

# Supplementary Material

**Supplementary Table S1      Bowel Status Chart Audit *EXCERPT***

Patient Initials:	
Age:	
Date admitted:	

Stool Quality								
Quality Start: Yesterday	Date 1 – _____	Date 2 _____	Date 3 _____	Date 4 _____	Date 5 _____	Date 6 _____	Date 7 _____	Total Score
1	Loose/ Hard	Loose/ Hard	Loose/ Hard	Loose/ Hard	Loose/ Hard	Loose/ Hard	Loose/ Hard	
2	Pasty	Pasty	Pasty	Pasty	Pasty	Pasty	Pasty	
3	Soft	Soft	Soft	Soft	Soft	Soft	Soft	
4	Semi- formed	Semi- formed	Semi- formed	Semi- formed	Semi- formed	Semi- formed	Semi- formed	
5	Formed	Formed	Formed	Formed	Formed	Formed	Formed	
								Average Quality Score
Size:	Small Medium Large	Small Medium Large	Small Medium Large	Small Medium Large	Small Medium Large	Small Medium Large	Small Medium Large	Average Frequency Score-as detailed below
Frequency Tally								Wk Freq/Score
								0      1
								1      2
								2      3
								3      4
								4      5
								5      5
								6      5
								7      4
								8      3
								9      2
								10      1

For each patient in the study, we noted weekly quality and frequency scores. The Quality was an average (each day a possible score 1-5) and week translated per the table above.

Supplementary Table S2

## Bowel Algorithm

Brain Injury patients ONLY, as per orders

<b>AIM:</b>	<ul style="list-style-type: none"> <li>To have all patients, including those with cognitive deficits, achieve <b>normal bowel function</b>, including absence of constipation, impaction, diarrhea, discomfort, and straining.</li> <li>To be able to identify bowel dysfunction in early <b>stages</b> and respond with <b>timely interventions</b>.</li> </ul>
<b>DEFINITIONS (for protocol purposes):</b>	
<b>Normal bowel function</b>	<ul style="list-style-type: none"> <li>Maintenance of usual sufficient bowel habits; including easy passage of stool (normally soft), and as frequently as is usual or baseline for the individual. In the absence of information about the patient's normal frequency, <b>AIM for <i>at least three bowel movements per week</i></b>.</li> </ul>
<b>Diarrhea</b>	<ul style="list-style-type: none"> <li><b>Liquid stool &gt; 300ml per day OR 3 loose stools</b> per day is considered clinically significant.</li> </ul>
<b>Constipation</b>	<ul style="list-style-type: none"> <li>The <b>absence of bowel movements for three consecutive days</b>. It also includes straining, difficulty passing stool or not having a feeling of incomplete evacuation of stools which may be difficult to ascertain in TBI patients. <b>If the patient has not had a bowel movement (BM) in the last 3 days, action should be taken.</b></li> </ul>
<b>Rectal Exam</b>	<ul style="list-style-type: none"> <li>An exam in which the Physician or Licensed Nurse will insert a gloved finger no more than 2 inches into rectum (this is an assessment and no stimulation should be performed). Feel for anything abnormal (mass of stool or impacted feces).</li> </ul>

**Assessment of Bowel Function**  
(To be completed by Licensed Nurse at least once every 12 hrs)

- Inspection of the abdomen for any signs of *distension*
- Auscultation of abdomen for presence of *bowel sounds*
  - Palpation of abdomen for *tenderness*
- Documentation of *gastric aspirates if PEG tube present*
- If 2 consecutive tube feedings have been held due to high residual, call physician. Laxative order and/or slowed feeding rate is expected intervention, pending an order.

(To be completed by Licensed Nurse or PCA)

- 
- Documentation of *flatus, bowel movement* (quantity and consistency)

- Update plan for bowel management in Bedside report/ hand-off each shift and as needed
- Record bowel movement & Rectal Exam results in IView
- If Diarrhea/Constipation/ Impaction occurs, refer to the appropriate algorithm

## Supplementary Figure 1: Constipation Algorithm Prophylactic Management

### (DAY OF ADMISSION)

- **Perform *bowel assessment*** (inspection-auscultation-palpation-percussion).
- Assess hydration status (skin turgor, I&O, mucous membranes)
- Ask patient or family members:
  - When was last BM?
  - Quality?
  - What was normal bowel pattern for the patient?
  - Does the patient experience nausea and/or vomiting?
  - Ask about prescribed pain medication usage.
- **Assess bowel history** from family and other facility's report and records
- Confirm whether the physician ordered a KUB exam on admit.
- Document the findings of your assessment and refer to the appropriate algorithm.
- **For all Brain Injury Program patients with an algorithm order, proceed to the steps below.**



### DAY 1

- Review medication orders, **Colace- BID**, **Senna x 2 tablets** at **noon** has been prescribed
  - Confirm **Dietary consult** has been ordered



### DAY 2

- **Continue** prescribed bowel regimen (**bowel assessment, treatment, I&O**)



### DAY 3

- **Continue** prescribed bowel regimen (**bowel assessment, treatment, I&O**)

#### IF NO BM

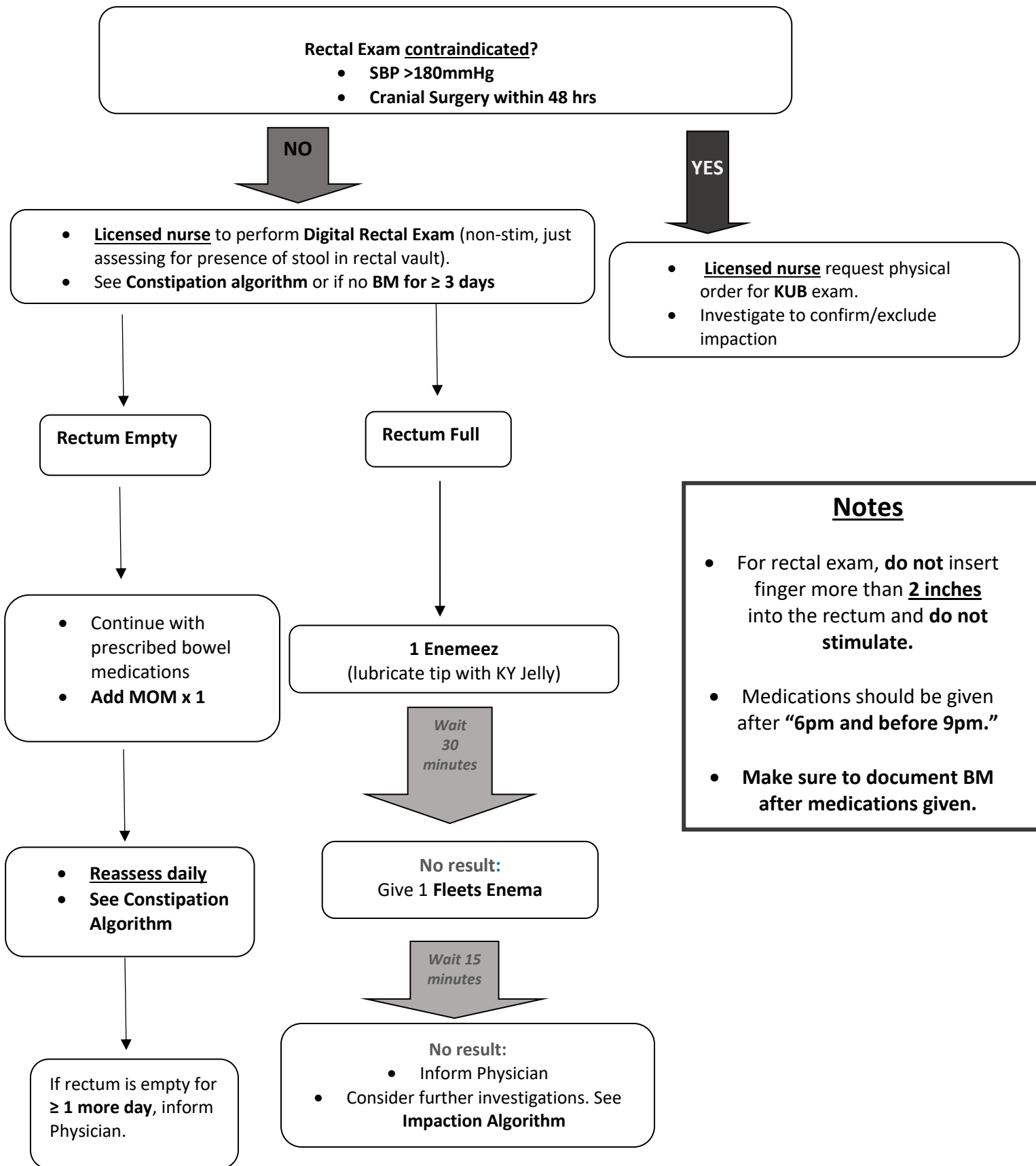
- Physician or Licensed Nurse to perform **\*RECTAL EXAM**, *if not contraindicated*. If Rectal exam is contraindication, request KUB \*See Rectal Exam Algorithm.



After **Positive result** (Bowel movement), resume **Day 1** routine of bowel medications.

**Request** scheduled Dulcolax Suppository if intervention beyond prophylactic program was needed.

## Supplementary Figure 2: Rectal Exam



### **CAUTION: DO NOT USE Repeated or Frequent Fleet enemas (i.e. Sodium phosphate preparations)**

- These agents cause large fluid and electrolyte shifts, particularly of sodium, potassium, calcium and phosphate
  - Concern for dialysis patients. Arrhythmias, collapse, and fatalities have occurred

## Supplementary Figure 3: Impaction Algorithm

### If IMPACTION SUSPECTED:

- **Contact** Physician to **request** order for **KUB** to determine extent of fecal burden.
- Move to the next step **only after KUB** has been discussed

If not contraindicated,  
Perform Digital Rectal Exam  
(rectal vault)

Have Enemas already  
been given?

**NO**

**No result:**  
**1 Dulcolax Suppository**  
(lubricate tip with KY Jelly)

*Wait 1  
hour*

**No result:**  
**1 Enemeez**  
(lubricate tip with KY Jelly)

*Wait 30  
minutes*

**No result:**  
Consider **1 Fleet (phosphate)  
Enema \***

*Wait 15  
Minutes*

**No result:**  
• **Inform Physician**

Next steps are  
informed by  
communication  
regarding KUB  
results

Fecal matter above  
rectum ± in the rectum

Give MOM – **1<sup>st</sup> intervention**

*No  
Need to  
Wait*

**No result:**  
**Give 1 Fleet (phosphate) Enema**  
**\*if not already given recently**

*Wait 15  
minutes*

**No result:**  
**Give SMOG (Saline, Mineral Oil and Glycerine)**

*Wait  
1  
Hour*

**No result:**  
• **Call Physician**  
• Physician may consider surgical review  
(intervention)

**\*CAUTION: DO NOT USE Repeated or Frequent Fleet enemas (i.e. Sodium phosphate preparations)**

- These agents cause large fluid and electrolyte shifts, particularly of sodium, potassium, calcium and phosphate
  - Concern for dialysis patients. Arrhythmias, collapse, and fatalities have occurred

## Supplementary Figure 4: Diarrhea

**FIND:** When was "loose stool" first reported (after admission, last shift?)

Exclude constipation with overflow \*Licensed Nurse Perform Rectal Exam

YES

\*If impaction is noted,

- Call primary physician.
- \*SEE Impaction Algorithm.

NO

No impaction,

- Review history or bowel pattern.

Diarrhea Present?

Criteria for Diarrhea:

- Liquid stools > 300 ml per day OR
- 3 loose stools per day OR
- Risk of contamination of wounds or catheters?

NO

- Continue appropriate Bowel Algorithm.
- **Enteral** fed, continue same rate.
- If orally fed, decrease dietary fiber.

YES

Bowel stimulants or softeners prescribed?

YES

\***Communicate with Physician to consider reducing** - Colace to daily and **hold Senna** until stool consistency/frequency changes.

\***Reassess** - minimum 8 hours

\***Enteral Feed** as tolerated.

- **Assess** in 8 hours, and if Diarrhea continues (per Criteria definition)-
- **Call Physician.**

NO

Patient on any of these **Meds**?

- Metoclopramide
- Quinidine
- Magnesium
- Erythromycin
- A proton pump inhibitor list formulary ones here?

YES

\***Request** - Pharmacist review and consult Physician

\***Enteral Feed** as tolerated.

\***Communicate with Physician about** dietary fiber.

NO

Is patient on **antibiotics**?

YES

\***Call physician** for stool sample collection for **C. Diff**

\***Collect watery stool sample, send to lab**

\***Enteral Feed** as tolerated.

\***Decrease** - oral dietary fiber.

NO

Patient on diet other than Regular?

YES

**CALL DIETICIAN** for diet review.

Is it resolved within 24 hours?

YES

Continue same diet

NO

**Consult Physician** for treatment options

\*Consult Physician for guidance on rate of enteral feeding. Consider decreasing by **10ml/hr** until tolerance achieved and **check hydration status**, with plan to then Increase rate as tolerated.

### CAUTION:

- If potential for contamination of wounds/lines or causing skin breakdown, **request insertion of simple rectal tube to manage diarrhea** volume short-term or bowel management system for long term.
- **Refer** to product information for contraindications of rectal tube use.