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## Implementation of an Educational Program to Improve Nurses' Knowledge of Basic Ostomy Care

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# Walden University

College of Nursing

This is to certify that the doctoral study by

Angela Trajcevski

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

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Walden University

2024

Executive Summary: Staff Education Project  
Implementation of an Educational Program to Improve Nurses' Knowledge  
of Basic Ostomy Care  
by  
Angela Trajcevski

BSN, Ramapo College of New Jersey, 2020

Executive Summary Submitted in Partial Fulfillment  
of the Requirements for the Degree of  
Doctor of Nursing Practice

Walden University

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## **Summary**

This staff education project aimed to determine if an educational program would improve nurses' knowledge of basic ostomy care in a surgical unit. Nurses in the surgical unit lack the knowledge and skills to perform proper ostomy care. Regardless of the years of experience, nurses may lose skills over time if they do not refresh their knowledge on basic ostomy care. The PICO (population, intervention, comparison, and outcome) question for this project was as follows: Does participation in an educational program focused on basic ostomy care improve the ostomy knowledge of staff nurses working on a surgical unit? This project focused on educating surgical nurses on the basics of ostomy care. A PowerPoint presentation was used as a visual description of ostomy care along with hands-on learning using ostomy appliances.

A pre-and-post-test design was used to determine the project's outcomes. Results from the pre- and posttests showed improvement in knowledge following a 45-minute educational program. Descriptive statistics showed improvement in test scores in the posttests. The Wilcoxon signed rank nonparametric test showed a significant difference between the pretest and posttest scores ( $p$  value  $< 0.05$ ). Nurses also verbalized satisfaction with the educational program. The outcomes of this project showed the need for frequent ostomy education and refresher courses. The availability of staff education to improve knowledge among nurses has potential to improve patients' experiences and quality of life, leading to a positive social change.

## **Background**

The purpose of this project was to determine if the implementation of an educational program for nurses focused on basic ostomy care would improve nurses'

knowledge of the care of the patient with an ostomy. The PICO question was the following: Does participation in an educational program focused on basic ostomy care improve the ostomy knowledge of staff nurses working on a surgical unit? Nursing staff on the surgical unit were asked to complete a pretest, followed by an educational program on ostomy care, and then a posttest (see Appendix A for pre- and posttests). After the nurses had attended the educational program, they were asked to complete the posttest to test their retention of knowledge learned. The overall evidence was strong and supported the concept of educational programs to improve nursing knowledge on ostomy care. Continuation of education is crucial in healthcare to promote relevant learning and relearning of proper procedure guidelines with supporting evidence. Based on the Johns Hopkins Evidence Appraisal Tool, all studies used were Level III. Most of the evidence found was cross-sectional studies and high-quality literature reviews. Evidence showed positive outcomes for nurses who attend educational programs on ostomy care in other articles and project implementations.

Among nursing professionals, a gap in knowledge regarding ostomy care has been identified in the literature (Belay et al., 2023; Duruk & Uçar, 2013). Educational training on ostomy care can improve nurses' confidence and knowledge; however, competence may decline if there is a lack of frequent exposure to stoma care (Naseh et al., 2023). The literature demonstrates that regardless of years of experience, nursing staff should continue their education to improve clinical skills. In-service training is necessary to enhance the knowledge of ostomy care by nurses (Belay et al., 2023). A qualitative study reported that nurses with more experience in providing hospital care to patients with an ostomy, those with higher levels of education, as well as those nurses

with more knowledge of ostomy care, provided better ostomy care to patients (Cross et al., 2014). On the other hand, nurses' limited competence in the accurate placement of ostomy appliances, time limitations in terms of nursing care, and heavy workloads can impair the quality of ostomy nursing care (Shoja et al., 2024). In a study of surgical nurses, participation in the training of ostomy care, having more than 8 years of nursing experience, attending educational meetings focused on ostomies, and reading professional literature were significant factors associated with improved knowledge of ostomy care (Belay et al., 2023).

A lack of adequate ostomy education during undergraduate nursing programs has also been reported in the literature. Zimnicki and Pieper (2018), in a study of undergraduate nursing students' perceptions of ostomy education, found that in addition to limited education, no clinical exposure to ostomy patients and a lack of knowledge of basic ostomy care was reported. Nurses spend most of their time in direct contact with patients; therefore, they need the skills to better identify patients' physical, mental, and social needs to provide them with proper ostomy care (Shoja et al., 2024). In this project's setting, new graduate nurses are provided with a basic ostomy lecture aimed at providing basic ostomy care during residency. While new graduate nurses in the residency programs at this hospital receive ostomy care education, nurses on the unit rely on past knowledge of ostomy care. All acute care nurses should have the basic competence to provide postoperative care and educational support to new ostomy patients. This should include information on proper stoma assessment, proper appliance system fitting, emptying and changing pouches, access to supplies, and basic

stomarelated problem-solving skills (Alenezi et al., 2022). These methods were taken into consideration when designing the components of the project interventions.

### **Staff Education Project Development**

The nursing staff on the surgical unit were asked to participate in this project, and ancillary staff were excluded. An educational program was presented to staff. A PowerPoint presentation (see Appendix B) was created as a visual aid to augment the educational program. Sample ostomy pouches were used to demonstrate how to cut the skin barrier accurately depending on the size of the stoma. During the presentation, the participants were asked to engage in hands-on learning to familiarize participants with the ostomy appliance. Prior to the start of the program, nurses were asked to complete a pretest on basic ostomy knowledge. After the program's completion, the nurses were asked to complete an identical posttest. The total time for completion of the pre- and posttest and the educational session was approximately 45 minutes in duration.

The hospital's ostomy care protocol was reviewed and used as a guide during this project implementation. Although a hospital protocol exists, many of the surgical nurses were not familiar with the requirements and expectations of the protocol. The protocol was reinforced and printed out for staff, and staff were educated on how to find it in the hospital's portal. The hospital protocol was reviewed prior to beginning this project to ensure it used updated supporting evidence. No changes were necessary for the hospital protocol, as it was updated in June of 2024.

Data were collected from the pre- and posttests. Each pre- and posttest was numbered (both with the same numbers) to ensure that the same person was taking the

correlated pre- and posttests. Data were collected anonymously using this numbering system to avoid any unveiling of confidentiality. The tests were scored and placed in a chart to calculate the means and averages of scores. There were minimal outliers.

## Results

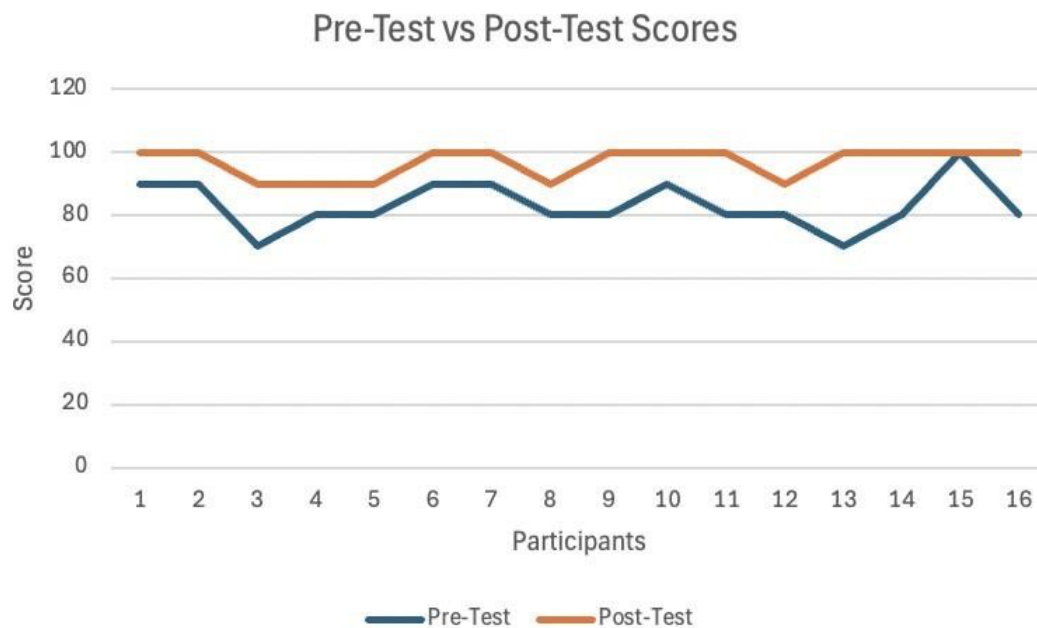
The pre- and posttests were identical 10-item tests that were reviewed and scored. Descriptive statistics were used to analyze all study variables. Scores on the pre-/posttest were recorded as a percentage. Frequency distributions, mean, standard deviation, and percentage were calculated based on the type of variable (continuous or categorical). The percentage change between the pre- and posttest scores, mean, and averages were calculated. The average pretest score was 83, and the average posttest score was 97. The median pretest score was 80, while the median posttest score was 100. This showed an approximate 12.5% median change improvement postimplementation. There were few outliers in the outcomes of this project. The higher average posttest scores suggest overall improvement in outcomes. The percentage change of improvement provides additional acknowledgment of positive outcomes for this project.

A *t* test or nonparametric equivalent was conducted to determine if there were any differences between the pre- and posttest scores. Both the results of the *t* test (*t*-statistic: -7.65) and the Wilcoxon test indicate statistically significant differences between the pretest and posttest scores (*p* value < 0.05). This shows that the intervention had a significant positive impact on performance, improving scores in comparison. Refer to Table 1 and Figure 1 for the visual representation of outcomes.



**Table 1***Percentage Change (Pre- to Posttest Results)*

Participants	Pretest score	Posttest score	Change (post-pre)	% change
1	90	100	10	11.11%
2	90	100	10	11.11%
3	70	90	20	29%
4	80	90	10	12.50%
5	80	90	10	12.50%
6	90	100	10	11.11%
7	90	100	10	11.11%
8	80	90	10	12.50%
9	80	100	20	25%
10	90	100	10	11.11%
11	80	100	20	25%
12	80	90	10	18.75%
13	70	100	30	42.85%
14	80	100	20	25%
15	100	100	0	0%
16	80	100	20	25%

**Figure 1***Comparison of Pre- and Posttest Scores***Impact on Organization**

This education program is expected to improve nurses' knowledge about ostomy care and improve their confidence and ability to perform ostomy care. Moving forward, the organization will continue to provide this program. Hopefully, this will motivate additional evidence-based staff education based on observances of gaps in practice using the Johns Hopkins Evidence-Based Model.

**Limitations**

The project has some limitations. Time was a limitation. Future projects could address a longer timeframe between pre- and posttests in order to measure retention of knowledge. This nonfunded project and the program took place during nurses' work time. Finding time to attend was a limitation for nursing staff. Future funding to support nurses' work time to attend education programs via Zoom or during weekly huddles

would allow for further dissemination. Furthermore, the impact of results with a larger group of nurses would reinforce the importance and funding by the hospital of these educational programs.

### **Importance Beyond Site**

The project can be expanded to other units that have patients with ostomies. This knowledge may prevent complications (e.g., infection, ileus, protrusion of stoma). The prepared nurse can better educate patients to perform self-ostomy care and address patient comfort with self-care, helping to lessen differences in day-to-day life activities.

### **Conclusions**

The implementation of a basic ostomy care educational program was openly accepted by the hospital. Nurses showed a willingness to participate and learn. There were no identified negative outcomes from this project, ruling out any threats to the organization. This project motivated leadership to identify the need for implementing educational in-services for nurses to frequently refresh their knowledge on ostomy care as well as other surgical unit interventions. The stakeholders identified that providing nurses with educational in-services clearly shows an improvement in nursing knowledge.

Leadership stated that they would like to continue providing educational in-services on ostomy care as well as other important topics moving forward. It was recommended that ancillary staff may also be educated in the future on how to empty ostomy bags and how to identify complications that should be communicated to the nurses. Nurses and ancillary staff should be working together moving forward in improving their knowledge within the requirements of their positions. Continuation of education is a crucial part of nursing practice that should be prioritized in the healthcare

settings. This will allow improved care to all ostomy patients with a diversity of ostomies in continuing their ostomy needs to promote health and quality of life, a positive social change.

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## Appendix A: Pretest and Posttest

### Pre-Test

Please circle your response to each of the following questions:

1. Which intervention should be implemented for leaking underneath the ostomy skin barrier?
  - a. Replace the barrier.
  - b. Tape the skin barrier over the leaking area.
  - c. Apply an additional skin barrier at the leaking edge.
2. Pouches should be emptied when they are:
  - a. one-third to one-half full.
  - b. one-half to two-thirds full.
  - c. about three-quarters full.
3. An ileostomy is a:
  - a. A surgically created opening in the large intestine
  - b. A surgically created opening in the small intestine
  - c. A surgically created opening to the bladder
4. Immediately following surgery for the creation of a urostomy, it is normal for there to be no urine output:
  - A. True
  - B. False
5. Following surgery for the creation of a new stoma, the stoma may be edematous:
  - A. True
  - B. False
6. Skin irritation in the peristomal area is most commonly due to:
  - a. leakage of stool onto the skin.
  - b. skin reaction to the skin barrier adhesive
  - c. perspiration underneath the wafer
7. Which of the following guidelines should the nurse follow when cutting the skin barrier to fit around the stoma?
  - a. Cut more than 1 inch around the stoma.
  - b. Cut the skin barrier as large as possible.
  - c. Cut the skin barrier to fit closely to the stoma size, minimizing skin exposure.
  - d. Skin barriers do not need to be cut to fit around the stoma.
8. Peristomal skin care consists of:
  - a. Cleansing the peristomal area with betadine, followed by alcohol.
  - b. Cleansing the peristomal area with normal saline.
  - c. Cleansing the peristomal area with warm tap water.
  - d. Cleansing the peristomal area with Hibiclens.
9. What is the primary reason for the creation of a urostomy?
  - a. To bypass a portion of the GI tract
  - b. To divert urine away from a diseased or damaged bladder
  - c. To treat ureteral reflux
  - d. To divert urine when the bladder is removed for conditions such as cancer.
10. A stoma is created from a part of the intestine and has two openings and maybe stabilized using a plastic rod or rubber catheter is called a (an):
  - a. end ostomy
  - b. double barrel ostomy
  - c. loop ostomy
  - d. sigmoid ostomy

## Post-Test

Please circle your response to each of the following questions:

1. Which intervention should be implemented for leaking underneath the ostomy skin barrier?
    - a. Replace the barrier.
    - b. Tape the skin barrier over the leaking area.
    - c. Apply additional skin barrier at the leaking edge.
  2. Pouches should be emptied when they are:
    - a. one-third to one-half full.
    - b. one-half to two-thirds full.
    - c. about three-quarters full.
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    - b. A surgically created opening in the small intestine
    - c. A surgically created opening to the bladder
  4. Immediately following surgery for the creation of a urostomy, it is normal for there to be no urine output.
    - A. True
    - B. False
  5. Following surgery for the creation of a new stoma, the stoma may be edematous:
    - A. True
    - B. False
  6. Skin irritation in the peristomal area is most commonly due to:
    - a. leakage of stool onto the skin.
    - b. skin reaction to the skin barrier adhesive
    - c. perspiration underneath the wafer
  7. Which of the following guidelines should the nurse follow when cutting the skin barrier to fit around the stoma?
    - a. Cut more than 1 inch around stoma
    - b. Cut the skin barrier as large as possible
    - c. Cut the skin barrier to fit closely to the stoma size, minimizing skin exposure.
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    - a. To bypass a portion of the GI tract
    - b. To divert urine away from a diseased or damaged bladder
    - c. To treat ureteral reflux
    - d. To divert urine when the bladder is removed for conditions such as cancer.
  10. A stoma that is created from a part of the intestine with two openings and may be stabilized by the use of a plastic rod or rubber catheter is called a (an):
    - a. end ostomy
    - b. double barrel ostomy
    - c. loop ostomy
    - d. sigmoid ostomy



## Appendix B: PowerPoint Presentation



# The Basics of Ostomy Care

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Walden University DNP Capstone Project

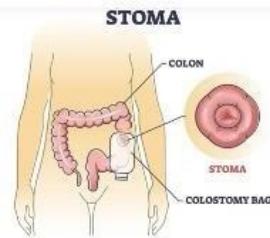
At the completion of this program the learner will be able to:

1. Identify the essential elements of a healthy stoma.
2. Identify the type of effluent to be expected for each type of ostomy
3. Identify the appropriate method to prepare and apply an ostomy pouching system

## What is an ostomy?

-An ostomy is a surgical procedure that creates an opening in the body to allow waste to exit, usually as a result of a disease or medical procedure that prevents the body from getting rid of waste normally.

-The opening is called a stoma, and stool or urine, depending on the type of ostomy is collected in a pouch.



## For what conditions is an ostomy created?

- Inflammatory Bowel Disease
- Cancer
- Perforated or complicated diverticulitis
- Bowel obstruction
- Injury to the colon, rectum, or small bowel
- Congenital deformities of the anus or rectum
- Hirschsprung Disease

## Types of Stomas

### End Stoma

- The surgeon creates an end stoma by bringing one end of the GI tract through the abdominal wall, inverts the bowel and sutures the bowel to the abdominal wall with dissolvable sutures.

### Loop Stoma

- The surgeon lifts a loop of the transverse colon through the abdomen. The colon is sometimes supported by a rod underneath. If a rod is used, it is removed after a few days when support of the colon is no longer needed. This type of stoma is usually created for temporary ostomies.



## Stoma Characteristics

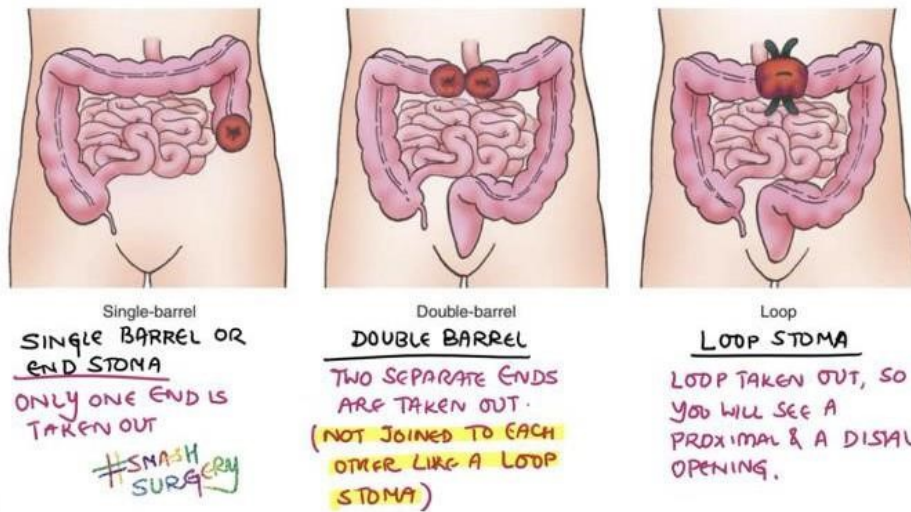
Characteristics of a normal stoma:

- Pink-red color
  - Moist
  - Usually round in shape & protrudes above the skin
  - No pain sensation present
- The patient will have no voluntary control of the effluent expelled through the stoma
- After surgery, the stoma may appear to be edematous which is a normal finding
- Stomas may change in size over time due to age, hernias, pregnancies, etc.



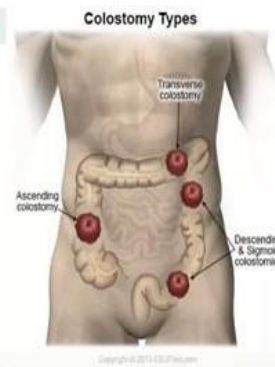
- Newly operated
- Skin looks fine
- Aseptic post-op inflammation
- Post-op oedema

- "Perfect" Ostomy
- Normal color and size
- Nice round shape
- Surrounding skin normal



## Colostomy

- A colostomy is a surgical operation in which a piece of the colon is brought out to the abdomen through the creation of a stoma.
- Stool and flatus pass through the stoma.
- The colostomy can be temporary to permit healing of the bowel distal to the colostomy opening since it diverts the fecal contents away from the affected area
- The colostomy may also be permanent as a means of bowel evacuation when the rectum or anus are non-functional or removed as a result of disease or illness

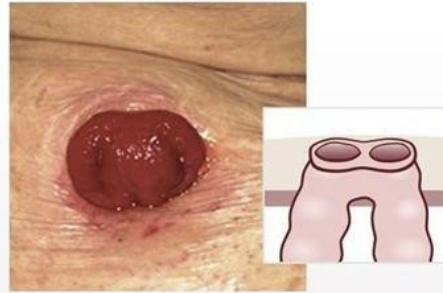


### End Colostomy Formation



An end colostomy is generally permanent.  
An end colostomy has only one opening.

### Loop Colostomy Formation

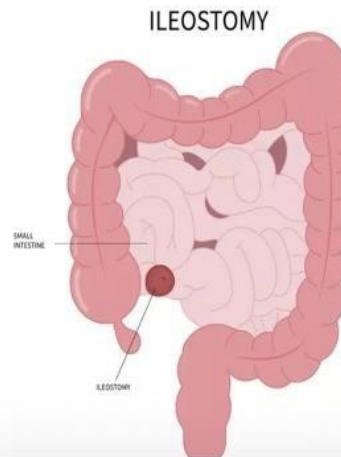


A loop colostomy is generally temporary and can be reversed later when no longer required. A loop colostomy has two openings.

1,500 × 750

## Ileostomy

- An ileostomy is a surgical procedure that creates an opening in the abdominal wall to divert waste from the body through the small intestine instead of the large intestine
- An ileostomy is usually performed when the large bowel needs to be removed or rested, or if a problem is preventing the ileum from functioning properly.
- An ileostomy may be permanent or temporary the same as a colostomy (loop & end ileostomy).
- Stool is usually less formed as it doesn't travel through the colon, which normally removes water



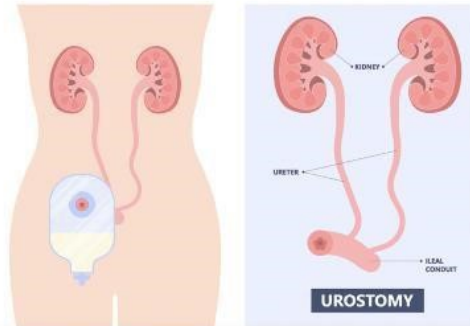
## Urostomy

-A urostomy is a surgical procedure that creates an opening in the abdominal wall to allow urine to pass out of the body when the bladder is removed.

-The purpose of a urostomy is to redirect urine away from a bladder that's diseased, injured, or not working properly

-Urine should be present immediately postoperatively.

New Urostomies will have 2 stents and 1 stoma drain in the stoma



## Peristomal Skin Care

-The skin can be cleaned with warm tap water and a washcloth/soft paper towel. Soap may be used, but it must be mild-fragrance-free soap

-The skin should not be scrubbed aggressively; dab it gently to avoid skin irritation

-The skin should be patted dry after washing it

-Skin barrier should be applied before putting on a new pouch

-When cutting a new skin barrier to fit around a stoma, you should cut the barrier to fit closely to the stoma size to minimize skin exposure.



Healthy Peristomal Skin

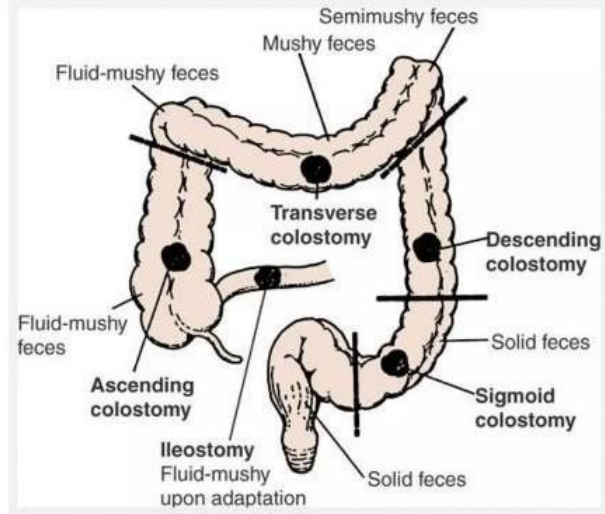
-The skin around the stoma should be intact without irritation, rash, or redness. A properly fitting skin barrier protects the skin from being irritated or damaged by the stoma drainage.



Peristomal  
Candidiasis

-A fungal infection of the skin can occur if moisture builds up beneath the skin barrier

## STOOL CONSISTENCY in VARIOUS TYPES OF STOMAS

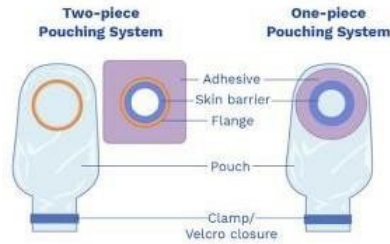


## TYPES OF OSTOMY APPLIANCES

TWO PIECE POUCHING SYSTEM



ONE PIECE POUCHING SYSTEM



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## Caring for your patient

- The ostomy pouch should be emptied when it is **one-third to half-full**
- When emptying the pouch, it is important to always assess the consistency of the stool
- Always assess the patient's stoma and peristomal skin when performing ostomy care
- If there is leaking underneath the ostomy skin barrier, the barrier should be replaced
- If the pouching system is worn for a prolonged period of time, the skin barrier/adhesive can erode or wear away and this can cause leakage.



## UROSTOMY APPLIANCE MANAGEMENT

### DRAINAGE TAP CONNECTOR FOR NIGHT-TIME DRAINAGE BAG

Urostomy bag can be used together with drainage bag to avoid getting up at night.



### ONE-PIECE UROSTOMY APPLIANCE



## HOW OFTEN SHOULD OSTOMY APPLIANCES BE CHANGED?

-An ostomy appliance should be changed every 3-5 days, depending on the type of appliance and the type of effluent.

-During the first 4-8 weeks post-operatively, it is common for the stoma to change in shape and size. This means that the appliance may need to be changed more frequently to accommodate the change in size.

Here's a video link on pouch change frequency:  
<https://www.youtube.com/watch?v=89-51cGKAVs&t=4s>



## DEMONSTRATION OF TWO-PIECE OSTOMY POUCH APPLICATION

<https://www.youtube.com/watch?v=-2N0GEJltw>

### Changing Your Two-Piece Pouching System

- 1 Wipe around your stoma with warm water (use oil-free soap if you prefer); pat dry.
- 2 Measure your stoma using a measuring guide. Stomas change size during the first months after surgery.\*
- 3 Cut a correctly sized hole in the skin barrier and be sure the edges are smooth.
- 4 Peel off the back side of the adhesive. Leave the paper backing strips.
- 5 Optional: For a tight seal, apply strip paste or a barrier ring around your stoma. This could alternatively be applied to the back of your barrier.
- 6 With the adhesive facing your skin (flange side facing outwards) center the barrier over your stoma and smooth to secure in place.
- 7 Remove the paper backing strips from your barrier.
- 8 Close the bottom of your pouch. Snap the pouch flange to the barrier flange. Helpful tip: place your hand over the pouching system to help it adhere.

\* Weight gain, weight loss, pregnancy, prolapse or hernias, aging, or other changes to your physical appearance can affect the size of your stoma. Your healthcare team will advise you on the correct sizing. Many skin barriers can be preordered with a custom sized precut opening.

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## Patient Education Considerations

- **Showering:**
  - Patients may shower with or without the pouch. If showering with the pouch, patients should make sure the seal on their pouch is secure or use a shower shield to keep the area dry. If showering without the pouch, the skin barrier should be removed before showering. Shower gels and moisturizing lotions should be avoided in the area and oil-free/residue-free soap may be used.
- **Activity:**
  - Patients should be encouraged to avoid a sedentary lifestyle. Engaging in daily physical activity can help avoid complications such as an ileus. Maintaining a healthy weight through exercise can help prevent stoma complications, such as pouch leakage. Pouches should be emptied prior to any physical activity. There are also protective stoma covers for contact sports.
- **Odor:**
  - The odor should not be escaping from the closed ostomy appliance. An assessment should be made to ensure no leaking of stool around the stoma or the bag. If the stool is particularly foul in smell, dietary changes may be necessary. Odor eliminator drops are available from multiple companies if desired by the patient.
- **Gas:**
  - For two-piece appliances, gas can be released from the bag by lightly separating the pouch from the flange at the top of the appliance. Some pouches contain a **built in** filter that helps to eliminate gas. For one-piece appliances, the bottom of the pouch can be carefully opened to allow the gas to escape. Dietary changes should be considered if there is excess gas build-up.
- **Diet:**
  - Dietary restrictions for the first few weeks after surgery will depend on the type of ostomy. For new ileostomies, a low-fiber low-residue foods for the first few weeks following surgery usually recommended. Following a diet directed by a dietitian can help avoid uncomfortable symptoms such as diarrhea, bloating, and gas. For patients with a urostomy, it is important to maintain hydration and an adequate fluid intake.

## POST-OP ASSESSMENT OF THE PATIENT WITH AN OSTOMY

- **Type of Stoma:**
  - Identify if the patient has an ileostomy, colostomy, urostomy or other.
  - Document the type of appliance (e.g., one-piece, two-piece)
- **Stoma Location**
  - The anatomical location of the stoma should be assessed (e.g., RLQ, LLQ, etc).
- **Stomal effluent:**
  - Document the characteristics of the effluent (e.g., color, odor, consistency of stool if applicable).
  - Record output and note volume changes if there are drastic changes in output (e.g., low output, large output, normal output).
  - Remember: A urostomy will function immediately after surgery. For a colostomy or ileostomy it may take longer for bowel function to return.
- **Stoma appearance**
  - Assess the stoma's color (should be pink/red; pale or dark indicates ischemia)
  - Check for swelling, irritation, or necrosis
  - Look for signs of infections (e.g., redness, purulent discharge, oozing)
- **Abdominal Assessment**
  - Auscultate bowel sounds
  - Inspect the abdomen for distension or tenderness
- **Presence of drains**
  - Identify any drains that may be present (e.g., JP drain, wound-vac)
- **Surgical incision sites**
  - Assess incision sites for redness, swelling, or drainage
  - Check for signs of dehiscence or infection