for 1 year postoperatively.¹⁰³

Pouching wear times vary significantly amongst patients with an ostomy. Multiple factors can influence wear-times, including patient location (local community), product awareness and availability, finances, personal expectations of wear time, the type of ostomy and associated effluent.^{42,105} Individual manufacturers provide recommendations for wear time depending on the type of ostomy the consistency of effluent, and the barrier formulation being selected. These recommendations can be used as a guide for both patient and clinicians when determining individualized product and accessory needs and usage. Product selection must also be merged with numerous patient factors to determine individualized wear-times. These factors include: socioeconomics; body contours; stomal protrusion; product preference; skin condition; access and availability to supplies; activity level; amount and consistency of effluent; and access to ETN and other patients with an ostomy. Health care providers need to provide educational material regarding the range of ostomy products available to inform and guide appropriate ostomy product selection.

Section 4. External Review Process

Reviewer Comment: In recommendation 1.1.2 it was suggested that this is about education, do not need to repeat in the sub header.

Author's Response: Agreed and appropriate changes made

Reviewers Comments: In recommendation 1.1.2 it was suggested that the wording "anticipated functional expectations" and "surgical procedure, type of stoma and location" be added to statement about ostomy procedure

Author's Response: Agreed and wording included

Reviewer Comment: In recommendation 1.1.2 it was suggested that ostomy buddy be replaced with ostomate

Author's Response: Declined, ostomy buddy will remain as this is an acceptable term

Reviewer Comment: In the summary of evidence for recommendation 1.1, it was asked did the explanation of the 3 studies need to be included.

Author's Response: Yes, as the studies were not all randomized controlled trials

Reviewer Comment: In the summary of evidence for recommendation 1.1, a sentence made no sense....was this a joint position statement? If it is, then say joint and remove the beginning of the sentence

Author's Response: Revised to reflect the statements by 2 different societies

Reviewer Comment: In the summary of evidence for recommendation 1.1, it was suggested that the position statement for Enterstomal Therapy Nursing is included in the recommendation

Author's Response: Agreed and wording included

Reviewer Comment: In the summary of the evidence for recommendation 1.1.1, suggested that there was too much information related to a specific study and it should be removed

Author's Comment: Agreed and information was removed

Reviewers Comments: In the summary of evidence for recommendation 1.1.1, it was suggested that wording be changed

Author's Comment: Agreed and wording changed

Reviewer Comment: In the summary of evidence for recommendation 1.1.1, it was suggested that an included study did not add anything to the evidence

Author's Comment: Agreed and deleted the information

Reviewers Comments: In summary of evidence for recommendation 1.1.2, references to be added

Author's Comment: Agreed and references added

Reviewers Comments: In the summary of evidence for recommendation 1.1.2, wording change to include possible complications

Author's Comment: Agreed and wording changes made

Reviewer Comment: In recommendation 3.1, it was asked "isn't this recommendation the same as 2.5 and should these recommendations be combined. Perhaps recommendation 3 should be about follow-up by an ETN

Author's Comment: Should keep it separate. 2.5 is specifically addressing the need for education and knowledge. CCAC support in the community who are competent with ostomy care and teaching; whereas

3.1 is addressing what the post-discharge care should be consisting of...RN and ETN visit allocation and specific patient education and assessment needed

Reviewer Comment: In the summary of evidence for recommendation 3.1 it was suggested that a more current reference be included in the summary

Author's Comment: Agreed and the most recent reference added

Reviewer Comment: In recommendation 3.2 it was suggested that "programs sponsored by industry" be added to the recommendation

Author's Comment: Agreed and wording included in recommendation

Reviewer Comment: In the summary of evidence for recommendation 3.2, it was requested that references be included

Author's Comment: Agreed and references were added

Reviewer Comment: In the summary of evidence for recommendation 3.4, it was asked about the lack of discussion about diet and counseling with a dietician

Author's Response: Agreed and included in the summary of evidence for recommendation 3.4

Reviewer Comment: In the summary of evidence for recommendation 3.4, it was requested that reference be included

Author's Response: Agreed and reference included

Appendix 1 - Preoperative Education

Preoperative information provided will vary from person to person based on their individualized needs and preferences (Level of Evidence: Low). Teaching may include:

- Basic anatomy and physiology of the GI/GU tract
- The surgical procedure and type of stoma including stomal characteristics (location, construction, colour size, protrusion, output/consistency, gas/flatus and odour, temporary vs. permanent)
- Pouching system options and other possible accessories
- A demonstration on how to empty and change a pouching system. A return demonstration of pouch emptying should be done by the patient or family member. Patients should be encouraged to practice wearing and emptying their pouch and doing a pouch change at home prior to surgery
- Post-operative course and goals of care, including the need for active involvement in ostomy care
- Vendor information
- Available funding sources (government and supplemental health coverage).
- Industry sponsored programs
- Home care support on initial discharge
- Transition programs
- Role of the ETN and other members of the health care team in post-operative teaching
- Temporary physical restrictions imposed on the patient to prevent incisional complications
- Dietary modifications when indicated
- Bathing and showering
- Intimacy and sexuality
- Offer to pair individuals a person with an ostomy ("ostomy buddy") and to enroll in industry sponsored programs (Ostomy Association, CCS)
- Lifestyle adjustment
- Psychological preparation
- Possible complications related to dehydration, small bowel obstruction, stoma and peristomal skin health, development of parastomal hernia formation and pouching wear-times
- Other topics as guided by patients/family questions/concerns arising during the teaching session

At a minimum the following should be included in the teaching: (Level of Evidence: Low)

- Basic anatomy and physiology of the GI/GU tract
- The surgical procedure and type of stoma, location and anticipated functional expectations
- Psychological preparation and lifestyle adjustment
- Introduction to pouching system options
- A demonstration on how to empty and change a pouching system. A return demonstration of pouch emptying should be done by the patient or family member. Patients should be encouraged to practice wearing and emptying their pouch and doing a pouch change at home prior to surgery
- Postoperative expectations related to self-management of the ostomy (See recommendation 2.3)
- Possible complications related to dehydration, bowel obstruction, stoma and peristomal skin health, development of parastomal hernia formation and pouching system wear times (See recommendation 3.4)
- Offer to pair individuals a person with an ostomy ("ostomy buddy") and information about industry sponsored programs
- Other topics as guided by the patient's/family's questions/concerns arising during the teaching session

References:

1. Pittman J, Rawl SM, Schmidt CM, et al. Demographic and clinical factors related to ostomy complications and quality of life in veterans with an ostomy. *J Wound Ostomy Continence Nurs.* 2008;35(5):493-503.
2. Colwell JC, Gray M. Does preoperative teaching and stoma site marking affect surgical outcomes in patients undergoing surgery? *J Wound Ostomy Continence Nurs.* 2007;34(5):492-496.
3. Haugen V, Bliss DZ, Savik K. Perioperative factors that affect long-term adjustment to an ostomy. *J Wound Ostomy Continence Nurs.* 2006;33(5):525-535.
4. Chaudhri S, Brown L, Hassan I, et al. Preoperative intensive, community-based vs traditional stoma education: a randomized, controlled trial. *Dis Colon Rectum* 2005;48(3):504-509.
5. Bekkers MJ, Van Knippenberg FC, Van Den Borne HW, et al. Prospective evaluation of psychosocial adaptation to stoma surgery: the role of self-efficacy. *Psychosom Med* 1996;58:183-191.
6. Canadian Association for Enterostomal Therapy. CAET Enterostomal Therapy Nursing Position Statement. *CAET* 2008; Retrieved from <http://www.caet.ca/caet-english/documents/caet-position-statement.pdf>.
7. Wound Ostomy and Continence Nurses Society. Management of the patient with a fecal ostomy: Best Practice Guideline for Clinicians. *WOCNS 2010* <http://www.wocn.org>
8. Hendren S, Hammond K, Glasgow SC et al. Clinical practice guideline for ostomy surgery. *Dis Colon Rectum* 2015;58(4):375-387
9. Parmar KL, Zammit M, Smith A, et al. A prospective audit of early stoma complications in colorectal cancer treatment throughout the greater Manchester and Cheshire colorectal cancer network. *Colorectal Disease* 2011;13:935-938
10. Millan M, Tegido M, Biondo S, et al. Preoperative stoma siting and education by stoma therapist of colorectal cancer patients: A descriptive study in twelve Spanish colorectal surgical units. *Colorectal Disease* 2010;12:88-92
11. Baykara ZG, Dmir SG, Karadag A, et al. A multicenter retrospective study to evaluate the effect of preoperative stoma site marking on stomal and peristomal complications. *Ostomy Wound Management* 2014;60(5):16-26
12. Person B, Ifargan R, Lachter J, et al. The impact of preoperative stoma site marking on the incidence of complications, quality of life and patient's independence. *Dis Colon Rectum* 2012;55(7):783-787
13. Mahjoubi B, Kiani Goodarzi K, Mohammad-Sadeghi H. Quality of life in stoma patients: appropriate and inappropriate stoma sites. *World J Surg* 2010;34(1):147-52
14. Registered Nurses Association of Ontario Clinical Best Practice Guidelines for Ostomy Care and Management. *RNAO 2009*, Toronto, ON Canada. <http://rana.ca/bpg/guidelines/ostomy-care-management>
15. Berry K, Carmel J, Gutman N, et al. ASCRS and WOCN Joint Position Statement on the value of preoperative stoma marking for patients undergoing fecal ostomy surgery. *J Wound Ostomy Continence Nurs.* 2007;34(6):627-628
16. Stelton S, Zulkowski K, Ayello EA; Practice implications for peristomal skin assessment and care from 2014 World Council of Enterostomal Therapists International Ostomy Guideline. *Advances in Skin & Wound Care* 2015;28(6):275-284
17. Salvadalena G, Hendren S, McKenna L et al. WOCN Society and ASCRS position statement on preoperative stoma site marking for patients undergoing colostomy or ileostomy surgery. *J Wound Ostomy Continence Nurs.* 2015; 42(3):249-252
18. Kann BR. Early stoma complications. *Clin Colon Rectal Surg* 2008;21:23-3
19. Zulkowski K, Ayello EA, Stelton S. World Council of Enterostomal Therapists. *WCET* 2014; International Ostomy Guideline. <http://www.wceten.org/international-ostomy-guidelines>
20. Registered Nurses Association of Ontario Establishing Therapeutic Relationships. *RNAO* 2006, Toronto, ON Canada. <http://rnao.ca/bpg/guidelines/establishing-therapeutic-relationships>
21. Smith, FB. Psychosocial Adaptation. In: *Ostomies and Continent Diversions: Nursing Management*, Hampton, B. Bryant R. (EDS). *Mosby*, St. Louis 1992: 1-22)
22. Erwin-Toth P, Doughty D. Principles and procedures of stomal management. In: *Ostomies and Continent Diversions: Nursing Management*, Hampton B, Bryant, R (Eds), *Mosby*, St. Louis 1992;29

23. Crawford D, Texter T, Hurt K, et al. Traditional nurse instruction vs. two session nurse instruction plus DVD for teaching ostomy care *J Wound Ostomy Continence Nurs.*2012;39(5):529-537
24. Werth SL, Schutte D, Stommel M. Bridging the gap. Perceived educational needs in the inpatients to home care setting for the person with an ostomy. *J Wound Ostomy Continence Nurs.*2014;44(6):566-572
25. Bannerman NR. Facilitating powerful learning experiences: experiential learning, the experiential learning cycle and "how tos" for facilitators. *Ryan Bannerman Associates* 2012;1-7. www.ryanbannerman.com
26. Younis J, Salerno G, Fanto D, et al. Focused preoperative patient stoma education, prior to ileostomy formation after anterior resection, contributes to a reduction in delayed discharge with the enhanced recovery programme. *Int. J Colorectal Dis.* 2011;27:44-47
27. Johnson A, Sandford J. Written and verbal information versus verbal information only for patients being discharged from acute hospital settings to home: systematic review. *Cochrane Database Syst Rev.* 2003;(4):CD003716
28. Betancourt JR, Tan-McGrory A. Creating a safe, high-quality healthcare system for all: Meeting the needs of limited English proficient populations; Comment on "Patient safety and healthcare quality: The care for language access". *Int J Health Policy Management* 2014;2:91-94
29. Fazio V. Current trends in ostomy surgery. Erwin-Thoth P, Krasner DL (Eds) Enterostomal Therapy Nursing. 110-116 Cambridge 2012. *World Council of Enterostomal Therapists*
30. Kamran MW, Ahmed S, Wong IFA, et al. Skin bridge loop stoma in gynecologic oncology unit. *J Gynecologic Surg* 2013;29(1):47-51.
31. Krstic S, Resanovic V, Alempijevic T, et al. Hartmann's procedure vs. loop colostomy in the treatment of obstruction rectosigmoid cancer. *World J Emergency Surg* 2014;9(1):52
32. Unti JA, Abearian H, Pearl RK, et al. Rodless end- loop stomas. Seven-year experience. *Dis Colon Rectum* 1991;34(11):999-1004
33. Law WL, Chu KW, Choi HK. Randomized clinical trial comparing loop ileostomy and loop transverse colostomy for faecal diversion following total mesorectal excision. *Br J Surg* 2002;89(6):704-708
34. Vijaykumar H, Pai SA, Harish K, et al. A study of new technique of loop Stoma Bridge in tertiary care hospital. *Int J Recent Trends in Science and Technology* 2014;10(1):67-71
35. Recalla S, English K, Nazarali R, et al. Ostomy care and management. A systematic review. *J Wound Ostomy Continence Nurs.* 2013;40(5):489-500
36. Wu H, Chau J, Twinn S. Self-efficacy and quality of life among stoma patients in Hong Kong. *Cancer Nursing* 2007;30(3):186-193
37. Werth S. Bridging the knowledge gap: From inpatient to home for the new ostomy patient. *J Wound Ostomy Continence Nurs.* 2011;38(3S):S89
38. Burch J, Slater R. Enhanced recovery after surgery: Benefits for the stoma care patient. *Br J Nsg* 201;21(6):S16-S21
39. Delaney CP, Senagore AJ, Remzi FH, et al. Prospective randomized controlled trial between a pathway of controlled rehabilitation with early ambulation and diet and traditional postoperative care after laparotomy and intestinal resection. *Dis Colon Rectum* 2003;46:851-859
40. Hignett S, Parmar CD, Lewis W, et al. Ileostomy formation does not prolong hospital length of stay after open anterior resection when performed within an enhanced recovery programme. *Colorectal Disease* 2011;13(10):1180-1183
41. Williams J. patient stoma care: Educational theory in practice. *Br J Nsg* 2012;21(13):786-794
42. Richbourg L, Thorpe J, Rapp C. Difficulties experienced by the ostomate after hospital discharge. *J Wound Ostomy Continence Nurs.*2007;34(1):70-79
43. Bryan S, Dukes S. The enhanced recovery programme for stoma patients. An audit. *Br J Nsg* 2010;19(13):831-834
44. Walker C, Lachman VD. Gaps in discharge process for patients with an ostomy. An ethical prospective. *MedSurg Nsg* 2013;22(1):61-64
45. O'Connor G. Teaching stoma-management skills: The importance of self-care. *Br J Nsg* 2005;14(6):320-324

46. Persson E, Gustavsson B, Hellstrom S, et al. Information to the relatives of people with ostomies. Is it satisfactory and adequate? *J Wound Ostomy Continence Nurs.*2005;32(4):238-244
47. Campo CJ, Caparrós Sanz R, Martin Bedia L, et al. Psychological evaluation of patients with an ostomy. *J Wound Ostomy Continence Nurs.*2003;23:8-12
48. Burch J. Optimal support system for patients with stoma – an opinion piece. *Nsg Research Reviews* 2014;4:55-64
49. Souza JL, Gomes GC, Barros E JL. The care of the person with ostomy: the role of family caregiver. *Revista Enfermagem UERJ* 2009;17(4):550-555
50. Piwonka MA, Neriano JM. A multidimensional modeling of predictors influencing the adjustment to a colostomy. *J Wound Ostomy Continence Nurs.*1999;26(6):298-305
51. McVey J, Madil A, Fielding D. The relevance of lowered personal control for patients who have stoma surgery to treat cancer. *Br J Clin Psychol* 2001;40(4):337-360
52. Sampaio FAA, Aquino PS, Araujo TL, et al. Nursing care to an ostomy patient: application of the Orem's theory. *Acta Paulista de Enfermagem* 2008;21(1):94-100
53. Barreto LCL, Cardoso MHCA, Villar MAM, et al. Professional health care team perception as to ostomized children discharge in a pediatric hospital unit. *Revista Gsaucha de Enfermagem* 2008;29(3):438-445
54. Berwick D. What "Patient Centered" should mean: confessions of an extremist. *Health Affairs* 2009;28(4):555-565
55. Perrson E, Gustavsson B, Hellstrom A, et al. Information to the relatives of people with ostomies: Is it satisfactory and adequate? *J Wound Ostomy Continence Nurs* 2005;32(4):238-244
56. Colwell J. Roles of the ostomy nurse specialist. Historical perspective, role potential in fecal and urinary diversions. *Management Principles* 2004:22 St. Louis, *Elsevier Health Sciences*
57. Burch J. Enhanced recovery, stomas and the community nurse. *Br J Community Nsg* 2013;18(5):218-220
58. Burch J. Stoma care. *Wiley-Blackwell*, 2008 Chichester UK
59. Pringle W, Swan E. Continuing care after discharge from hospital for stoma patients. *Br J Nsg* 2001;10(19):1275-1288
60. Jones T, Springfield T, Brudwick M, et al. Fecal ostomies: Practical management for the home health clinician. *Home Healthcare Nurse* 2011;29(5):306-317
61. Barwell J. High-output stoma management following bowel perforation. *Br J Nsg* 2012;21(6):S4-7
62. Addis G. The effect of home visits after discharge on patients who have had an ileostomy or a colostomy. *World Council of Enterostomal Therapists Journal* 2003;23(1):26-33
63. Black P. Stoma care nursing management: Cost implications in community care. *Br J Community Nsg* 2009;14(8):352-355
64. Skingley S. Changing practice: The role of the community stoma nurse. *Br J Nsg* 2004;13(2):79-86
65. Williams J. Stoma care nursing. What the community nurse needs to know. *Br J Community Nsg* 2007;12(8):342-346
66. Bradshaw E, Collins B. Managing a colostomy or ileostomy in community nursing practice. *Br J Community Nsg* 2008;13(11):514-518
67. Burch J. Ensuring optimum quality of life in community patients with a stoma. *J Community Nsg* 2014;28(1):21-26
68. Marquis P, Marrel A, Jambon B. Quality of life in patients with stomas: the Montreux Study. *Ostomy Wound Management* 2003;49(2):48-55
69. Simmons K, Smith J, Bobb K, et al. Adjustment to colostomy; stoma acceptance, stoma self-efficacy and interpersonal relationships. *J Advanced Nsg* 2007;60(6):627-635
70. Padilla L. Transitioning with an ostomy: the experience of patients with cancer following hospital discharge. *Padilla* 2013
https://www.ruor.uottawa.ca/bitstream/1093/24291/1/Padilla_Liza_2013_thesis.pdf
71. Barr JE. Part I: Assessment and management of stomal complications: a framework for clinical decision making. *Ostomy Wound Management* 2004;50(9):50-56
72. Butler DL. Early post-operative complications following ostomy surgery: a review. *J Wound Ostomy Continence Nurs.* 2009;36(5):513-519

73. Salvadalena G. The incidence of stoma and peristomal complications during the first 3 months after ostomy creation. *J Wound Ostomy Continence Nurs.* 2013;40(4):400-406
74. Hoeflok J, Guy D, Allen S, et al. A prospective multi-centre evaluation of a moldable stoma skin barrier. *Ostomy Wound Management* 2009;55(5):62-69
75. Wound, Ostomy and Continence Nurses Society. 2016. Core Curriculum Ostomy Management. *Wolters Kluwer*, Philadelphia, PA
76. Juul K, Prieto L. Quality of life with an intestinal stoma. *Seminars in Colon and Rectal Surgery* 2008;19(3):167-173
77. Ang S, Siah R, He H, et al. Stressors relating to patient psychological health following stoma surgery: An integrated literature review. *Oncology Nsg Forum* 2013;40(6):587-594
78. Karabulut H, Dinc L, Karadag A. Effects of planned group interactions on the social adaptation of individuals with an intestinal stoma: a quantitative study. *J Clinical Nsg* 2014;23:2800-2813
79. Danielson A, Soerenson E, Burcharth K, et al. Learning to live with a permanent intestinal ostomy. *J Wound Ostomy Continence Nurs.*2013;40(4):407-412
80. Tao J, Sonwathana P, Isaramalai S et al. Personal awareness and behavioral choices on having a stoma: a qualitative meta-synthesis. *J Clin Nsg* 2013;23:1186-2100
81. Ministry of Health and Long Term Care. Ministry Programs – *Telehealth Ontario*. 2014. <http://www.health.gov.on.ca/en/public/programs/health>
82. Bohnenkemp SK, McDonald P, Lopez AM, et al. Traditional versus telenursing outpatient management of patients with cancer with new ostomies. *Oncology Nsg Forum* 2004;31(5):1005-1010
83. Hoeflok, J. Ontario Telemedicine Network. Case study: Breaking down barriers of distance to raise the standard of health care in Ontario. 2013. <https://www.otn.ca/sites/default/files/otn-telemedicine-case-study-hoeflok.pdf>
84. Beaver K, Latif S, Williamson S, et al. An exploratory study of the follow-up care needs of patients treated for colorectal cancer. *J Clinical Nsg* 2010;19(23-24):3291-3300
85. Zhang JE, Wong FKY, Li MY, et al. A qualitative study exploring the nurse telephone follow-up of patients returning home with a colostomy. *J Clinical Nsg* 2012;21(9-10):1407-1415
86. Zheng M, Zhang J, Qin H, et al. Telephone follow-up for patients returning home with colostomies: Views and experiences of patients and Enterostomal nurses. *European J Oncology Nsg* 2013;17:184-189
87. Bowman C, Howden J, Allen S, et al. A telephone survey of medical patients 1 week after discharge from hospital. *J Clinical Nsg* 1994;3(6):369-373.
88. Bostrum J, Caldwell J, McGuireK, et al. Telephone follow-up after discharge from the hospital: Does it make a difference? *Applied Nsg Research* 1996;9(2):47-52
89. Nagle D, Pare T, Keenan E, et al. Ileostomy pathway virtually eliminates readmissions for dehydration in new ostomates. *Dis Colon Rectum* 2012;55(12):1266-1272
90. Falah SQ, Khan MM. Frequency of complications in patients with temporary ileostomy. *Journal of Medical Sciences* 2010;18:182-185
91. Beck-Kaltenbach N, Voigt K, Rumstadt B. Renal impairment caused by temporary loop ileostomy. *International J Col Disease* 2011;26:623-6
92. Paquette IM, Solan P, Rafferty JF, et al. Readmission for dehydration or renal failure after ileostomy creation. *Dis Colon Rectum* 2013;56(8):974-979
93. Agarwal S, Ehrlich A. Stoma dermatitis: Prevalent but often overlooked. *Dermatitis* 2010;21(3):138-147
94. Ratliff CR. Early peristomal skin complications reported by WOC Nurses. *J Wound Ostomy Continence Nurs.* 2010;37(5):505-510
95. Persson E, Berndtsson I, Carlsson E, et al. Stoma-related complications and ostomy size - a 2 year follow-up. *Colorectal Disease* 2010;10:971-976
96. Popkin BM, D'Anci KE, Rosenberg IH. Water, hydration and health. *Nutrition Reviews* 2010;68:439
97. Poon JT, Law WFL, Chu KW. Small bowel obstruction following low anterior resection: the impact of diversion ileostomy. *Langenbecks Archive of Surgery* 2004;389:250-255
98. Beck DE, Opelka FG, Bailey HR et al. Incidence of small bowel obstruction and adhesiolysis after open colorectal and genera surgery. *Dis Colon Rectum* 1999;42(2):241-248
99. Ellozy SH, Harris MT, Bauer JJ et al. Early postoperative small bowel obstruction. *Dis Colon Rectum* 2002;45(9):1214-1217

100. Meisner S, Lehur PA, Moran B, et al. Peristomal skin complications are common, expensive and difficult to manage: a population based cost modeling study. *PLoS ONE* 2012;7(5):1-8
101. Erwin-Toth P, Thompson S, Davis J. Factors impacting the quality of life of people with an ostomy in North American – results from a dialogue study. *J Wound Ostomy Continence Nurs.*2012;39(4):417-422
102. Herlufsen P, Olsen AG, Carlsen B, et al. Ostomy skin study: a study of peristomal skin disorders in patients with permanent stomas. *Br J Nsg* 2006;15(16):854-862
103. Thompson MJ. Parastomal hernia: incidence, prevention and treatment strategies. *Br J Nsg* 2008;17(2):S16-20
104. Israelsson L. Parastomal hernias. *Surgical Clinics of North America* 2008;88(1):113-125
105. Richbourg L, Fellows J, Arroyave WD. Ostomy pouch wear time in the United States. *J Wound Ostomy Continence Nurs.* 2008;35(5):504-508