Guidelines: Bowel Management for Patients with Neurogenic Bowel Dysfunction

Neurogenic Bowel Dysfunction

'Neurogenic bowel' is the term used to describe dysfunction of the colon due to loss of normal sensory and/or motor control or both, as a result of central neurological disease or damage (trauma). Damage to the spinal cord and brain interrupts the neural pathways and the outcome will vary depending on the location and severity of the damage.

Neurogenic bowel dysfunction (NBD) is a temporary or permanent disruption of bowel function. NBD can be life altering, affecting all aspects of a patient's social, physical and emotional wellbeing. Patients likely to present with NBD are patients with Spinal Cord Injury (SCI), Cauda Equina Syndrome, Multiple Sclerosis, Guillain Barre Syndrome, and some patients with Stroke. NBD can present in any situation where there is interruption of the normal innervation of the bowel.

Purpose of Guidelines:

The purpose of this document is to provide front line health care providers and physicians with guidance to assist and support (empower) patients and their care providers to develop and / maintain a bowel management routine. The goal of the bowel routine is to minimize or eliminate the occurrence of unplanned or difficult evacuations; to evacuate stool at a regular, predictable time within 60 minutes of bowel care; and to minimize gastrointestinal (GI) complications.

Key Messages:

1. Bowel movements are usually a personal and private function. Loss of independence and control of something so private may cause the patient to feel vulnerable. It can be very stressful and elicit a range of emotions including anxiety and grief.
2. The goal of a bowel routine is to minimize or eliminate the occurrence of unplanned or difficult evacuations.
3. It is important to plan a consistent, regularly scheduled bowel routine in collaboration with the patient, as well as their possible caregivers.
4. If a patient with an SCI at T6 (or occasionally T7-8) or above begins to experience signs and symptoms of Autonomic Dysreflexia (AD) during the bowel routine, bowel care should be stopped, and AD resolved before resuming.
5. Bowel routine should be initiated as early as possible in the acute phase of injury to help establish the bowel routine and to prevent complications.
6. An effective bowel routine will need trial and evaluation, close monitoring, and careful adjustments that can take up to months to establish.
7. Bowel management and education is important in supporting the patient in rehabilitation and empowering their independence over time.

Types of NBD: Reflexic (spastic) vs Areflexic (flaccid)

Nearly everyone who experiences a spinal cord injury (SCI) will have some level of NBD. NBD can be classified into two types: reflexic (spastic) neurogenic bowel and areflexic (flaccid) neurogenic bowel.

Reflexic (spastic) NBD is seen with injuries above approximately vertebral level T12. It results in a hypertonic and spastic bowel because the defecation reflex centre, which causes

the involuntary contraction of muscles of the rectum and anus, remains intact. However, the nerve damage results in disruption to the nerve signals and therefore there is an inability to relax the anal sphincters and defecate, often leading to constipation.

Areflexic (flaccid) NBD is typically seen with injuries below approximately vertebral level T12. There is damage to the defecation reflex. There is a significant risk of incontinence due to the atonic or flaccid external anal sphincter and lack of control over the muscle that causes the lumen of the rectum to open. The patient cannot feel the need to have a bowel movement, and the rectum can't easily empty by itself. There is a significant risk of incontinence due to the atonic or flaccid external anal sphincter and lack of control over the muscle that causes the lumen of the rectum to open.

Note: The commonly used terminology upper motor neuron versus lower motor neuron has generally been abandoned for NBD. *(PVA 2020 guidelines)*

After an acute SCI, a patient may initially have an areflexic bowel. Once reflexes return, the bowel may become reflexic. Management of NBD may be required for a short time in reversible syndromes, or may be a permanent part of life going forward for patients with SCI and other irreversible neurological disorders. Bowel symptoms are more severe in patients with complete SCI than in those with incomplete SCI.

Principle of Care

A comprehensive evaluation of bowel function, impairment, and possible problems should be completed by the most responsible health practitioner (MRHP), often a Physiatrist, at the onset of NBD and at least annually throughout the continuum of care.

Starting early bowel management and education is important in supporting the patient in rehabilitation and regaining their independence. A basic bowel management routine should be used in individuals with both reflexic and areflexic NBD during the acute phase of care. It is a treatment plan designed to eventually minimize or eliminate the occurrence of unplanned or difficult bowel evacuations.

Each cycle of bowel care should be scheduled at the same time of day to facilitate habituation. This is important to support the patient in resuming activities such as school, work, leisure and recreation on discharge and transition back to community. Build the plan with the patient. An effective bowel routine will need trial and evaluation, close monitoring, and careful adjustments that can take up to months to establish.

For most individuals with a reflexic (spastic) NBD, a minimum of 3 adequate bowel movements per week is recommended to avoid constipation. For persons with areflexic (flaccid) NBD, a minimum of daily bowel care is typically needed in order to minimize the risk of unplanned bowel evacuations. The ideal frequency of bowel movements per week should factor in an individual's lifestyle and bowel history prior to their SCI.

Patient and Family Education and Engagement

Education for patients with NBD and/or caregivers should be provided and tailored to their level of understanding. It is important to understand what education the patient / family has, and what additional information they need to become confident with managing their bowel routine.

It is important to plan the bowel routine with the patient with NBD, as well as their possible caregivers.

If a patient with an SCI at T6 or above begins to experience signs and symptoms of Autonomic Dysreflexia (AD), the bowel routine should be stopped and AD resolved before resuming.

Persons who live with chronic neurological disorders (including SCI), and have managed their neurogenic bowel are usually the experts in their own bowel care. It is important to consider this expertise when changes are required to their bowel plan. Situations like admission to hospital, health changes, illness, or even normal aging may affect the bowel function or patterns of a person with a neurological disorder (including SCI). Collaborative problem solving between care providers and patients is recommended to find bowel management solutions that work for the patient and their family.

As the patient and care providers learn more about the patient's bowel habits and patient-centered needs and concerns, the bowel routine is expected to be adjusted and adapted over time.

Table 1: Summary of Care: Reflexic (Spastic) vs. Arreflexic (Flaccid) Bowel

	Reflexic (Spastic) Bowel *(previously referred to as upper motor neuron lesion)*	**Areflexic (Flaccid) Bowel** *(previously referred to as lower motor neuron lesion)*
Patho-physiology	• More common in spinal cord injuries or lesions above T12 • Lesion allows for impulses to get to and from the spinal cord, resulting in the presence of bowel reflexes • Patients with reflexic NBD benefit from mechanical and chemical rectal stimulation because the defecation reflex is intact.	• More common in spinal cord injuries or lesions below T12 (cauda equina syndrome) • Lesions in the peripheral nerves block impulses from getting to and from the spinal cord, resulting in the absence of reflexes • Patients with areflexic NBD require manual evacuation of stool because of the absence of the defecation reflex. • May occur in some lesions above T12 during the first days to months after injury, resolving to reflexic bowel with the return of reflex activity.
Characteristics	• Patient does not feel the need to have a bowel movement, but the reflex to have a movement is still intact. • The rectum may evacuate more stool after a bowel movement when the anus is stimulated (ie with cleaning/peri-care)	• The rectum empties at irregular times, especially when the patient is upright (due to gravity) or on movement transitioning from bed to chair, and laying to sitting

Management *start as early as possible Including in acute care*	• This type of bowel can be "trained" to respond to stimulus, although the training can take a long time to develop. • It is recommended that the bowel care occur daily in the acute phase of injury and during the establishment of a bowel routine. As the bowel routine becomes more established and efficient, individuals may choose to decrease their bowel care to a minimum of 3 times a week because of different life considerations. (This usually does not occur until several weeks or months after injury.) • **Mechanical rectal stimulation** is used to trigger anorectal reflexes to increase motility and relax sphincters. (This stimulation can be done with a finger or with an adaptive device.) • **Digital rectal stimulation** is a form of mechanical rectal stimulation that is most commonly used. This procedure may be performed side lying or over a commode. • Digital rectal stimulation is performed by the affected individual or caregiver by placing a gloved, lubricated finger into the rectum and performing slow rotation in a circular movement for no longer than 10 to 20 seconds at a time. Repeat the rectal stimulation sequence every 5 to 10 minutes until evacuation of the stool is achieved. Using additional fingers or excessive dilation has shown no benefit and can contribute to complications. • Having the patient consume food or a beverage 30 minutes prior to bowel care, can stimulate the	• This type of bowel requires more frequent manual evacuation of stool and may not be successful in bowel training. Digital inspection and evacuation of bowels will likely be required two or more times per day, especially in the initial stages. • **Manual evacuation of stool** is indicated as treatment and is performed with the affected individual side-lying in bed or positioned on a padded commode if prescribed to be performed in an upright position. The individual with SCI or caregiver inserts a single, gloved, lubricated finger into the rectum to disimpact and remove stool that is present in the rectal vault. • Manual rectal disimpaction /removal of stool – minimum daily, up to TID after meals • Care note: If there is stool in the rectum when a patient with an areflexic bowel sits upright, gravity may cause that stool to be expelled. If this happens at an unplanned time, it is likely to impact the patient's schedule and rehab, requiring care and cleanup. The rectum should be inspected for stool before the patient is moved to an upright position. • Goal is for stool to be firm (Bristol Type 3). See Appendix C • Once a routine has been established manual evacuation may only need to be performed daily (but may be more often depending on the patient's individual needs)

	gastrocolic reflex, and help facilitate a bowel movement. • Goal is for stool to be soft and formed (Bristol Type 4). See Appendix C.	
Typical routine	see Appendix A	
Complications	• Complications associated with mechanical rectal stimulation include potential for AD (for those at risk), hemorrhoids, abdominal distension, and anal fissures. • If during mechanical rectal stimulation an individual has signs and symptoms of AD, such as bradycardia, cardiac arrhythmia, pounding headache, anxiety, sweating above the level of their SCI, flushing, blurry vision, nasal congestion, and/or piloerection, rectal stimulation should be discontinued immediately. (Lidocaine gel for lubrication is commonly used to reduce the risk of AD episodes caused by mechanical rectal stimulation.)	• Complications associated with manual evacuation of the bowel include: AD (for those at risk), hemorrhoids, and anal fissures.
Changes over time	• Bowel routines will require customization for each patient. The initial plan described above will likely change over the months and years following acquired spinal cord injury according to patient response.	
Medication management *Medications commonly prescribed to facilitate bowel routine (as per SCI order set)*	Bowel will respond to peristaltic stimulants. Bowel training: 1. Daily polyethylene glycol (PEG) 3350 17g packet* daily or QHS 2. Sennosides (Senna)* 1-2 tablets PO daily or QHS Bowel Routine: 1. PEG based Bisacodyl* suppository 10mg 10-15 minutes before planned evacuation (some stool may	Bowel will **not** respond to peristaltic stimulants. Osmotics or lubricant medications to make stool pass more easily through the intestine may be prescribed. 1. Psyllium mucilloid powder 1 packet daily up to TID (Each packet to provide 3.4 g psyllium) *Caution: patients will need appropriate fluid intake to prevent constipation while taking psyllium* 2. Lidocaine 2% gel 5 to 10 mL rectally PRN prior to disimpaction

	evacuate when suppository is inserted.) 2. Lidocaine gel 2% prn for lubrication is commonly used to reduce the risk of AD episodes caused by mechanical rectal stimulation. 3. If bleeding or uncomfortable hemorrhoids with digital stimulation, add Anusol-HC 2.5% cream after bowel movement for 14 days	3. If bleeding or uncomfortable hemorrhoids with manual dis-impaction, add Anusol-HC 2.5% cream after bowel movement for 14 days
Dietary Considerations	• **Water and other healthy fluids**: Fluids are crucial to maintaining a healthy bowel routine. Many other factors will not be effective without taking in enough fluids. Healthy fluids should not include caffeine or alcohol beverages, as these will cause dehydration (unless there are intake restrictions). Patients should be encouraged to avoid dehydration to reduce the tendency to experience constipation. • **Diet**: Fibre plays a key role in establishing a successful bowel routine. A person with a SCI must learn how fibre impacts their bowel routine as well as which foods affect their bowel routine. • Consult a registered dietitian if the patient has poor appetite, poor oral intake, or significant weight changes, or if guidance is required for fluid and fibre intake. • Patients with SCI should not be routinely placed on high-fibre diets. Increases in fibre intake should be done gradually to assess tolerance.	

* medications require an order from an authorized prescriber.

** patients with spinal cord injury and/or at risk of pressure ulcers should never be seated on a commode without appropriate padding or pressure redistribution material between the patient and the seat.

Appendix A: Typical Routine for Management of NBD

Reflexic (Spastic) Bowel	Areflexic (Flaccid) Bowel
• Bowel care is best performed approximately 30 minutes after eating • Bisacodyl suppository (if ordered) 10-15 minutes before planned evacuation	• Bowel care is best performed approximately 30-60 minutes after eating • Psyllium mucilloid powder 1 packet daily up to TID (Each packet to provide 3.4 g psyllium) • Caution, patients will need appropriate fluid intake to prevent constipation while taking psyllium
• If occurrence of pain or history of autonomic dysreflexia (AD) with bowel evacuation, follow AHS AD protocol or obtain an order for application of topical lidocaine 2%* to anus. • Explain procedure and get permission to proceed • Daily AM or PM routine (depending on patient's' schedule): 1. Have patient sitting on **padded** commode**, in sling of mechanical lift, or lying on left side 2. Digital rectal stimulation (for no longer than 10 to 20 seconds at a time); allow stool to evacuate unassisted; repeat every 5-10 minutes X 2 until evacuation of the stool is achieved. 3. Digital disimpaction may be required for any stool that does not evacuate with stimulation alone. 4. Perform this routine even if the bowels have emptied spontaneously earlier in the day • NOTE: simply inserting a suppository and waiting for results without stimulation and manual disimpaction will not likely be effective, and can cause impaction of stool in the rectum • **If patients displays signs and symptoms of AD, stop bowel care. AD is a medical emergency.** Manage AD (See AD protocol) **Caution:** vagal response (syncope) may occur with bowel routine	• Explain procedure and get permission to proceed • Routine should be performed twice per day and prn (eg. prior to getting the patient up in their wheelchair). • If patient having more incontinence—may need to increase frequency of routine. 1. Have patient sitting on padded commode, in sling of mechanical lift, or lying on left side 2. Digitally inspect the rectum for stool 3. If stool is present, remove it by performing digital disimpaction 4. If stool is too hard to remove, consider administering a glycerin suppository* (as per prescriber's orders) into the bulk of stool, then trying to remove stool after 30 minutes. **NOTE:** Incontinence may be more frequent due to areflexic bowel, therefore nursing may need to assess more frequently for incontinence, and provide assistance as required.

Appendix B: Glossary

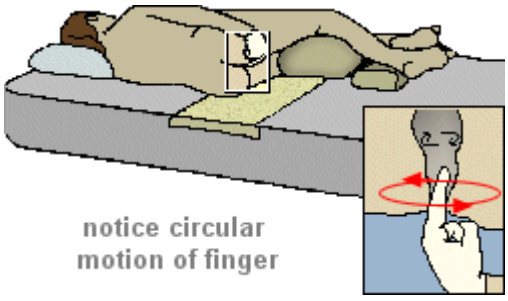
Autonomic Dysreflexia: Autonomic Dysreflexia (AD) is a potentially life-threatening condition that most commonly occurs in patients with a SCI at or above the T6 neurological level; and sometimes in patients with a SCI at level T7-8. AD is a medical emergency that causes a sudden rise in the patient's blood pressure. AD is a usually the result of a noxious stimuli below the level of the spinal cord injury, that the patient with SCI may not be able to feel or is unaware of. Early management includes recognition and removal of the cause of the noxious stimuli. If conservative management is unsuccessful, medical management with anti-hypertensive medication may be required to prevent serious complications. If left untreated, AD may result in serious complications (e.g., stroke, seizure, cardiac arrest, and death).

Bowel Care: is the process of assisted defecation, typically at a scheduled interval, which can include rectal stimulation (chemical, mechanical, or both), manual evacuation of stool, positioning, and adaptive equipment. Mechanical rectal stimulation should be used for individuals with reflexic NBD. Manual evacuation of stool should be used for individuals with areflexic NBD.

Manual Evacuation or Digital Disimpaction: is indicated as treatment for areflexic bowel management and fecal impaction. Performed with the affected individual side-lying in bed or positioned on a padded commode if prescribed to be performed in an upright position. Insert a single, gloved, lubricated finger into the rectum to disimpact and remove stool that is present in the rectal vault.

Mechanical Rectal Stimulation: manual procedures to stimulate bowel evacuation in the setting of reflexic neurogenic bowel dysfunction.

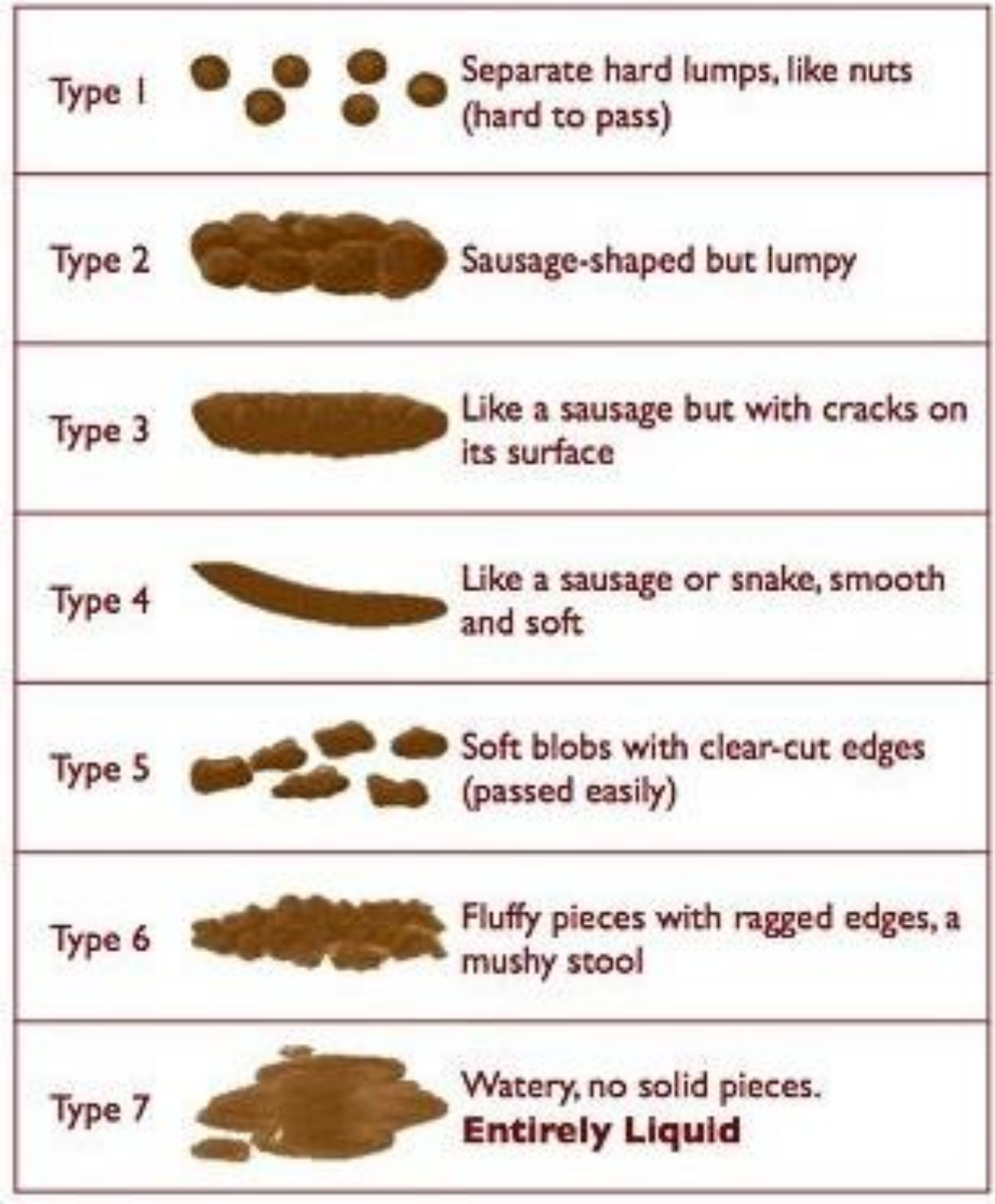
Digital Rectal Stimulation: is a form of mechanical rectal stimulation that is most commonly used for those with reflexic NBD. Insert a gloved, lubricated finger into the rectum and perform slow rotation in a circular movement for no longer than 10 to 20 seconds at a time. Repeat the rectal stimulation sequence every 5 to 10 minutes until evacuation of the stool is achieved. Using additional fingers or excessive dilation has shown no benefit and can contribute to complications.



My Shepherd Connection

Assistive Device (adaptive digital stimulator): Any device that increases the independence of a person with a disability. An example is a digital stimulator, which helps a person with limited hand function to be more independent with bowel care. Also called adaptive device.

Appendix C: Bristol Stool Chart



The Bristol Stool Scale (Heaton et al 1992)

Appendix D: Bowel Management Medications: Tips and Tricks

Medication	Mechanism of Action	Ideal for	Purpose (Prevention, Rescue or Management)	Tips
Bulk Forming Agents				
Psyllium (Metamucil®)	Increases physical bulk of feces, which stimulates peristalsis in normal bowel; promotes growth of health gut flora. Acts within 12- 72 hours.	Patients with loose or liquid stools, or fibre deficit in diet; may be helpful in preventing accidents in patients with flaccid bowel; patients whose stools are difficult to pass	Prevention; Chronic Management Not appropriate for acute bowel impaction	Can cause distention and gas. Can be taken up to TID. Take with a full glass of water; avoid with enteral administration – likely to clog tubing.
Fruit Lax (contains soluble and insoluble fruit fibre)	Osmotic and bulking agent	Patients with fibre poor diets	Prevention; Chronic Management	Take with meals and lots of water, consult a dietitian for frequency. Too much fibre too quickly can cause bloating and cramping
Osmotics and Hyperosmotics				
Polyethylene Glycol (PEG) 3350 (Colyte®) with electrolytes	Draws water into the lumen of the gut, distending the colon with promotes peristalsis; causes abdominal distention and subsequent evacuation of the bowel. Acts within 48 hours.	Patients preparing for bowel procedures	Bowel prep	Reconstitute with water. Makes 4 liters of solution.
Lactulose Oral	Draws water into the lumen of the gut, distending the colon with promotes peristalsis; causes abdominal distention and subsequent evacuation of the bowel. Acts within 24-48 hours.	Chronic or subacute constipation	Prevention or Chronic Management	Max 60 mL per day May cause gas, distension, belching and discomfort in the first week. May take up to 48 hours for results.
Glycerin Suppository Rectal	Osmotic and softens, lubricates. May also stimulate. Acts within 15-60 minutes.	Acute constipation with rectal impaction of stool that is too hard and	Treatment of Constipation	Usually works 15-60 minutes. Patient to stay in side-lying position while

Medication	Mechanism of Action	Ideal for	Purpose (Prevention, Rescue or Management)	Tips
		bulky to pass.		suppository is in place. Try to insert suppository directly into stool.
Tap water enema Rectal	Adds water to stool; causes bowel distention, stimulating peristalsis and expulsion of stool	Only to be used as last resort as bowel prep prior to endoscopy or rectal procedures/ diagnostics.	Not recommended except in bowel prep	Can cause fluid and electrolyte imbalance with repeated administration. Uses 500-1000 mL warm water.
Sorbitol 70% Oral	Adds water to stool; causes bowel distention, stimulating peristalsis and expulsion of stool. Onset of action: 24-48 hours.			Less sweet than lactulose, may cause less nausea.
Saline Laxatives (Osmotics and Hyper-Osmotics containing magnesium or phosphates)				
Sodium phosphate enema (Fleet®) Rectal only	Draws water into the lumen of the gut, creating softer stools, potentially affecting systemic fluid and electrolyte balance. Acts quickly with results usually within 3 to 5 minutes.	Acute constipation	Rescue (Use with caution)	Rectal administration will increase serum phosphorus levels. Don't give more than once in 24 h period. May result in acute kidney injury.
Magnesium hydroxide (Milk of Magnesia®) Oral	Draws water into the lumen of the gut, distending the colon which promotes peristalsis; causes abdominal distention and subsequent evacuation of the bowel Acts in 30 minutes to 3 hours.	Chronic or subacute constipation; only for patients with GFR $\geq$ 30 mL/min	Management	Max dose 60 mL in 24 h; one 30 mL dose contains 2400 mg of elemental magnesium; magnesium toxicity can occur with excessive oral doses. Also helps with symptoms of indigestion/reflux
Magnesium Citrate (Citromag®)	Draws water into the lumen of the gut, distending the colon which promotes peristalsis; causes abdominal distention	Acute Constipation	Rescue	Results within 3 hours. May cause electrolyte imbalance, especially in young children or patients

Medication	Mechanism of Action	Ideal for	Purpose (Prevention, Rescue or Management)	Tips
	and subsequent evacuation of the bowel. Acts within 30 minutes to 3 hours.			with renal insufficiency.
Peristaltic Stimulants *(Give for spastic or non-neurogenic bowel. Will not be effective for flaccid bowel.)*				
Bisacodyl (Dulcolax®) oral	Directly stimulates the colonic mucosa to produce peristalsis. Tablets act in 6 to 12 hours. Suppositories act in 15 minutes to 1 hour.	Give for spastic or non-neurogenic bowel. Will not be effective for flaccid bowel.	Prevention and treatment	Given in the evening to produce a bowel movement in the morning.
Bisacodyl suppository			Routine Maintenance of neurogenic bowel; Rescue for non-neurogenic bowel	Give in the evening to avoid lengthy AM bowel management. Ensure suppository is placed in contact with the rectal wall.
Cascara oral	Irritates the intestinal mucosa; increases motility and alters fluid/ electrolyte secretion.		Management	May cause cramping
Senna oral (Senokot®)	Stimulates neuro-peristaltic response. Acts in 6 to 10 hours.		Prevention and Management	Take with a large glass of water, or large enteral flush.
Soap and water enema	Distends the bowel, increasing peristalsis; irritates/stimulates the mucous membranes of the bowel.	Only to be used as a last resort as bowel prep prior to endoscopy or rectal procedures / diagnostics.	Not recommended except in bowel prep as may cause colonic mucosa irritation	Use the pre-prepared kit/ package or, if no kit available, mix 5 mL mild liquid soap in 1000 mL warm water. Can causes fluid and electrolyte imbalance with repeated administration.
Lubricants				
Mineral Oil Enema	Lubricates stool for easier passing. Acts within 2-15 minutes.	When straining may be painful or dangerous; difficult to pass or very hard stools	Management, Rescue	Usually works within 2-15 minutes.

Medication	Mechanism of Action	Ideal for	Purpose (Prevention, Rescue or Management)	Tips
Medications with a unique mechanism of action to treat constipation				
Methylnaltrexone (Relistor®) injectable	Opioid receptor antagonist that acts upon GI tract to prevent opioid induced decreased GI motility and delay in GI transit time. Acts within 30-60 minutes.	Opioid induced constipation	Rescue (only in those with opioid induced constipation)	Should not be used with other laxatives; Monitor for opioid withdrawal.
Naloxegol (Movantik®) oral	Opioid receptor antagonist that acts upon GI tract to prevent opioid induced decreased GI motility and delay in GI transit time. Acts within 6 to 12 hours.			
Prucalopride (Resotran®)	Serotonin agonist whose action at the receptor site promotes stimulation of peristaltic reflex, intestinal secretions and GI motility. Acts within 2-3 hours	Chronic idiopathic constipation	Management of chronic idiopathic constipation refractory to a 4-week trial of osmotic laxatives; Management of chronic intestinal pseudo-obstruction refractory to other laxatives.	Only indicated for females in Canada

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