Abstract Title: Using a decision tree to guide bowel management in spina bifida
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Lecture title  Using a decision tree to guide bowel management in Spina Bifida

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  Credentials: Pediatric Nurse Practitioner, Associate Professor, Nursing at Minnesota State University/Mankato
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  • Discloses a financial relationship with Coloplast, speaker honorarium related to Webinar.
Using a decision tree to guide bowel management in Spina Bifida

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Normal bowel function is:

- A combination of nerves, hormones, bacteria, blood, and the organs of the digestive system - completing the complex task of digesting the foods and liquids a person consumes each day.
- Eliminating what your body doesn’t need.
- All the pieces working together.

Diagram from the International Encyclopedia of Rehabilitation
Understanding Neurogenic Bowel Dysfunction

Neurogenic Bowel Dysfunction results from loss of normal sensory or motor control and may encompass both the upper and the lower gastrointestinal (GI) tract.

- Lack of normal nerve function – lack of bowel motility.
- Lack of normal sphincter function.
- Impaired awareness of full rectal cavity.
Secondary conditions resulting from Neurogenic Bowel Dysfunction

1. Constipation
2. Fecal incontinence
3. Urinary incontinence
4. UTIs
5. Shunt malfunction
6. Potential for skin breakdown
7. Loss of social opportunities
8. Hemorrhoids
9. Anal fissures
Desired Outcomes of Bowel Program

• Maintain healthy bowel function.
• Bowel continence.
• Adequate bowel emptying.
• Maximum participation in society – don’t sit out because of your neurogenic bowel.
• Independence according to individual abilities
Step 1 – Understanding YOUR problem

Keep a bowel tracking record for 3 weeks

• When – time of day
• Where – toilet, diaper, pants
• What – consistency (Bristol Stool Scale)
• How – straining, urgency
• Why – exercise, activity, food triggers, medication
<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Where</th>
<th>What</th>
<th>How</th>
<th>Why</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Toilet</td>
<td>Diaper</td>
<td>Pant</td>
<td>Hard</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>
Decision Tree for Bowel Management

1. Constipation, Bowel Incontinence
   - Yes: Fiber, Fluids, Exercise, Timed Bowel after meals
   - No: Continue high fiber, adequate fluids, and regular exercise
2. Continue healthy eating and regular exercise
   - Yes: Begin 2-fold attack: oral and rectal
   - Oral: Rectal
Step 2 – Dietary Management

• Fiber

• Fluids

• Recognize Food triggers
How much fiber?

<table>
<thead>
<tr>
<th>Age (Years)</th>
<th>Fiber (grams) Male</th>
<th>Fiber (grams) Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-3</td>
<td>19</td>
<td>19</td>
</tr>
<tr>
<td>4-8</td>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td>9-13</td>
<td>31</td>
<td>26</td>
</tr>
<tr>
<td>14-18</td>
<td>38</td>
<td>26</td>
</tr>
<tr>
<td>19-50</td>
<td>38</td>
<td>26</td>
</tr>
<tr>
<td>&gt;50</td>
<td>30</td>
<td>21</td>
</tr>
</tbody>
</table>
Fiber Sources

• Soluble and Insoluble Foods

Fiber supplements
• Fiber gummies
• Fiber capsules
• Psyllium (Metamucil)
• Wheat dextrin (Benefiber)
## Fluids

<table>
<thead>
<tr>
<th>Age</th>
<th>Fluid requirements (cups/day)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
</tr>
<tr>
<td>4-8 yrs</td>
<td>5</td>
</tr>
<tr>
<td>9-1 yrs</td>
<td>8</td>
</tr>
<tr>
<td>14-18 yrs</td>
<td>11</td>
</tr>
<tr>
<td>adult</td>
<td>11</td>
</tr>
</tbody>
</table>

Avoid caffeine – it is a diuretic and will pull more fluids out of your GI tract.
Food triggers - Constipating

- High fat, low fiber
- High starch
- High Protein fiber
Food triggers – Constipation relief

• High fiber
• High water content
• Flaxseed
• Coffee

1 prune = 1gm
1 T ground flaxseed = 2 gm
1 c spinach = 4gm
1 wedge water Melon = 1gm
1 c green beans = 4gms
3 c popcorn = 2gm
1 prune = 1gm
Food triggers – Disaster….

- Chocolate
- Chocolate milk
- High fructose corn syrup
- Greasy foods
- Spicy foods
Decision Tree for Bowel Management

Constipation, Bowel Incontinence

- Yes
  - Fiber, Fluids, Exercise, Timed Bowel after meals
    - No
      - Continue high fiber, adequate fluids, and regular exercise
    - Yes
      - Begin 2-fold attack: oral and rectal
  - No
    - Continue healthy eating and regular exercise

Rectal

Oral
Decision Tree for Bowel Management

PMD/NP/PA

- Glycerin Suppository

Consider Referral

- Enemeez, ducosate sodium, or Bisacodyl

- Continue Glycerin Suppository

- Senna Syrup or Tabs

- Polyethylene Glycol

- Continue Senna
Step 3 - Management for Infants

Oral

- Breastmilk
- Senna (Little Tummy’s Laxative drops, Senokot Syrup)
- If the above fails, then polyethylene glycol (PEG)

Rectal

- Glycerin Suppository

Positioning

- Flex hips and knees toward tummy
Step 3 - Management for Toddlers and Preschool age

**Oral**
- Senna (Little Tummy’s Laxative drops, Senokot Syrup)
- If the above fails, then PEG

**Rectal**
- Glycerin Suppository or
- Enemeez mini enema

**Positioning**
- “Toilet - time” after the evening meal. Be sure feet are resting on ground or step. 15-20 minutes.
### Step 3 - Management for School age and older

<table>
<thead>
<tr>
<th>Oral</th>
<th>Positioning</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Senna (Little Tummy’s Laxative drops, Senokot Syrup)</td>
<td>• “Toilet - time” after the evening meal. 15-30 minutes</td>
</tr>
<tr>
<td>• If the above fails, then PEG</td>
<td>• Position:</td>
</tr>
<tr>
<td></td>
<td>• Sit on toilet and lean forward, resting forearms on thighs</td>
</tr>
<tr>
<td></td>
<td>• Lift heels or place feet on stool</td>
</tr>
<tr>
<td></td>
<td>• Lean forward and grasp ankles</td>
</tr>
</tbody>
</table>

**Rectal**

• Enemeez mini enema
Other oral options

• Osmotic laxatives
  • Magnesium derivatives (mag citrate, Milk of Mag)
  • Lactulose

• Stimulant laxatives
  • Bisacodyl (Dulcolax) or other Senna preps (ExLax, Fletcher’s)

• Stool softeners
  • Ducosate (Colace, Ducosoft)

• Combinations
  • Pericolace, Senna S
Decision Tree

Consider Referral

Yes

- Enemeez, ducosate sodium, or Bisacodyl

No

- Continue Enemeez, ducosate sodium, or Bisacodyl

Yes

- Cone Enema

No

- Continue Cone Enema

Yes

- Transanal Irrigation

No
Step 4 – Cone Enema

- Put 20 ml/Kg. (of the child’s weight) of lukewarm water in the enema bag.
- Hang the bag 5-6 feet high and flush the bag’s tubing with water.
- Lubricate the tip of the cone tip.
- Sitting on the toilet, insert the cone into the rectum. Hold cone in place.
- Open the clamp on the enema bag to allow the water to run in relatively fast (approx. 1-2 minutes).
- Remove the cone tip.
- Vigorously massage the abdomen in a clockwise direction. Make sure feet are supported.
- Remain on the toilet about 10-20 minutes (sometimes takes 30 minutes).
- Wash the cone irrigation tip with soap and water. Store it dry.

Continue any oral medications while advancing to this step.
Potential enema additives

- Glycerin
  - 30mL (2 Tablespoons)
- Baby shampoo
  - 1 tsp per 500mL
- Salt
  - 1 tsp per 500mL
- Bisacodyl enema
- Mineral Oil
  - 10-30mL
Step 5 – Transanal Irrigation
Step 6- Surgical Options

- Cecostomy
- Malone or Antegrade Continence Enema (MACE or ACE), laporscopic
- Sacral Nerve Stim or Modulation
- Colostomy
Cecostomy

Pros
• Two step insertion process usually done in interventional radiology
• Can be done as an outpatient
• Less likelihood of stomal stenosis
• More likely to be independent than with retrograde (cone) enema

Cons
• Potential for leakage around the site
• May have cramping with peristalsis
• If Chait tube used, will need adapter
• Change device every 6-12 months
Malone or ACE

Pros
• Provides benefits similar to cecostomy without external device
• Larger bore catheters – easier administration of volume
• More likely to be independent than with retrograde (cone) enema

Cons
• Surgical procedure
• Potential for leakage around the site
• Requires daily catheterization
• Potential for stomal stenosis
Sacral Nerve Modulation

- A small device is surgically implanted in the buttocks. It's about the size of a stopwatch.
- This device stimulates the appropriate nerves by using mild or moderate electrical impulses.
- Only 3/10 (30%) patients had a more than 50% improvement and proceeded to a permanent sacral nerve modulation implantation (Lansen-Koch et al, 2012).
Colostomy

- Used if need complete continence such as when there is a wound
- Maybe resorted to if bowel obstruction
- Can be reversed but many times a patient is so happy to have continence that it won’t be
Final Tips

- Eat breakfast
- Try to stick to a schedule for eating
- Limit caffeine
- Eat a high fiber diet
- Drink plenty of non-caffeinated beverages
- Make exercise a habit – at the same time each day
- Find the best time of day to have a BM – usually 30 minutes after a meal
Outcomes from one Spina Bifida Clinic

Limitations:
• Small sample size
• Didn’t compare to other factors known to affect neurogenic bowel
• Results with larger sample size did not reflect same results
• Did not record at what point on the decision tree the success usually came
Conclusion

Use of a decision tree allows customizing a bowel management program for each patient while following evidence-based practice guidelines for bowel management.

Outcomes for use of a decision tree need to be studied in larger groups as initial evidence suggests improved bowel continence.
References:


• Guidelines for Management of Neurogenic Bowel Dysfunction in Individuals with Central Neurologic Conditions. Multidisciplinary Association of Spinal Cord Injured Professionals. Developed 2012


