

NEUROGENIC BOWEL

Neurogenic bowel dysfunction occurs when the nervous system (autonomic, somatic, central/peripheral) that supports the gastrointestinal system is impaired. (LBMP 2023) The primary goal when treating neurogenic bowel is to achieve social continence and the secondary goal is to achieve the highest level of independence and engagement with a management plan possible according to the individual potential of each person.

Neurogenic bowel dysfunction may be:

- · Complete: resulting in the complete requirement of external management support to achieve social continence.
- Partial: in which a patient may have variable physiological ability for GI/bowel function resulting in the use of some external management strategies.
- <u>Transitional</u>: in which nerve function is moving within a changing continuum throughout time due to the nature of a medical diagnosis. The changes that occur may be related to the progression of disease or healing potential from injury/disease and can be varied.

COMMON CAUSES/PATHOPHYSIOLOGY OF NEUROGENIC BOWEL DYSFUNCTION

- Myelodysplasia/Spina Bifida
- · Sacral agenesis
- · Anorectal malformation (ARM)
- Cerebral Palsy (up to 90% kids with CP suffer constipation and 47% fecal incontinence)
- · Muscular Dystrophies/Mitochondrial Disorders
- Brain injury
- Pelvic injury
- · Spinal cord injury
- Brain/spinal tumor
- · Down syndrome (multifactorial could be considered partially neurogenic)
- · Genetic syndromes with associated hypotonia (multifactorial could be considered partially neurogenic)
- Autism (multifactorial could be considered partially neurogenic)
- Transverse Myelitis
- Guillain-Barre syndrome (bowel dysfunction seen in up to 15% patients)
- Cauda Equina syndrome
- · Acute Disseminated Encephalomyelitis and Meningitis-Retention syndrome

Mosiello 19

Spinal Level	Spinal Level Function
Cervical Spine C5	Elbow flexors, partial upper extremity function
Cervical Spine C6	Wrist extensors, standing with stander/orthotics
Cervical Spine C7	Elbow extensors
Cervical Spine C8	Finger flexors
Thoracic spine T2	Complete upper extremity function
Thoracic spine T3-T8	Standing with stander/orthotics
Thoracic spine T4	Possible exercise ambulation
Thoracic spine T7	Partial flexion trunk muscles
Thoracic spine T9-T12	Exercise ambulation
Thoracic spine T12-S5	Sexual function varies
Lumbar Spine L1	Complete trunk flexion: exercise ambulation, sometimes household ambulation
Lumbar Spine L2	Hip flexor muscles present: exercise ambulation, household ambulation
Lumbar Spine L3	Knee extensors present household ambulation, possible community ambulation
Lumbar Spine L4	Medial knee flexors present, ankle dorsiflexors, 3/5 strength
Lumbar Spine L4-S5	Community ambulation
Lumbar Spine L5	May walk with or without crutches in home
Sacral Spine S1	Hip abductors, 3/5 strength
Sacral Spine S2	Hip extensors 4/5 strength, ankle, PF, 3/5 strength. May walk with or without crutches
Sacral Spine S2-S4	Bowel and bladder function varies. Bladder: parasympathetic input from the pelvic nerve. Somatic input from pudendal nerve to urethral sphincter.
Sacral Spine S3	All muscle activity may be within normal limits
Sacral Spine S5 and above	Be aware of signs and symptoms of shunt malformation and tethered spinal cord

Level of involvement	of Functional independence level for bowel rement management plan participation			
C1–C5	Total assist. Able to give verbal direction to caregivers based on cognitive abilities			
C6–C8	Partial to total assist			
T1–S5	Modified independent to fully independent with bowel management plan task completion			

Source: Consortium for Spinal Cord Medicine. (1999, July). Outcomes Following Traumatic Spinal Cord Injury: Clinical Practice Guidelines for Health-Care Professionals. Retrieved 2016, from Paralyzed Veterans of America (pva.org):

http://www.pva.org/site/c.ajIRK9NJLcJ2E/b.8907633/k.4A9/PDFs_Clinical_ Practice_Guidelines_CPGs.htm.9

• Areflex	ic bowel = L1 and below
0	Decreased/No anal reflex
0	Absent bulbo-anal reflex
0	History of injury or damage to conus
	medullaris or cauda equina at or
	below L1 vertebra
Reflexie	c bowel = T12 and above
0	Anal reflex present
0	Bulbo-anal reflex present
0	History of injury or damage to spinal
	cord and/or brain at or above T12
	vertebra
Source: Lifesp Association. A	an Bowel Management Protocol. Spina Bifida pril 2023. <u>www.spinabifidaassociation.org</u>

Source: https://www.spinabifidaassociation.org/resource/sb-the-spine/





Neurogenic Bowel Management Clinic/ Spina Bifida Clinic Pathway

Protocol Neurogenic B	owel Clinic visits
New consult	 Spina Bifida diagnosis: first clinic medical and rehab visits are recommended within the first 3 months of life/new diagnosis. Other neurogenic bowel diagnoses: first clinic visit recommended as referral received. May be for new diagnosis or known diagnosis. Will initiate care at any age Goal: Initiate education of neurogenic bowel and related needs shortly after birth (at first clinic visit)
Planned follow-ups: Regular return to clinic visits are recommended throughout the lifespan. It is important to regularly assess any medical needs and/or bowel management plan needs that change over time with growth and development.	 See complex care pediatrician and BB rehab at planned return to clinic visits. Cadence of return visits are recommended according to age and developmental needs and are typically at a 3, 6, 9, or 12 month cadence. If current bowel management plan is successful, then no BB Rehab is needed beyond regular return to clinic visits If current bowel management plan requires modifications/support, then BB Rehab treatment is recommended
Procedure, change in medical status, change in bowel management plan needs	 If current bowel management plan is successful, then no BB rehab is treatment needed If current bowel management plan requires modifications, then BB Rehab treatment is recommended

Neurogenic Bowel Management Multidisciplinary Team

- Providers directly managing neurogenic bowel
 - o Complex Care Pediatrician
 - Pelvic health: Bowel Bladder Rehab
- Providers providing additional medical management within multidisciplinary clinic model as appropriate
 - o Neurosurgery team
 - o PM&R
 - o Orthopedics
 - o Nurse team
 - PT: Gait and Mobility



Neurogenic Bowel Management Clinic (NBC)/ Spina Bifida Clinic Pathway



- Patient/family/rehab satisfied with daily management protocol: family to continue with maintenance plan. No active rehab treatment recommended.
- Patient/family/rehab not satisfied with daily management protocol: establish active rehab treatment plan.
- Follow up as recommended by rehab/Complex Care Pediatrician.

REHAB

GUIDELINE

Disclaimer: This guideline is designed for general use with most patients; each clinician should use their own independent judgment to meet the needs of each individual patient. This guideline is not a substitute for professional medical advice, diagnosis or treatment.



Outpatient Rehab Pathway

Provider referral to Outpatient Pelvic Health Bowel Bladder Rehab (PHBB) services:

- · Requires orders from medical provider, reason for referral
- Outpatient PH Bowel Bladder Rehab services are an appropriate referral for neurogenic bowel patients when they would benefit from a higher frequency of rehab and/or longer duration of rehab visits to meet specific goals.
- May be appropriate to first establish neurogenic bowel management plan in neurogenic bowel management clinic (NBC) and then refer to Outpatient Pelvic Health Bowel Bladder Rehab
- May be appropriate to be directly referred to OPBB Rehab

BB Rehab Provider will collaborate with referring medical provider regarding any oral/rectal route medication titration needs (see pages 7-18 for resources)

BB Rehab frequencies: Outpatient

- Week 1-6 up to 2x/week
- Week 7-10 up to 1x/week
- · Week 11 and beyond: reducing frequency to EOW/ monthly/ quarterly checks

Monitor progress, modify rehab frequency recommendations as appropriate

Successful as established:

- Patient/family independent with maintenance rehab plan
- Constipation and incontinence management plan are stable
- Achieved social continence
- Musculoskeletal training complete
- Toileting task training complete
- · Establish any return to clinic orders if appropriate

Education Complete: Patients and families understand the long-term follow- up needs required with lifetime management of neurogenic bowel. Important patients and families understand red flags for non-urgent, urgent, and emergent situations to reach out for medical and/or rehab support



TYPICAL DEVELOPMENTAL STAGES

Skill	Task	Age (in years) 90% has mastered skill
	Indicates when wet/soiled	2.0–2.5
	Manages toilet, clothing management	3.0–3.5
Toileting	Takes self to bathroom, distinguishes need to void vs. eliminate	3.0–3.5
. enemig	No bowel accidents	3.5–4.0
	Dry day and night	4.5–5.0
	Thoroughly wipes	6.0–6.5
	Don/doff elastic waist pants	3.0–3.5
	Don/doff pull on shirt	3.5–4.0
Dressing	Removes and unfastens all clothing	4.5–5.0
	Dons and fastens all clothing	5.5–6.0

Skill	Task	Age (in years) 90% has mastered skill
Grooming	Washes/dries hands thoroughly	4.0–4.5
	Unsupported sitting: toilet	2.0–2.5
	On/off low potty	3.0–3.5
Iransters	On/off toilet: arms	3.0–3.5
	On/off toilet: no arms	6.0–6.5
	Moves between rooms with no difficulty	1.0–1.5
Locomotion	Opens/closes doors	3.0–3.5
	Walks up/down full flight of stairs without difficulty	3.0–3.5

Haley, Coster, Ludlow, Haltiwanger and Andrellos, 1992



TYPICAL DEVELOPMENTAL STAGES

with Myelodysplasia (80th percentile)

Skill	Task	L2 and above	L3, L2–L4	L4–L5	S1 and below
Grooming	Washes hands - no help	9 yrs	6.5 yrs	6.75 yrs	5.25 yrs
Dressing	Removes pants	10 yrs	8 yrs	6.33 yrs	5.5 yrs
	Dons pants	12.5 yrs	11.33 yrs	7 yrs	5.75 yrs
	Pull on garment	10 yrs	8 yrs	6 yrs	6 yrs
	Shirt with buttons	11.25 yrs	6.5 yrs	7 yrs	6 yrs
	Removes braces	9.25 yrs	9.25 yrs	7 yrs	8.5 yrs
	Full dressing self (except difficult snaps)	10 yrs	10 yrs	9 yrs	7 yrs
Personal awareness	Asks about routine bodily functions	7 yrs	5.66 yrs	4.83 yrs	4.5 yrs

Sousa, Telzrow, Holm, McCartin and Shurtleff, 1983

*This table may not be relevant for patients who received fetal repair of myelodysplasia since this is based on older research.



List of bowel management interventions listed from least to most invasive (LBMP 2023)

Oral Medications*

Digital rectal stimulation**

Suppositories**

Enemas**

Cone/balloon large volume enema

Transanal irrigation system (Peristeen, Navina, Aquaflush)

Antegrade enemas (Mace, Cecostomy, other)

Pouched fecal diversion (ileostomy, colostomy)

Source: Lifespan Bowel Management Protocol. Spina Bifida Association. April 2023.

*Oral agents alone generally don't improve continence but may assist with relieving constipation and improving stool consistency.

** These treatments are generally more effective in individuals with reflexic bowels since they take advantage of the anorectal reflex. Most individuals with spina bifida have areflexic NBD and will not find success with these treatments alone.



Rates of independence for individuals in the National Spina Bifida Patient Registry for the following types of bowel management interventions listed below Source: Lifespan Bowel Management Protocol. Spina Bifida Association. April 2023. <u>www.spinabifidaassociation.org</u>

		% independent	% independent	% independent
Selected management	Overall, regardless of age (%)	5- to 11-year- olds	12- to 19-year- olds	20 years old and older
Suppositories 23%		6%	34%	58%
Standard rectal 26% enemas		<10% 38%		38%
Cone/balloon large volume enemas	21%	10%	37%	45%
Transanal irrigation system*	13%	<5%	<25%	<65%
Antegrade enemas	49%	22%	54%	69%

*Transanal irrigation system options: Peristeen, Navina (Wellspect), Aquaflush



MEDICAL MANAGEMENT

Physician:

- · Create written Plan of Care (POC) for team to follow as appropriate
- · Order diagnostics as needed:
 - KUB, anorectal manometry, endo-anal ultrasound, barium enema MR proctogram, Electromyography, MRI/CT, colonoscopy (rare)
 - Sensation Testing/Level of Innervation
- · Treatment options as appropriate single or combination:
 - Oral route medication orders
 - Rectal route medication orders
 - PHBB rehab consults with MD regarding medication dosing approvals regarding titration
 - Orders and letters of medical necessity for Transanal irrigation system (Peristeen, Navina Wellspect)
 - Surgical options: referral by physician
 - Antegrade enemas (MACE, ACE, Cecostomy, etc)
 - Pouched fecal diversion (colostomy, ileostomy)
- · Orders for rehab, dietitian or any additional medical services
- · Orders for equipment/supplies as necessary
- Physician within Spina Bifida Clinic is providing long-term complex medical care for patients with Spina Bifida diagnosis. Place referral if not already established.

(Newman, 2012) (Mosiello 2021) (LBMP 2023)

Dietitian:

- Consult prn to provide recommendations and education to patient/caregivers
- Caloric needs
- Dietary needs
- Fiber

Nursing:

- Inpatient
- Support daily stool output tracking
- Support daily toileting plan with cares and education
- Skin cares and management



REHABILITATIVE MANAGEMENT

Pelvic Health: Bowel and Bladder Rehabilitation (Occupational and Physical Therapists with Advanced PHBB Competencies)

Rehab Education:

- Neurogenic systems; typical anatomy/function; age-appropriate function:
 - Pelvic floor musculature
 - o Urinary system, bladder function
- GI system
- Constipation
- Nutrition concepts to support regularity, motility, gut health, constipation
- Hydration concepts to support healthy bowel and bladder system function
- Bladder irritants as related to healthy bowel and bladder system function
- Equipment/Supply options for support

Logging information:

Intake/Output to guide creation and modification of toileting plans

Training:

- · Voiding/elimination schedule
- Task analysis for specific management program including bathroom analysis, ability to assemble supplies, cleaning up supplies, hand hygiene, assessment adaptation to tasks as necessary
- ADL skill level of assist specific to clothing management and hygiene. Ability to access supplies.
- Transfers/sitting balance
- · Wiping/skin care
- Toileting posture

- Constipation management with titration of medication as directed by primary medical provider medication ranges (including but not limited to) bulk forming laxatives, fiber therapy, osmotic laxatives, saline laxatives, magnesium supplements, stimulant laxatives, fecal softeners, enemas, rectal laxatives
 - Daily management and intermittent dis-impaction/clean out considerations
- Core strengthening
- · Postural stability
- Visceral mobilization/tissue mobilization/manual therapy/scar mobilization
- Breathe control and coordination as it relates to posture, GI function, voiding/elimination function
- Collaboration with bowel management care medical provider (physician or nurse practitioner) to assist with function of management options including: Digital stimulation, Manual evacuation, Bulb syringe, Balloon enema, Cone enema, Transanal irrigation, ACE (bowel surgery) as needed
- Assessment for adaptations and adapted equipment/supplies and tools as necessary
- Anal manometry, rectal balloon training, biofeedback training as appropriate

BOWEL MANAGEMENT INTERVENTION CONSIDERATIONS

- Manual evacuation
- Diet
- Timing
- voiding/elimination
- Soft tissue and visceral manipulation
- Posture training
- Rehab techniques: mobility, strength
- Environmental supports
- Equipment management

- Oral/rectal medications
- Suppositories
- Enemas
- Large volume enemas
- Transanal irrigation
- Antegrade irrigation (surgery)
- Pouched fecal diversion colostomy/ileostomy (surgery)



GENERAL REHABILITATION SERVICES

General Rehab referrals to OT, PT, SLP are made if patients with neurogenic bowel are appropriate for multidisciplinary rehab care. OT, PT, SLP have base competencies in providing ancillary support to patients with neurogenic bowel. Plan of care recommendations will vary depending on patient status and rehab setting (inpatient, outpatient, or neurogenic bowel management clinic).

Occupational Therapy (OT):

- · Any appropriate interventions within OT scope of practice
- Examples of interventions that may directly support patients with NB
 - Assess and treatment interventions to improve hand function for toileting or bowel management tasks
 - UE ROM and/or strength to support toileting or bowel management tasks
 - o ADL Skill completion
 - o Feeding needs as it relates to bowel function/constipation
 - Interoception and sensory regulation techniques related to goals

Physical Therapy (PT):

- · Any appropriate interventions within PT scope of practice
- Examples of interventions that may directly support patients with NB
 - Static and dynamic postural control to support toileting or bowel management tasks
 - LE ROM and/or strength to support toileting, bowel management tasks
 - o Transfers/transitions for toileting access and participation
 - o Functional mobility for toileting access and participation

Speech Therapy (SLP):

- · Any appropriate interventions within SLP scope of practice
- Examples of interventions that may directly support patients with NB
 - o Executive function for task management
 - Expressive/Reception language related to toileting or bowel management tasks
 - Communication support related to toileting or bowel management tasks
 - o Cause and effect to support goals



TYPES OF ADAPTIVE EQUIPMENT

- Folding frame or fixed frame
- Self-propulsion or attendant propulsion
- Tilt-in-space commode
- Custom-made pressure-reducing foam seat with vinyl cover
- Smaller or extended aperture

- Padded/custom backrest/ seatrest
- Toilet ring
- Arm rests
- Headrest
- Handles

- Leg rests
- Anti-tip bars
- Easy wipe
- Toilet aid/self-wipe
- Bottom Buddy[™]
- Adaptive clothing

- Transfer board
- Mechanical lift
- Reacher
- Mirrors
- Reducer ring
- Digital bowel stimulator/ suppository inserter

EQUIPMENT BASED ON LEVEL OF INJURY

C1–C4	 Mobile shower commode with custom padded seat Arm supports, head rest/support Lateral supports Tilt-in-space
C5–C6	Mobile shower commode with custom padded seatPotential need for seat-to-back resting angle or arm rests
C7–C8	 Mobile shower commode with custom padded seat Full or partial side cutouts for access Adaptive equipment (i.e., suppository inserter)

T1-L1	 Mobile shower commode with custom padded seat with full or partial side cutouts for access Padded toilet seat Over-toilet aid with padded seat
L1-S5	 Mobile shower commode with custom padded seat with full or partial side cutouts for access Over-toilet aid with custom padded seat

ACI State Spinal Cord Injury Service, 2014; Galant and Victor, 2016



BOWEL MEDICATIONS: BOWEL MAINTENANCE MEDICATION

*Please note, this dosing is unique to patients with neurogenic bowel and may differ from dosing recommendations for patients without neurogenic bowel

Medication (Brand name if applicable)	Drug Class	Age or Weight	Dosing	Onset of Action	Comments/Notes
Polyethylene	Osmotic	< 18 months	Oral : 2–4 g (½ to 1 tsp) daily	24–96 hours	Mix every 8.5 g powder in 120 mL (4 oz) of liquid. While the powder may dissolve in less liquid, the liquid is necessary for optimal
		18 months to 3 yrs	Oral : 8.5–12 g (2 to 3 tsp) daily		
(GlycoLax)		3 yrs and older	Oral : 8.5–17 g (2 to 4 tsp) daily		Net recommended in actients loss than 10 km
		Adolescents and Adults	Oral: 17 g (1 heaping tablespoon or 1 capful) daily		Not recommended in patients less than TO kg
Bisacodyl	Stimulant Laxative	< 2 years	Rectal: 5 mg (1/2 suppository) once daily	6–12 hours	Do not split, crush, or chew oral tablet. Patient
(Dulcolax)		2 to 10 years	Oral : 5 mg (1 tablet) once daily Rectal : 5 mg (½ suppository) once daily	(oral) 15–60 min (rectal)	must be able to swallow tablets to receive oral formulation.
		>10 years	Oral : 5–15 mg (1–3 tablets) once daily Rectal : 10 mg (1 suppository) once daily		Nausea, vomiting, abdominal cramps
Docusate Sodium	Stool	< 3 years	Oral : 10–40 mg (1–4 mL) per day in 1 to 4 divided doses	12–72 hours	Oral liquid is bitter *Enemeez Plus (docusate 283 mg + benzocaine 20 mg) may be considered for patients ≥12 years with painful bowel movements, autonomic dysreflexia or hemorrhoids, as it contains benzocaine as a local anesthetic
(Colace) - Oral	Soldener	3 to 5 years	Oral: 20–60 mg (2–6 mL) per day in 1 to 4 divided doses		
(Enemeez) - Rectal		> 5 years	Oral: 40–150 mg (4–15 mL) per day in 1 to 4 divided doses		
(DocuSol Kids) - Rectal		< 2 years	Rectal: 10-40 mg per day using enteral liquid product		
		2 to < 6 years	Rectal: 100 mg (5 mL) once daily		
		> 6 years	Rectal: 283 mg (283 mg/5 mL enema) 1 to 3 times daily*	2–15 min	
Glycerin	Osmotic Laxative	Neonates	Rectal : One half (½) pediatric suppository once daily Rectal : 2.8 g (4 mL) once daily	15–30 min –	If a child has weak external sphincter tone, caregivers may need to manually hold buttocks cheeks together for better retention
(Fleet Liquid Glycerin Suppository) (Fleet Pedia-Lax Liquid Glycerin Suppository) (Pedia-Lax)		1 month to <6 years	Rectal : 1 pediatric suppository once daily Rectal : 2.8 g (4 mL) once daily (pediatric enema)		
		≥6 years	Rectal: 1 adult suppository once daily		
Lactulose	Osmotic Laxative	Infants and Children	Oral : 1–2 g/kg (1.5–3 mL/kg) per day in 1 or 2 divided doses	24–48 hours	Flatulence, abdominal cramps
(Kristalose)		Adolescents and Adults	Oral : 10–20 g (15–30 mL) once daily		For all ages, maximum daily dose is: 40 g/60 mL



BOWEL MEDICATIONS: BOWEL MAINTENANCE MEDICATION

*Please note, this dosing is unique to patients with neurogenic bowel and may differ from dosing recommendations for patients without neurogenic bowel

Medication (Brand name if applicable)	Drug Class	Age or Weight	Dosing	Onset of Action	Comments/Notes
Linaclotide	Osmotic/ Stimulant	6 to <12 years	Oral: 72 mcg (1 capsule) once daily	1 week	Give at least 30 minutes before 1 st meal
(Linzess)	Laxative	≥12 years	Oral: 72 mcg, 145 mcg, or 290 mcg once daily		Typically requires Prior Authorization for Outpatient Coverage
Magnesium Citrate	Osmotic Laxative	2 to <6 years	Oral: 60–90 mL in 1 or 2 divided doses	0.5-6 hours	Hypermagnesemia, hypotension, respiratory depression
		6 to <12 years	Oral: 90–210 mL in 1 or 2 divided doses		
		≥12 years	Oral: 200–300 mL in 1 or 2 divided doses		
Magnesium Hydroxide	Osmotic Laxative	2 to <12 years	Oral: 80–240 mg/kg (1-3 mL/kg) per day in 1 or 2 divided doses	24–96 hours	All doses should be followed by 240 mL (8 oz) water Hypermagnesemia, hypotension, respiratory depression
(wink of Magnesia)		≥12 years	Oral: 1200–4800 mg (15–60 mL) per day in 1 to 4 divided doses		
Psyllium	Bulk- Forming Laxative	< 6 years	Oral : 1.25–2.5 g per dose and may give 1 to 3 times daily	6–8 hours	Mix powder in 240 mL (8 oz) water or juice
(Metamucil) (Fiberall)					Contraindicated in fecal impaction or GI obstruction
		6 to <12 years	Oral: 2.5–3.75 g per dose and may give 1 to 3 times daily		Use caution with esophageal strictures, liver dysfunction, rectal bleeding, chronic constipation
				_	Abdominal cramps, esophageal or bowel obstruction
		l ≥12 years	Oral: 2.5–30 g per day in 1 to 3 divided doses		
Senna St Sennosides (Senokot) (Ex-Lax)	Stimulant Laxative	1 month to <2 years	Oral: 2.2-4.4 mg (1.25-2.5 mL) once daily	1 week	Nausea, vomiting, abdominal cramping, idiosyncratic hepatitis Syrup may be given with juice or milk or mixed in with ice cream. Senna gummies may be obtained over the counter or online for better palatability.
		2 to <6 years	Oral: 4.4–6.6 mg (2.5–3.75 mL) once daily		
		6 to <12 years	Oral: 8.8–13.2 mg (5–7.5 mL) once daily <i>or</i> 8.6–12.9 mg (1–1.5 tablets) once daily		
		≥12 years	Oral: 8.8–26.4 mg (10–15 mL) once daily <i>or</i> 8.6–25.8 mg (1–3 tablets) once daily		

BOWEL MEDICATIONS: BOWEL DISIMPACTION/CLEANOUT

*Please note, this dosing is unique to patients with neurogenic bowel and may differ from dosing recommendations for patients without neurogenic bowel. For additional information or guidance: https://www.seattlechildrens.org/globalassets/documents/for-patients-and-families/pfe/pe1071.pdf

OPTION #1: POLYETHYLENE GLYCOL-BASED REGIMEN (PREFERRED).

Medication (Brand name if applicable) Drug Cla	Age or V	/eight	Dosing	Onset of Action	Comments/Notes
1) Polyethylene Glycol	Osmo Laxativ	ic <12 years		Oral: 1.5g/kg once daily for 2 days	24–96 hours	Mix 17 g powder in 120–240 mL (4–8 oz) liquid
3350		≥12 years		Oral: 119 g in 1L (34–36 oz) liquid once		
Prescribe Polyethylene Glycol AND 1 Stimulant Laxative (Senna or bisacodyl)						
2a) Senna Sennosides	Stimula Laxati	nt 2 to <6 yea	S	Oral: 4.4–13.2 mg (2.5–7.5 mL) Oral: 4.3–12.9 mg (0.5–1.5 tablets)	6–24 hours	
		≥6 years		Oral: 8.6–17.2 mg (1–2 tablets)		
2b) Bisacodyl	Stimula Laxati	int 2 to 10 yea	S	Oral: 5 mg (1 tablet) once daily Rectal: 5 mg (0.5 suppository) once daily	6–12 hours (oral) 15–60 minutes (rectal)	Do not split, crush, or chew oral tablet
						Nausea, vomiting, abdominal cramps
OPTION #2: MAGNESIUM CITRATE-BASED REGIMEN (ALTERNATIVE OPTION)						
Medication (Brand name if applicable)	Drug Class	Age or We	ght	Dosing	Onset of Action	Comments/Notes
Night Before Bowel Cleanout						
1a) Bisacodyl	Osmotic Laxative	20 to <23 kg		Oral: 5 mg (1 tablet)	6-12 hours	Choose either bisacodyl or senna and administer the dose the night before the planned magnesium citrate cleanout.
- or -		23 to <30 kg		Oral: 10 mg (2 tablets)		
				Oral: 15 mg (3 tablets)		Bisacodyl: Do not split, crush, or chew oral tablet
1b) Senna	Stimulant	20 to <23 kg		Oral: 17.6 mg (10 mL) or 17.2 mg (2 tablets)	6–24 hours	
Sennosides		23 to <30 kg		Oral: 26.4 mg (15 mL) or 25.8 mg (3 tablets)		
		≥30 kg		Oral: 52.8 mg (30 mL) or 51.6 mg (6 tablets)		
Day of Bowel Cleanout						
2) Magnesium Citrate	Osmotic Laxative	notic <6 years		Oral: 2–4 mL/kg in single or divided doses	6–12 hours (oral) 15–60 minutes (rectal)	Alternative weight-based dosing: 2-4 mL/kg for all weights, max of 300 mL.
		6 to <12 years		Oral: 100-150 mL in single or divided doses		
		≥12 years		Oral: 150-300 mL in single or divided doses		Pour magnesium citrate over ice and drink within 30 minutes. Once completed, continue to provide plenty of clear liquids throughout the rest of the day. The goal is to see clear liquid stools several times before resuming a regular diet.

Disclaimer: This guideline is designed for general use with most patients; each clinician should use their own independent judgment to meet

the needs of each individual patient. This guideline is not a substitute for professional medical advice, diagnosis or treatment.

REFERENCES

- 1. Consortium for Spinal Cord Medicine. (1999, July). Outcomes Following Traumatic Spinal Cord Injury: Clinical Practice Guidelines for Health-Care Professionals. Retrieved 2016, from Paralyzed Veterans of America (pva.org): <u>http://www.pva.org/site/c.ajIRK9NJLcJ2E/b.8907633/k.4A9/PDFs_Clinical_</u>Practice_Guidelines_CPGs.htm.
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