Neurogenic Bowel

Although all patients with a spinal cord injury will have a neurogenic bowel, the type and symptoms will depend on the level and completeness of the lesion. Individuals with lesions above T10 vertebral or T12 spinal will have a hyperreflexic bowel, while those with lesions below T10 vertebral or T12 spinal will have an areflexic bowel.

Stool incontinence has a significant social and emotional impact.

Each patient requires an individualised bowel management program that considers timing of bowel movements, diet (e.g., fibre and fluid intake), physical (gastrocolic reflex, abdominal massage) and either a rectal stimulation (hyperreflexic bowel) or a manual evacuation (areflexic bowel) technique.

Most patients will be on chronic laxatives (stool softners, stimulant or osmotic laxatives).

If bowel management routine is ineffective, change 1 element of the management plan at a time to help identify cause and do not change more frequently than every 10-14 days.

Neurogenic bowel is a common reason patients with spinal cord injury have to go to A&E and a common cause of Autonomic Dysreflexia (AD).

Definitions

**Neurogenic Bowel**
A life-altering impairment of gastrointestinal and anorectal function resulting from a lesion of the nervous system that can lead to life-threatening complications such as autonomic dysreflexia (Consortium for Spinal Cord Medicine Clinical Practice Guidelines, p. 8).

**Areflexic Bowel**
A lower motor neuron (LMN) bowel produced by an injury at the sacral segments in which no spinal cord-mediated reflex occurs (Consortium for Spinal Cord Medicine Clinical Practice Guidelines, p. 37).

**Reflexic Bowel**
An upper motor neuron (UMN) bowel produced by a spinal cord injury above the sacral segments in which defecation cannot be initiated by voluntary relaxation of the external anal sphincter (Consortium for Spinal Cord Medicine Clinical Practice Guidelines, p. 37).

Pathophysiology

Hyperreflexic Bowel
The upper motor neuron (UMN) bowel syndrome is characterised by increased colonic wall and anal tones. Voluntary (cortical) control of the external anal sphincter is disrupted and the sphincter remains tight, thereby promoting retention of stool. The nerve connections between the spinal cord and the colon, however, remain intact; therefore, there is preserved reflex coordination and stool propulsion. The UMN bowel syndrome is typically associated with constipation and faecal retention at least in part due to external anal sphincter activity (Stiens et al., 1997). Stool evacuation in these individuals occurs by means of reflex activity caused by a stimulus introduced into the rectum, such as an irritant suppository or digital stimulation.

Areflexic Bowel
The lower motor neuron (LMN) bowel syndrome is characterised by the loss of centrally-mediated (spinal cord) peristalsis and slow stool propulsion. LMN bowel syndrome is commonly associated with constipation and a significant risk of incontinence due to the atonic external anal sphincter and lack of control over the levator ani muscle that causes the lumen of the rectum to open. Stool evacuation usually involves manual evacuation.

Completeness of injury
Those with an incomplete injury may retain the sensation of rectal fullness and ability to evacuate bowels so no specific bowel program may be required. (used with permission from SCIRE)

Signs and symptoms

<table>
<thead>
<tr>
<th>Upper Motor Neuron (UMN) Lesion</th>
<th>Lower Motor Neuron (LMN) Lesion</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Level of lesion</strong></td>
<td>&gt;T10 vertebral or T12 spinal segment</td>
</tr>
<tr>
<td><strong>Colonic transit time</strong></td>
<td>Increased</td>
</tr>
<tr>
<td><strong>External anal sphincter (EAS)</strong></td>
<td>Spastic paralysis</td>
</tr>
<tr>
<td><strong>Sympathetic output</strong></td>
<td>Absent with lesions &gt; T6 spinal segment</td>
</tr>
<tr>
<td><strong>Symptoms</strong></td>
<td>Constipation</td>
</tr>
<tr>
<td></td>
<td>Difficulty with evacuation</td>
</tr>
<tr>
<td></td>
<td>Incontinence</td>
</tr>
<tr>
<td><strong>Faecal impaction</strong></td>
<td>Proximal colon</td>
</tr>
<tr>
<td><strong>Autonomic dysreflexia</strong></td>
<td>Common with injuries above T6 level</td>
</tr>
<tr>
<td><strong>Reflex defecation</strong></td>
<td>Present</td>
</tr>
</tbody>
</table>

Additional symptoms of neurogenic bowel include:

- Abdominal distension
- Respiratory compromise
- Early satiety
- Nausea
- Evacuation difficulty
- Unplanned evacuations
- Rectal bleeding
- Diarrhoea
- Constipation
- Pain
Management and recommendations

Goals of bowel management

1. Regular and thorough bowel emptying (every 1-2 days)
2. Maintain continence
3. Prevent and treat complications (e.g., constipation, haemorrhoids, faecal impaction, perforation, abscess, Autonomic Dysreflexia (AD))

Guiding principles

- A systematic and comprehensive evaluation of bowel function and impairments is completed at the onset of injury and continues on an annual basis.
- Bowel management starts during acute care and is revised as needed.
- Bowel management program provides predictable and effective elimination and reduces gastrointestinal and evacuation complaints.
- Knowledge, cognition, motor performance, and function are important assessments in determining the ability of the individual to complete a bowel care program or instruct a carer.
- Attendant care needs, personal goals, life schedules, role obligations, developmental needs, and self-rated quality of life are to be considered in the development of bowel care programs.
- Establishing a consistent schedule for defecation, based on factors that influence elimination, preinjury patterns of elimination, and anticipated life demands, is essential when designing a bowel care program.
- Prescriptions for appropriate adaptive equipment for bowel care should be based on the individual’s functional status and discharge environment.
- All aspects of the bowel management program are designed to be easily replicated in the individual’s home and community environments.
- Adherence to treatment recommendations is assessed when evaluating bowel complaints and problems.
- Effective treatment of common neurogenic bowel complications, including faecal impaction, constipation, and haemorrhoids, is necessary to minimise potential long-term morbidities.


Designing a management program
Assessment and initiation of bowel management program (download PDF)

Evaluating bowel management

**Evaluation of bowel care program (download PDF)**


**Troubleshooting**

If bowel management routine is ineffective and regular bowel emptying does not happen regularly (every 2 days), change one element at a time to help identify the cause and do not change more frequently than every 10-14 days. A change in bowel management takes about 10-14 days to be reflected. Make sure to ask patient
about changes in activity as this may impact bowel function (less active = harder stool).

Troubleshooting (download PDF)


<table>
<thead>
<tr>
<th>Problem</th>
<th>Possible Solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stool too soft</td>
<td>• Reduce or stop stool softener or laxative</td>
</tr>
<tr>
<td></td>
<td>• Consider adding fibre supplement to bulk up stool</td>
</tr>
<tr>
<td></td>
<td>• Increase dietary insoluble fibre (e.g., prunes)</td>
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<tr>
<td></td>
<td>• Consider overflow from impaction (rectal exam and/or x-ray to rule out)</td>
</tr>
<tr>
<td></td>
<td>• Check medications (e.g., antibiotics)</td>
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<tr>
<td></td>
<td>• Check for bacterial infection in colon</td>
</tr>
<tr>
<td></td>
<td>• Consider spacing out bowel routine</td>
</tr>
<tr>
<td></td>
<td>• Inquire about dietary changes (e.g., fatty or spicy foods)</td>
</tr>
<tr>
<td></td>
<td>• Ask about psychological stress</td>
</tr>
<tr>
<td>Stool too hard</td>
<td>• Check fluid intake, if adequate consider fibre supplement</td>
</tr>
<tr>
<td></td>
<td>• Add stool softener</td>
</tr>
<tr>
<td></td>
<td>• Check medications (e.g., anticholinergic, narcotic)</td>
</tr>
<tr>
<td></td>
<td>• Consider using a macrogol e.g. Movicol</td>
</tr>
<tr>
<td>Alternating diarrhoea and</td>
<td>May be indicative of higher faecal obstruction</td>
</tr>
<tr>
<td>constipation</td>
<td></td>
</tr>
</tbody>
</table>
### Problem | Possible Solutions
--- | ---
Incontinence prior to planned evacuation time | If stool is too hard or too soft may be the result of ineffective emptying. Change stimulant laxative to later time (i.e. evening). Ask about adherence to bowel care program. Ask about use of laxatives.

Incontinence after evacuation | - Consider incomplete emptying
- Change stimulant laxative to earlier time
- Consider increasing stimulant dose
- If stool too hard, may have longer transit time

Excessive gas or abdominal bloating | Ask about:
- Chewing gum (increases swallowing of air)
- Swallowing air while drinking through a straw or eating
- Snoring
- Consumption of gas-producing foods (high in sugar), beverages (e.g. carbonated drinks) or medications (e.g. Lactulose)
- Changes to tube feeding or intake of artificial sweeteners in food or liquid medications
- Lactose tolerance

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**Laxatives**

Most patients will be on chronic laxatives, which is OK.

We do not recommend bulk-forming laxatives or phosphate enemas due to the risk of bowel perforation.

<table>
<thead>
<tr>
<th>Class</th>
<th>Mechanism of Action</th>
<th>Onset of Action</th>
<th>Available Products</th>
<th>Adverse Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hyperosmotic</td>
<td>Increases bowel water retention, which stimulates peristalsis</td>
<td>2-24h</td>
<td>Lactulose 15-30ml OD-BID</td>
<td>Bloating, flatulence, cramps, diarrhoea</td>
</tr>
<tr>
<td>Class</td>
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</table>
| Osmotic       | Increases bowel water retention, which stimulates peristalsis | 0.5-6h (mag hydroxide) 24-48h (mag sulfate) | - Macrogols (Movicol) ½ -2 sachets OD-BD  
- Magnesium sulfate (Epsom salts) 10-30g OD (dissolve in 240ml water)  
- Sodium phosphates (oral or rectal (Fleet)) 120ml PO OD (dilute in 120ml of water) or 120ml PR | - Nausea, cramping, diarrhoea  
- Magnesium: risk of hypermagnesemia in renal failure  
- Phosphates: risk of hyperphosphatemia in renal failure; decrease absorption of quinolones and tetracyclines (administer at separate times), phosphate enema risk of perforation |
| Stimulant     | Irritate bowel wall which stimulate colonic peristalsis | 0.5h (bisacodyl) 6-12h (senna) | - Senna (Senokot) 2-4 tabs PO QHS  
- Bisacodyl (Dulcolax) 5-10mg PO OD or 10mg PR OD | - Abdominal cramping  
- Melanosis coli (Senna) |
| Softeners     | Surfactant, keeps stool soft                 | 12-72h                     | - Docusate sodium (100-200mg OD-BD) | - Nausea, cramping |
| Lubricants    | Coat stool to prevent colon from reabsorbing water | 6-8h                       | - Glycerin 4-8g PR OD | - Leakage from rectum can cause irritation and pruritus  
- Decreases absorption of fat-soluble vitamins |


**Follow-up**
- Yearly review of bowel management program
- If examination indicated should include: Abdominal palpation, rectal exam to check for tone and anocutaneous and bulbocavernous reflexes
- Consider colorectal cancer screening for patients >50 years of age (FOB test may be very unreliable in...
this population)
- Provide patient with education/resources (e.g. LSCIC Education pack)

References


The Canadian Continence Foundation


Multidisciplinary Association of spinal cord injured professionals (MASCIP) guidelines (2012). Guidelines for the management of neurological bowel dysfunction in individuals with central neurological conditions.


