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# Acute Care Physical Therapy Status Post Laparoscopic Loop Sigmoid Colostomy For A Patient With Colorectal Cancer: A Case Report

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1 **Acute Care Physical Therapy Status Post Laparoscopic Loop Sigmoid Colostomy for a**  
2 **Patient with Colorectal Cancer: A Case Report**

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15  
16 The patient signed an informed consent allowing the use of medical information for this report  
17 and received information on the institution's policies regarding the Health Insurance Portability  
18 and Accountability Act.

19  
20  
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23 well as the patient for participating in this case report.

24 **ABSTRACT**

25 **Background and Purpose:** Colorectal cancer (CRC) is the third most commonly diagnosed  
26 cancer, with an increasing prevalence in the United States. Surgical treatment is common and the  
27 American Society of Enhanced Recovery (ASER) established fast track protocols to reduce  
28 recovery time and length of stay in the hospital. Early mobilization is a key component of these  
29 protocols. The purpose of this case report is to describe the acute physical therapy (PT) for a  
30 patient who received a laparoscopic loop sigmoid colostomy.

31 **Case Description:** The patient was a 73-year-old male admitted to the hospital to receive  
32 surgery for a permanent colostomy due to his diagnosis of stage II adenocarcinoma of the  
33 rectum. PT evaluation and treatment began post-operative day (POD) one. He presented below  
34 his baseline level of function, as he was previously independent in mobility and activities of  
35 daily living (ADLs). At the time of evaluation, he had limitations in bed mobility, transfers, and  
36 tolerance to activity. Treatment focused on a task oriented approach addressing limitations in  
37 functional mobility.

38 **Outcomes:** The patient was assessed on his required level of assistance at initial evaluation and  
39 discharge. He demonstrated improvements in all functional mobility; bed mobility (moderate  
40 assistance to independence), transfers (minimal assist to independence), ambulation (contact  
41 guard assist for 150 feet to supervision for 350 feet), and stair negotiation (unable to perform to  
42 close guarding with ascending/descending nine stairs).

43 **Discussion:** This patient had the benefit of following the multidisciplinary ASER protocol and  
44 received early mobilization guided by a skilled physical therapist. He was discharged to inpatient  
45 rehab after eight days in the hospital. Further research should look at pre-habilitation to  
46 determine how that affects outcomes. Manuscript word count 3069

48 **BACKGROUND and PURPOSE**

49 CRC is defined as any malignant uncontrolled cell division that commences in the large  
50 intestine. Ninety-six percent of all cases of CRC are classified as an adenocarcinoma, which  
51 arises from glandular cells within the inner lining of the large intestine.<sup>1</sup> The large intestine is  
52 made up of the colon and the rectum. The colon is the more proximal portion of the large  
53 intestine, which connects distally to the rectum (refer to Figure 1). The primary function of the  
54 large intestine is to absorb water and transport stool to the rectum, where the stool is stored until  
55 elimination.

56 CRC is an extremely prevalent problem in the United States, as it is the third most  
57 commonly diagnosed cancer, aside from skin cancers.<sup>2</sup> As of January, 2016, the American  
58 Cancer Society (ACS) estimated there are 724,690 men and 727,350 women living with a history  
59 of CRC, and has a projected ten year increase to 910,190 and 885,940 respectively.<sup>3</sup> CRC  
60 screening has helped reduce incidence rates for individuals aged 65 and older; however, this  
61 population is still at the greatest risk with the median age of CRC diagnosis being 66 for males  
62 and 70 for females.<sup>1,3</sup>

63 Treatment for CRC is dependent upon the location and stage of the cancer. Colon cancer  
64 is typically treated with surgery first, followed by adjuvant chemotherapy (chemo) and/or  
65 radiation. In comparison, rectal cancer is usually treated first with chemo-radiation  
66 neoadjuvantly.<sup>3</sup> Chemo-radiation therapy combines the use of localized high energy particles  
67 from radiation with the systemic effects of chemo. Side effects vary amongst individuals, but  
68 fatigue, nausea, and diarrhea are commonly reported.

69 Surgery is aimed at the removal of the tumor which, depending on location, may result in  
70 a colostomy. A colostomy is a surgical procedure that resects part of the large intestine, creating

71 a stoma to allow a new pathway for the removal of gas and stool into a disposable bag attached  
72 to the abdomen (refer to appendix 2 and 3). The placement of the stoma is dependent on the  
73 location of the cancer. The operation for a colostomy can either be open or laparoscopic. A  
74 laparoscopic approach is minimally invasive, and has been shown to reduce the risk of infection,  
75 recovery time, and length of stay at the hospital when compared to an open surgery.<sup>4,5</sup>

76 Post-surgical recovery requires a multi-disciplinary approach, which includes physicians,  
77 nurses, physical and occupational therapy, as well as social work. ASER has established fast  
78 track protocols for colorectal surgery, which encourage safe early mobilization. These fast track  
79 protocols have an emphasis on ambulation post-operative day one, with the goal of improving  
80 patient outcomes and reducing length of stay and overall health care costs.<sup>6</sup> With consideration to  
81 the older population, they have been shown to be safe with patients older than 70 years of age.<sup>7</sup>  
82 Although clinical practice guidelines support early mobilization, there is a lack of literature that  
83 describes the acute physical therapy management for patients post colostomy.

84 The purpose of this case report is to describe the acute physical therapy management for  
85 a patient who received a laparoscopic loop sigmoid colostomy due to a diagnosis of stage II  
86 rectal cancer.

## 87 **CASE DESCRIPTION**

### 88 **Patient History and Systems Review**

89 The patient was a retired 73-year-old Polish-American male who was treated in an acute  
90 care hospital. The patient gave consent for this case report to be written by a student physical  
91 therapist (SPT) who evaluated and treated the patient during his hospital admission. He was  
92 admitted with an ongoing diagnosis of stage II adenocarcinoma of the rectum. Prior to his  
93 admission, he had been receiving neoadjuvant chemo-radiation to ease the effects of his cancer

94 and to prolong his life. However, he had difficulty tolerating the chemo-radiation and had issues  
95 with nausea, fecal incontinence, and diarrhea. Secondary to his nausea and diarrhea, the patient  
96 became malnourished and dehydrated. Therefore, to improve his quality of life, he opted for an  
97 irreversible loop sigmoid colostomy.

98         Prior to his cancer diagnosis, the patient had had a diagnosis of pre-hypertension. His  
99 hospital course entailed an eight-day inpatient admission on the medical-surgical unit. While at  
100 the hospital, he received nutritional counseling to improve his diet, intravenous fluids to improve  
101 his hydration, wound care, as well as physical and occupational therapy to address his limitations  
102 with mobility and activities of daily living (ADLs).

103         The patient was a retired corrections officer and was well respected in the community. He  
104 had a supportive wife who was working fulltime and an adult daughter who lived five hours  
105 away. Prior to admission, the patient lived in a split-level, three story home with his wife. He  
106 was independent in ADL's and mobility with use of a rolling walker for ambulation. He had  
107 complaints of weakness and fatigue since he began chemo-radiation, which limited his ability to  
108 complete instrumental activities of daily living (IADLs). Therefore, his wife managed the  
109 cooking, cleaning, shopping and driving. His chief complaints upon the physical therapy  
110 evaluation were pain at his surgical site and fatigue. The patient's goal was to return home upon  
111 discharge from the hospital. However, he understood the necessity of independent ambulation  
112 prior to a home discharge. Therefore, his goals in therapy were to safely ambulate with his  
113 rolling walking and to complete a flight of stairs. A systems review can be found in Table 1.

#### 114 **Clinical Impression 1**

115         The primary problem for the patient was his decreased tolerance to activity, which  
116 limited his independence with mobility and ADLs. This decreased tolerance needed to be

117 differentiated from his pre and post-operative level of function. As the patient was seen on  
118 POD-one, it was expected he may present with pain, fatigue, and decreased activity  
119 tolerance. Due to his reports of fatigue from chemo-radiation prior to surgery, the SPT believed  
120 the patient was deconditioned prior to his surgery, which may negatively impact his prognosis.

121 Physical therapy in the hospital setting has typically focused on basic mobility to maintain  
122 function, return to baseline mobility, and to assure a safe discharge. The ASER protocol from  
123 Dartmouth College recommends ambulation POD one as well as a PT consultation if the patient  
124 is over age 70.<sup>6</sup> After reviewing literature for acute care physical therapy, it was considered  
125 appropriate to focus on functional activity within the hospital setting.<sup>8</sup> Therefore, the plan for  
126 examination included an assessment of basic functional mobility POD one with a focus on bed  
127 mobility, transfers, ambulation and stairs.

128 The patient was chosen for this case report because in addition to being diagnosed with a  
129 serious disease that required a life-changing procedure, he presented with a prior decline in  
130 function due to his treatment. Furthermore, he was motivated to return home, was compliant with  
131 PT treatment, and had a good support system to encourage his participation with his exercises  
132 outside of PT.

### 133 **Examination – Tests and Measures**

134 Due to ASER protocols and the goals of physical therapy in a hospital setting, an  
135 assessment of functional mobility was completed POD one. Functional mobility as defined by  
136 Spears<sup>9</sup> is an individual's ability to move around in his or her environment, and consists of three  
137 key areas of bed mobility, transfers, and ambulation. There were no standardized tests or  
138 outcome measures used in this case. Results were qualitatively documented in terms of cueing

139 and level of assistance required by the patient to complete tasks. Terminology for his required  
140 level of assistance was based on Scalzitti's<sup>10</sup> definitions and can be found in Appendix 1.

141 The mobility assessment took place in his hospital room, using an ADVANTA-2 med-  
142 surg bed (Hill-Rom, Skaneateles Falls, NY) for bed mobility. A wall saver recliner (Art of Care,  
143 Skaneateles Falls, NY) was used for transfers and his personal two-wheeled rolling walker for  
144 ambulation.

145 Bed mobility was assessed at a zero degree incline and included rolling from supine to  
146 side-lying on both sides, scooting vertically and horizontally, as well as supine to and from sit.  
147 Transfer tasks entailed sit to stand from bed to recliner with a step-pivot using his rolling walker.  
148 The ambulation assessment looked at distance measured in feet, gait pattern, and safety with  
149 assistive device use. Stair use was not assessed on the initial evaluation due to the SPT's clinical  
150 judgment based on the patient's presentation of weakness and fatigue. Strength had been grossly  
151 assessed during the systems review, which revealed global weakness in all extremities.

152 Outcomes from the assessment of functional mobility on the initial evaluation can be  
153 found in Table 2.

## 154 **Clinical Impression 2**

155 The patient presentation during the initial examination was consistent with the initial  
156 clinical impression. He had pain and fatigue, consistent with his surgical operation. His reports  
157 of weakness and fatigue prior to surgery were consistent with chemo-radiation side effects.<sup>3,10</sup>  
158 Due to the patient's functional limitations with bed mobility, transfers and ambulation, as well as  
159 his weakness and decreased tolerance to activity, he was still deemed appropriate for this case  
160 report.



161           The patient was admitted to the hospital for a laparoscopic loop sigmoid colostomy  
162 surgery with a diagnosis of stage II adenocarcinoma of the rectum. POD-one, he was examined  
163 by the SPT and was further diagnosed with a gait disorder due to weakness (ICD10 code  
164 R26.89), as well as generalized muscle weakness (ICD10 code M62.81).

165           The patient had a fair but guarded prognosis for several reasons. He had received a  
166 laparoscopic surgery which has shown to reduce recovery time compared to open surgeries.<sup>4,5,12</sup>  
167 He was independent with mobility prior to admission, so it was expected that the patient would  
168 show progress with his strength and mobility as long as there were no medical complications  
169 while in the acute setting. He also had a healthy, supportive wife who would visit daily to learn  
170 his exercises and walk with him outside of his therapy sessions. Due to the minimally invasive  
171 surgery, prior level of independence, support system and early mobility, it was the SPT's clinical  
172 opinion that the patient would regain his functional mobility. Conversely, due to his prior decline  
173 in function and his oral chemotherapy, he may have ongoing fatigue and limited activity  
174 tolerance, which may prolong his recovery. Therefore, the patient would benefit from continued  
175 physical therapy services after being discharged from the hospital. If he was able to manage his  
176 colostomy independently and mobilize safely, a home discharge with home PT could be  
177 considered. However, Balentine et al,<sup>13</sup> have shown that the prognosis for a home discharge  
178 decreases with age regardless of functional status. Because of his previous decline in function,  
179 ongoing treatment, and his wife's lack of 24 hour per day availability, a sub-acute inpatient  
180 rehabilitation (SAR) seemed most appropriate.

181           The plan for additional testing included an assessment of his safety using stairs. This  
182 would take place when the patient could ambulate 200 feet with CGA. His tolerance to activity  
183 would be observed during all PT treatments. There was no acute plan for additional referrals or

184 consultation as he was already being seen by a multidisciplinary team. His long term plan would  
185 include a referral to a SAR.

186         The PT plan of care consisted of a frequency and duration of daily treatments, five days a  
187 week for two weeks. Interventions were to address bed mobility, endurance, strengthening, gait,  
188 energy conservation, patient/family education, functional transfer training, and stair training. His  
189 mobility was assessed during each therapy session and was planned to assess his safety using  
190 stairs when the patient felt ready and the therapist deemed it appropriate. Goals for physical  
191 therapy were based on his limitations during the initial evaluation and can be found in Table 3.  
192 Because the discharge plan was for the patient to go to a SAR, goals were aimed at progress and  
193 safe mobility, but not complete independence.

#### 194 **Intervention**

195         The initial patient presentation, plan of care, and progress were discussed with his  
196 physician, nurses, and discharge planners. Social work was consulted to address his adjustment  
197 to illness. His PT was coordinated with occupational therapy in order to avoid excessive fatigue.  
198 His presentation during each visit was communicated with his nurse and PT discharge  
199 recommendation was communicated with the discharge planner. The initial evaluation and all  
200 treatment sessions were documented electronically in SOAP note format and included a  
201 discharge recommendation.

202         The patient was instructed to be out of bed for all meals, and to walk with nursing after  
203 lunch and dinner. He was educated on his results during the initial evaluation and the  
204 expectations during recovery which included the necessity of his participation during all PT  
205 sessions. His wife was also educated on the exercises that were done, the plan for progression  
206 and the ASER protocol to ambulate at least four times a day. The patient was educated on safety

207 and energy efficient techniques during mobility tasks as well as the importance of changing  
208 positions to maintain skin integrity and to reduce the risk of progression of his stage 1 pressure  
209 ulcers on his sacrum and on the lower cervical spinous processes.

210 The patient was scheduled daily for five days per week for up to two weeks. However,  
211 the patient was discharged from the hospital on POD seven. He required encouragement and  
212 motivation to complete exercises but was compliant with all PT sessions. The interventions were  
213 used to address limitations found during the initial evaluation. They focused on functional  
214 mobility which included bed mobility, transfers, gait, and stair training, as well as therapeutic  
215 exercises for endurance, and strengthening to improve his activity tolerance. Because the  
216 intervention tasks were low in complexity and high in organization, a whole task approach was  
217 used.

218 ADVANTA-2 med-surg bed (Hill-Rom, Skaneateles Falls, NY) was used for bed  
219 mobility. This bed had adjustable rails which the patient could use initially and progress to not  
220 using in order to simulate his home environment. Interventions to address bed mobility included  
221 transitions of supine to and from sit. The patient initially received verbal cues with minimal  
222 assistance from the therapist. After he demonstrated his ability to do this task without therapist  
223 assistance he was progressed to no verbal cues and was further progressed to no use of the rail.

224 Transfer activities focused on sit to and from stand. Initially the patient used his hospital  
225 bed which allowed the height to be adjusted for ease. He was also using a wall saver recliner (Art  
226 of Care, Skaneateles Falls, NY) in order to promote being out of bed. After he no longer needed  
227 physical assistance from the therapist, he was progressed to a Day Bed Sleeper sofa (Art of Care,  
228 Skaneateles Falls, NY) which was lower the ground and only had one arm rest. He was further

229 progressed to a standard folding chair which did not have arm rests. The different seating options  
230 added variability which helped simulate real world situations.

231 All ambulation activities were on a flat, hard floor with the use of the patient's personal  
232 Rolling walker. With no complaints of dyspnea, dizziness or lightheadedness the ambulation  
233 distance was increased daily. After the patient gained some strength and endurance back, stairs  
234 were introduced and remained a part of each PT session.

235 His weakness and decreased activity tolerance were addressed through endurance and  
236 strengthening exercises. Because he was also being treated by occupational therapy, which  
237 focused on his upper extremities, PT exercises targeted his lower extremities. These were  
238 initially seated exercises which were progressed to standing when the patient reported little to no  
239 difficulty with initial exercises. Please see table 4 a detailed report of interventions.

#### 240 **OUTCOME**

241 The patient demonstrated improvement with all functional mobility. He was initially  
242 evaluated on POD one and was discharged from the hospital after five PT treatments on POD  
243 seven. Throughout treatments, he was able to progress his therapeutic exercises, decrease his  
244 required level of assistance and progressively work towards independence. Bed mobility  
245 improved from requiring moderate assistance to being independent. Transfer tasks improved  
246 from requiring minimal assistance to being independent. Ambulation improved from requiring  
247 contact guard assist to supervision. Ambulation distance also improved from 150 feet to 350 feet.  
248 Stair negotiation was unable to be assessed during the initial evaluation due to the patient's  
249 weakness and fatigue. By discharge, he was able to complete nine consecutive stairs with close  
250 guarding. Please see table 2 for the results of outcome measures.

251 At the time of hospital discharge, the patient had met all but one goal. The goal he needed

252 to continue to work on was negotiating stairs, he was discharged at a level of close guarding and  
253 the goal was to be at supervision level. Due to his unmet goal, ongoing fatigue, prior decline in  
254 function as well as his wife's request for the patient to get stronger prior to returning home, he  
255 was discharged to SAR.

## 256 **DISCUSSION**

257 This case report describes the acute PT management for a patient who received a  
258 laparoscopic loop sigmoid colostomy. Through examining the patient POD one, the PT followed  
259 the ASER protocol for early mobility and focused interventions to address limitations in  
260 functional mobility. The patient demonstrated progress in all aspects of functional mobility.  
261 Although this case report outlines the PT management, ASER protocols recommend that post-  
262 surgical recovery use a multidisciplinary team. In this case, the team included nurses, physicians,  
263 discharge planners, a dietician, occupational and physical therapy. The patient was seen for only  
264 five PT treatments and demonstrated progress in all areas of functional mobility. Although PT  
265 focused on his functional mobility, many factors helped this patient recover. He had good  
266 support from his wife and was motivated to return to his prior level of function. He also had the  
267 support and supervision of nurses to monitor his medical status and to assist with tasks. This  
268 provided safety and helped to prevent falls or other complications. Physicians were also available  
269 to adjust medications and monitor medical status. His nutritional status may have also played a  
270 role in his recovery by improving his hydration through intravenous fluids and reintroducing to  
271 solid foods to his diet.

272 In addition to being a post-surgical patient, he also had an ongoing diagnosis of stage II  
273 adenocarcinoma of the rectum. His cancer related fatigue had begun prior to his surgery which  
274 caused him to be admitted in a deconditioned state. This patient had the benefit of following the

275 multidisciplinary ASER protocol and received early mobilization guided by a skilled physical  
276 therapist. However, due to his cancer diagnosis, age, and prior decline in function, a pre-  
277 operative therapy program may have been beneficial for him. Clinicians should continue to  
278 follow the ASER protocol and promote the need for skilled PT during early mobilization. Further  
279 research should examine pre-habilitation to determine how that affects patient outcomes.

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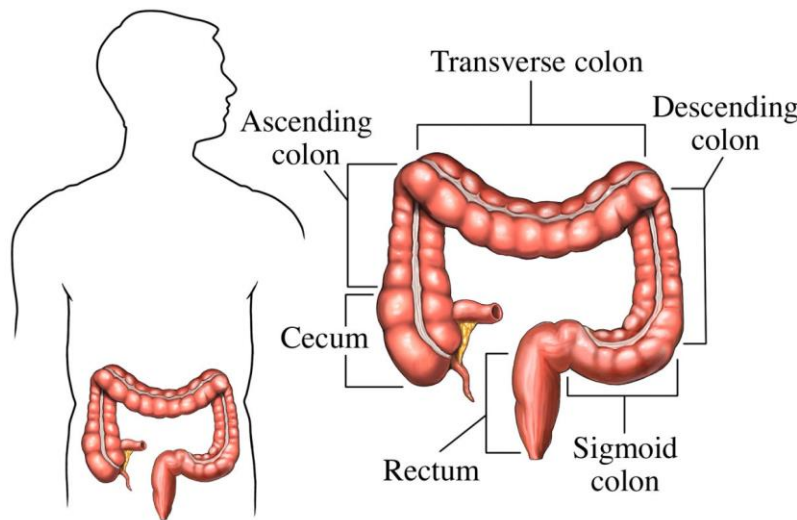
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326 **TABLES and FIGURES**

327 **Figure 1. Anatomy of the Large Intestine**

328



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333

334 **Table 1. Systems Review**

<b>Systems Review</b>	
<b>Cardiovascular/Pulmonary</b>	Pre-hypertension, decreased tolerance to activity
<b>Musculoskeletal</b>	Global weakness
<b>Neuromuscular</b>	Intact
<b>Integumentary</b>	Stoma in Left Lower Quadrant, stage 1 pressure ulcer at C6/7 and sacrum.
<b>Communication</b>	Intact
<b>Affect, Cognition, Language, Learning Style</b>	Alert and oriented, cooperative, good problem solving, good safety awareness, good attention span, preferred demonstration.

335



336 **Table 2. Outcomes**

	<b>Task</b>	<b>Results at Initial Evaluation (POD 1)</b>	<b>Results at Discharge (POD 7)</b>
<b>B E D  M O B I L I T Y</b>	Supine to side lying	I, with use of bed rail	I
	Scotting	Min A, VC to bend knees and lift torso	I
	Supine to sit	Mod A, able to move legs off bed but required assistance with lifting his torso	I
	Sit to supine	Mod A, assistance with leg placement	I
<b>T R A N S F E R S</b>	Sit to stand	Min A, VC to push from the bed	I
	Step Pivot	CGA, with RW	I, RW
	Stand to sit	CGA, VC to reach for chair	I
	Ambulation	CGA, 150 ft, RW step through pattern, on flat level hard surface	S, 350 ft, RW step through pattern, on flat level hard surface
	Stairs	Patient unable to perform	CG, 9 consecutive stairs up and down with bil hand rails.
Verbal cueing= VC; Moderate assistance= Mod A; Minimal assistance= Min A; Contact guard assist= CGA; Close guarding= CG; Supervision= S; Independent= I; Bilateral= bil; Feet= ft; Rolling walker=RW			

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**Table 3. Goals**

<b>Time Frame</b>	<b>Goal</b>	
Short term goals to be met by day three	1. Independent with supine to side lying without the use of the bed rail 2. Supervision for scooting, sit to supine and supine to sit with verbal cueing and use of bed rail. 3. Close guarding for sit to stand, step-pivot, and stand to sit. 4. Ambulate 200 feet four times per day with rolling walker and contact guard assist.	1. Met 2. Met 3. Met 4. Met

Long term goals to be met by day five	<ol style="list-style-type: none"> <li>1. Ambulate 350 feet four times a day with rolling walker and supervision.</li> <li>2. Negotiate nine stairs with supervision and use of bilateral handrails.</li> </ol>	<ol style="list-style-type: none"> <li>1. Met</li> <li>2. Not met.</li> </ol>
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**Table 4. Interventions**

	Intervention	Rx Day 1 (POD1)	Rx Day 2 (POD2)	Rx Day 3 (POD5)	Rx Day 4 (POD6)	Rx Day 5 (POD7)
B M E O D B I L I T Y	Supine to sit	Mod A VC Bed rail x 2	Min A VC Bed rail x 3	S Bed rail x 2	S VC x 3	I
	Sit to supine	Mod A VC x 2	Min A VC x 2	S x 2	S x 2	I
T R A N S F E R	Sit to stand	Min A VC Level 1 x 3	CGA VC Level 1 x 3 Level 2 x 2	CG Level 1 x 2 Level 2 x 2	S Level 1 x 2	S Level 1 x 1 CGA Level 3 x 2
	Stand to sit	Min A VC Level 1 x 3	CGA VC Level 1 x 3 Level 2 x 2	CG Level 1 x 2 Level 2 x 2	S Level 1 x 2	S Level 1 x 1 CGA Level 3 x 2
	Gait	150 ft CGA	200 ft CGA	300 ft CG	350 ft S	350 ft S
	stairs			9 consecutive stairs up and down bil rails, CGA	9 consecutive stairs up and down bil rail CG	9 consecutive stairs up and down bil rails S
T H E R A P E U T	Ankle pumps	x 10 bil	x 10 x 2 bil using light resistance theraband	x 10 x 2 bil using light resistance theraband	d/c	d/c
	Seated knee extension and flexion	x 10 alt	x 10 x 2 using light resistance theraband	x 10 x 2 using light resistance theraband	d/c	d/c
	Seated hip flexion	x 10 alt	x 10 x 2	d/c	d/c	d/c

I C  E X E R C I S E	Glute sets	5 sec hold x 5	10 sec hold x 3	10 sec hold x 3	d/c	d/c
	Mini squats				x 5 x 2 holding on to rolling walker	x 10 x 2 holding on to rolling walker
	bridges				5 sec hold x5	5 sec hold x5
	Side stepping				10 ft x 2 both directions using rail	10 ft x 2 both directions Using rail
<p>Verbal cueing= VC; Moderate assistance= Mod A; Minimal assistance= Min A;  Contact guard assist= CGA; Close guarding= CG; Supervision= S; Independent= I;  Bilateral= bil; Alternating= alt; Feet= ft; Discontinued= d/c  Level 1= ADVANTA-2 med-surg bed (Hill-Rom, Skaneateles Falls, NY) and/or wall saver  recliner (Art of Care, Skaneateles Falls, NY)  Level 2= Day Bed Sleeper sofa (Art of Care, Skaneateles Falls, NY)  Level 3= folding chair  x # = number of repetitions (ex: Level 1 x 3 = level 1 surface with 3 repetitions)</p>						

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344 **APPENDICES**

345 **Appendix 1. Levels of assistance defined by Scalzitti<sup>10</sup>**

<b>Level of assistance</b>	<b>Definition</b>
Independent	Patient can consistently perform the skill safely.
Supervision	Someone is within an arm's reach while the patient performs the task.
Close guarding	Someone is in a ready position to assist but is not touching patient.
Contact guard assist	Therapist is in ready position, touching the patient but not providing assistance.
Minimal assistance	Patient can complete majority of the task without assistance.
Moderate assistance	Patient can complete less than half of the task without assistance.
Maximal assistance	Patient is unable to perform any of the task.

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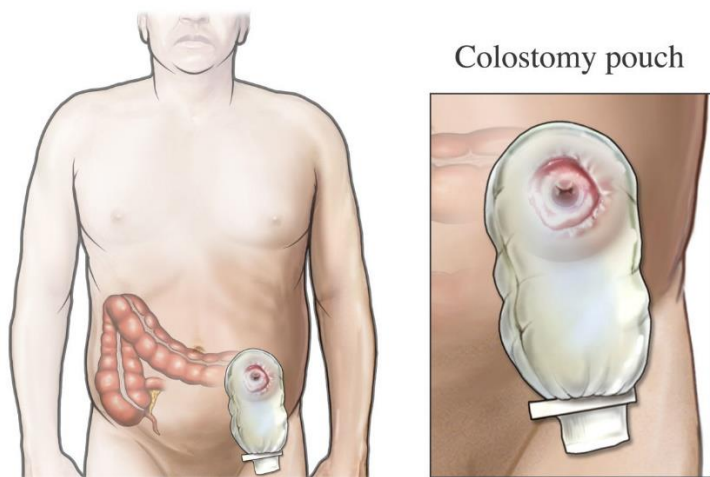
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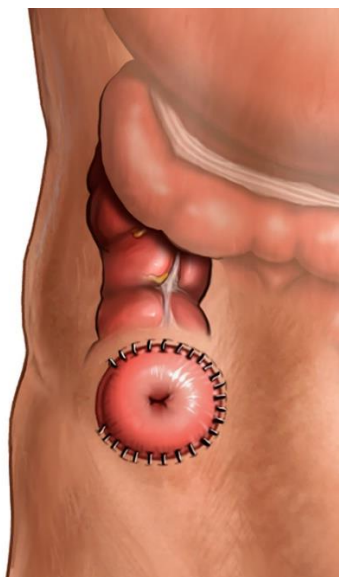
351 **Appendix 2. Colostomy Bag**



352  
353 Nucleus Medical Media. Colostomy Pouch. Smart Imagebase. April 3 2009 10:20 EDT.  
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356

357 **Appendix 3. Stoma**



358  
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360 Available at: [https://ebSCO-smartimagebase-com.une.idm.oclc.org/colostomy-stoma/view-](https://ebSCO-smartimagebase-com.une.idm.oclc.org/colostomy-stoma/view-item?ItemID=2731)  
361 [item?ItemID=2731](https://ebSCO-smartimagebase-com.une.idm.oclc.org/colostomy-stoma/view-item?ItemID=2731). Accessed 31 Oct 2017.