Approach to Constipation

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Definition: Constipation

• No standardized or comparable definition

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Clinical Practice Guideline

Evaluation and Treatment of Constipation in Infants and Children: Recommendations of the North American Society for Pediatric Gastroenterology, Hepatology and Nutrition

• Constipation was defined as a delay or difficulty in defecation, present for 2 or more weeks, and sufficient to cause significant distress to the patient
Two or more findings from table 1 indicate constipation
Rome III Definition

• At least two of the symptoms must be present for at least one month in infants and children up to age four and at least two months in children over four:
  – Two or fewer defecations per week;
  – At least one episode per week of incontinence after the acquisition of toileting skills;
  – History of retentive posturing or excessive voluntary stool retention (over 4 years) or excessive stool retention (under 4 years);
  – History of painful or hard bowel movements
  – Presence of a large faecal mass in the rectum; and
  – History of large diameter stools which may obstruct the toilet

(Hyman 2006; Rasquin 2006)
Definitions

- **Chronic Constipation**
  - Constipation lasting longer than 8 weeks. (NICE Clinical Guideline 2010)
- **Intractable Constipation**
  - Constipation that does not respond to sustained, optimum medical management (NICE Clinical Guideline 2010)
- **Fecal loading**
  - ineffective and **incomplete evacuation** of stools resulting in accumulation of stool in rectum
- **Fecal soiling**
  - involuntary leakage of small amounts of soft or watery stool secondary to faecal loading and rectal distension
- **Encopresis**
  - apparently **willful** passage of normal consistency stool into underclothes or other places.
Epidemiology

• Mostly European studies
• 3% of general paediatric consultations
• 25% of paediatric gastroenterology consultations (Partin 1992)
• Prevalent in 5-30% of children

NASPGHAN CONSTIPATION GUIDELINE COMMITTEE (2006)
Journal of Pediatric Gastroenterology and Nutrition
Vol. 43, No. 3:e1-e13; September 2006
Why Treat Constipation?

- Risk of recurrent urinary tract infections
- Can worsen gastro-oesophageal reflux
- Abdominal cramps, pain and irritability
- Painful anal fissures
Classification of Constipation

- Functional/Idiopathic Constipation
  - No objective evidence of a pathological condition

- Organic Constipation
  - Anatomical malformations
  - Neurological disease etc
Voluntary withholding of faeces

Prolonged fecal stasis in colon

Ongoing fluid reabsorption, increase in size, consistency of stool

Painful passage of large, hard stools

Toilet Training

Change in routine or diet

Stressful events

Too busy

Severe Illness

Refusal to use public toilets
Painful, large stools  
Fear of defecation  
Voluntary Withholding stool  
Enlarging rectal fecal mass – urge to defecate subsides  
Fecal loading and fecal soiling
How many stools are too few?

<table>
<thead>
<tr>
<th>Age</th>
<th>Bowel movements per week&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Bowel movements per day&lt;sup&gt;b&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>0–3 Months</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Breast-fed</td>
<td>5–40</td>
<td>2.9</td>
</tr>
<tr>
<td>Formula-fed</td>
<td>5–28</td>
<td>2.0</td>
</tr>
<tr>
<td>6–12 months</td>
<td>5–28</td>
<td>1.8</td>
</tr>
<tr>
<td>1–3 years</td>
<td>4–21</td>
<td>1.4</td>
</tr>
<tr>
<td>More than 3 years</td>
<td>3–14</td>
<td>1.0</td>
</tr>
</tbody>
</table>


<sup>a</sup>Approximately mean ± 2 SD.

<sup>b</sup>Mean.
Approach to Constipation

Age of patient

< 1 year
Higher prevalence of organic constipation

Older than 1 year
More likely Functional Constipation
Approach in a child >1 year

1. Confirm the presence of constipation
2. Exclude any ‘Red-Flags’ on history and examination (patients needing referral)
3. Initiate treatment
4. Maintain therapy
5. Wean medication
Constipation: Delayed or difficult defecation for > 2 weeks

1. History
   - Physical exam
   - Occult blood (if indicated)

2. Are there any red flags?
   - e.g., fever, vomiting, bloody diarrhea, failure to thrive, anal stenosis, tight empty rectum?

3. Yes
   - Refer

4. No
   - Functional constipation

5. Disimpact with oral or rectal medication

6. Is there fecal impaction?

7. Yes
   - Effective?

8. Yes
   - Functional constipation without impaction

9. Treatment:
   - Education
   - Diet
   - Oral medication
   - Dairy
   - Close follow-up

10. No

NASPGHAN CONSTIPATION GUIDELINES (2006)
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History

• What the family or child means when using the term ‘constipation’

• Onset of constipation
  – Age of onset
  – Delay in passage of meconium eg. Meconium Ileus
  – Duration of symptoms

• Characteristics of symptoms
  – Frequency and consistency of stools
  – Pain or bleeding with passing stools
  – Abdominal pain
  – Fecal soiling may be mistaken for diarrhea by some parents
History

• Potential precipitating factors
  – coinciding with the start of symptoms
  – fissure, change of diet
  – timing of potty/toilet training
  – infections
  – Stressors
    • moving house, starting nursery/school, fears and phobias, major change in family
History

• Diet
  – Assess fluid intake

• Medication
  – Current Medication
  – Chronic Medication

• Developmental History

• Psychosocial History
Examination

• Look for any syndromic or dysmorphic features
• Abdominal exam
  – Distension
  – Palpable fecal mass (LIF, suprapubic)
• Inspection of perianal area
  – Appearance
  – Position
  – Patency
Examination

• Lower limb neuromuscular examination
  – Tone
  – Power
  – Reflexes
  – Gait

• Back and spine examination
  – Dimple
  – Tuft of hair
  – Evidence of sacral agenesis
Constipation: Delayed or difficult defecation for > 2 weeks

1. History
2. Physical exam
3. Occult blood (if indicated)

Are there any red flags?
- e.g., fever, vomiting, bloody diarrhea, failure to thrive, anal stenosis, tight empty rectum?

Yes -> Refer

No

Functional constipation

Disimpact with oral or rectal medication

7. Is there fecal impaction?

Yes

Effective?

Yes -> Functional constipation without impaction

Treatment:
- Education
- Diet
- Oral medication
- Dairy
- Close follow-up

No

Condition

Question

Action
## Red Flags

<table>
<thead>
<tr>
<th>Red Flag</th>
<th>Possible Cause</th>
</tr>
</thead>
</table>
| Constipation present since birth or first few weeks of life | • Hirschprungs Disease  
• Cystic Fibrosis                                                                 |
| Failure to thrive                              | • Malabsorption  
• Cystic Fibrosis  
• Coeliac Disease  
• Hirschsprungs Disease (short segment) |
| Abdominal distension / Vomiting                | • Intestinal obstruction                                                      |
| Bloody stools                                  | • Anal Fissure  
• Intestinal Obstruction  
• Inflammatory Bowel Disease                                                   |
| Lumber Spine abnormalities                     | • Spina Bifida Occulta                                                       |
| • Sacral dimple covered by a tuft of hair      |                                                                                |
| • Midline pigmentary abnormalities of the lower spine |                                                                              |
| • Sacral agenesis                              |                                                                                |
| • Sacral agenesis                              |                                                                                |
## Red Flag

<table>
<thead>
<tr>
<th>Red Flag</th>
<th>Possible Cause</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Perianal</strong></td>
<td>• Inflammatory Bowel Disease</td>
</tr>
<tr>
<td>Fistulae, bruising, multiple fissures</td>
<td>• Spinal cord lesions</td>
</tr>
<tr>
<td>Patulous anus</td>
<td></td>
</tr>
<tr>
<td>Anteriorly displaced anus</td>
<td></td>
</tr>
<tr>
<td><strong>Lower limb abnormalities</strong></td>
<td>• Tethered Cord Syndrome</td>
</tr>
<tr>
<td>Decreased lower extremity tone and/or strength</td>
<td>• Spina Bifida Occulta</td>
</tr>
<tr>
<td>Absence or delay in relaxation phase of lower extremity deep-tendon reflexes</td>
<td></td>
</tr>
<tr>
<td><strong>Abnormal Abdominal Wall Musculature</strong></td>
<td>• Prune Belly Syndrome</td>
</tr>
</tbody>
</table>
Constipation: Delayed or difficult defecation for > 2 weeks

1. History
   - Physical exam
   - Occult blood (if indicated)

2. Are there any red flags? e.g., fever, vomiting, bloody diarrhea, failure to thrive, anal stenosis, tight empty rectum?
   - Yes
     - Refer
   - No

3. Functional constipation:

4. Disimpact with oral or rectal medication
   - Yes
     - Effective?
       - Yes
         - Functional constipation without impaction
       - No
         - Treatment:
           - Education
           - Diet
           - Oral medication
           - Dairy
           - Close follow-up
Diagnosis of Fecal Impaction

• Combination of history-taking and physical examination
• Look for overflow soiling or faecal mass palpable abdominally
• Abdominal radiograph is not indicated to establish the presence of fecal impaction
• Digital Rectal examination
  – Should only be done by a healthcare professional competent to perform a digital rectal examination and interpret features of anatomical abnormalities

Constipation in children and young people (May 2010)
NICE clinical guideline 99
www.nice.org.uk/guidance/CG99
Classification of laxatives

• Osmotic Agents
  – Mechanism of action: Osmotic laxatives are poorly absorbed in the gut. They act as hyperosmolar agents, increasing water content of stool and therefore making stool softer and easier to pass, as well as increasing colonic peristalsis.
  – Macrogol (Polyethylene Glycol)
    • Trade Names:
      – Pegicol
      – Movical
      – Golytely
  – Lactulose
  – Sorbitol

Osmotic and stimulant laxatives for the management of childhood constipation (Review)
Gordon M, Naidoo K
http://www.thecochranelibrary.com
Classification of Laxatives

• Stimulant Laxatives
  – Mechanism: Stimulant laxatives act on the intestinal mucosa, increasing water and electrolyte secretion. They also stimulate peristaltic action
  – Examples:
    • Senna
    • Bisacodyl (dulcolax)

Osmotic and stimulant laxatives for the management of childhood constipation (Review)
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http://www.thecochranelibrary.com
Classification of Laxatives

• Lubricants
  – Mechanism: Softens stool and decreases water absorption. More palatable if chilled
  – Examples
    • Mineral oil
    • Liquid Paraffin

• Bulk Forming Agents
  – Mechanism: bulk-forming agents increase stool bulk. The increased stool bulk then stimulates peristalsis.
  – Examples:
    • Fybogel
Methods for Fecal Disimpaction

- Polyethylene Glycol 3350 (PEG)
  - Macrogol
  - Escalating dose regime

- Add a stimulant laxative
  - If no effect after 2 weeks

- If PEG not tolerated
  - Try Stimulant laxative
  - Can add lactulose or sorbitol

- Alternative is Liquid Paraffin (Mineral Oil)

- Advise starting with a single agent and increasing to maximum effective dose
- If not successful in disimpacting, add a second agent from another class of laxative.
- If refractory fecal impaction present then refer patient

Constipation in children and young people (May 2010)
NICE clinical guideline 99
www.nice.org.uk/guidance/CG99
Functional constipation without impaction

Treatment:
- Education
- Diet
- Oral Medication
- Diary
- Close follow-up

Treatment effective?

Yes

Maintenance therapy

Relapse?

No

- Wean
- Observe

NASPGHAN CONSTIPATION GUIDELINE COMMITTEE (2006)
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Treatment

• Education
  – Education of the family as a whole
  – Explanation of the pathogenesis of constipation
  – Explanation of the mechanism of fecal soiling and remove negative attributions
  – Parents are encouraged to maintain a consistent, positive, and supportive attitude in all aspects of treatment
  – Supportive written information and website information (www.childhoodconstipation.com)
Treatment - Diet

• Adequate fluids

<table>
<thead>
<tr>
<th>Age</th>
<th>Total water intake/day (including water in food)</th>
<th>Water from drinks/day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infants 0–6 months</td>
<td>700 ml assumed to be from breast milk</td>
<td></td>
</tr>
<tr>
<td>7–12 months</td>
<td>800 ml from milk and complementary foods and beverages</td>
<td>600 ml</td>
</tr>
<tr>
<td>1–3 years</td>
<td>1300 ml</td>
<td>900 ml</td>
</tr>
<tr>
<td>4–8 years</td>
<td>1700 ml</td>
<td>1200 ml</td>
</tr>
<tr>
<td>Boys 9–13 years</td>
<td>2400 ml</td>
<td>1800 ml</td>
</tr>
<tr>
<td>Girls 9–13 years</td>
<td>2100 ml</td>
<td>1600 ml</td>
</tr>
<tr>
<td>Boys 14–18 years</td>
<td>3300 ml</td>
<td>2600 ml</td>
</tr>
<tr>
<td>Girls 14–18 years</td>
<td>2300 ml</td>
<td>1800 ml</td>
</tr>
</tbody>
</table>

Treatment - Diet

• Adequate Fibre
• Carbohydrates and especially sorbitol, found in some juices such as prune, pear, and apple juices
Behavior Modification

- Regular toilet habits (retraining of the bowel)
- Unhurried time on the toilet after meals is recommended (scheduled toileting)
- Diaries of stool frequency
- Rewards system (positive reinforcement)
- Advise daily physical activity
- Referral to a mental health care provider
  - Severe behavioral problems
Maintenance Therapy

• Do not use dietary interventions alone as first-line treatment

• Polyethylene Glycol (1st Line)
  Pegicol, Movicol

• Adjust PEG dose to symptoms and response

• Add a Stimulant laxative

• Substitute a stimulant laxative if PEG not tolerated
  • Add lactulose or sorbitol if stools hard

Constipation in children and young people (May 2010)
NICE clinical guideline 99
www.nice.org.uk/guidance/CG99
Maintenance Therapy

• Prolonged use of stimulant laxatives is not recommended
• Maintenance therapy may be necessary for many months
• Relapses are common
Follow Up

• Regular telephonic or face-to-face consultations
• Refer children with functional constipation that does not respond to initial treatment within 3 months
Consult a paediatrician or refer patient

- Re-assessment
- Adherence?
- Re-education
- Different medication?

Response to treatment

- Yes
- Blood tests:
  - T4
  - TSH
  - Calcium
  - Lead

Consult a paediatrician or refer patient

- No

Treatment effective?

- Yes
  - Maintenance therapy

- No

Relapse?

- Yes
  - Wean
  - Observe

- No
  - Consult a paediatrician or refer patient

Treatment:
- Education
- Diet
- Oral medication
- Dairy
- Close follow-up

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Weaning Medication

• Continue medication at maintenance dose for several weeks after regular bowel habit is established

• Children who are toilet training should remain on laxatives until toilet training is well established

• Do not stop medication abruptly:
  – gradually reduce the dose over a period of months in response to stool consistency and frequency
  – Some children and young people may require laxative therapy for several years
Approach to Constipation in a Child
Less than 1 year
Children <1 year

Constipation: Delayed or difficult defecation for > 2 weeks

1. History
   - Physical exam
   - Occult blood (if indicated)

2. Delayed passage of meconium?
   - Yes
     - Rectal biopsy
   - No
     - Hirschsprung disease?
       - Yes
         - Surgical management
       - No
         - Sweat test

3. Are there any red flags? e.g., fever, vomiting, bloody diarrhea, failure to thrive, anal stenosis, tight empty rectum, impaction, distension?
   - Yes
     - Evaluate further
     - Specialty consultation
   - No
     - No

4. Exclusively breast-fed > 2 wk old?
   - Yes
     - Probably normal
   - No
     - Functional constipation

5. Treatment:
   - Education
   - Diet
     (prune, other juices and fruits, fluids, verify formula preparation)

NASPGHAN CONSTIPATION GUIDELINE COMMITTEE (2006)
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## Danger Signs (<1 year)

<table>
<thead>
<tr>
<th>Danger Sign</th>
<th>Possible Cause</th>
</tr>
</thead>
</table>
| • Constipation from birth  
• Failure to pass meconium/delay (more than 48 hours after birth, in term baby) | • Hirschprungs Disease  
• Cystic Fibrosis  
• Intestinal Malformation |
| Changes in infant formula | • Cow’s Milk Protein Enteropathy |
| • Recurrent vomiting (+/- Bile stained)  
• Abdominal Distension | • Intestinal Obstruction (Acute/Sub-acute)  
• Intestinal webs, atresia  
• Malrotation  
• Pyloric stenosis |
Prognosis

- Previous research showed that prognosis is better the earlier the treatment starts after the onset of constipation (van den Berg MM et al.)

- Prognostic factors
  - Presence of a family history and frequency of defecation at presentation do not influence outcome

- 60.6% of the children are free of symptoms after 6 to 12 months

- 49.3% of the children recover and are weaned off laxatives by 6 to 12 months
Conclusion

• No standardised definition for constipation
  – Should include:
    • Stool frequency (<3 stools per week)
    • Symptoms associated with defecation
    • History

• Organic vs Functional Constipation

• Difference in approach to children <1 year and children >1 year
Conclusion

• Exclusion of ‘Red Flags’ on history and clinical exam
  – If ‘Red Flags’ present, do not treat constipation and refer child urgently

• Mainstay of treatment
  1. Confirm Functional constipation
  2. Disimpaction
  3. Maintenance
     • Educate
     • Bowel retraining
  4. Wean medication

• Treatment is often prolonged (months to years) and in some cases, can persist into adolescence
References
Use of Probiotics in Functional Constipation

• Fermented milk containing Bifidobacterium lactis DN-173 010 in childhood constipation: a randomized, double-blind, controlled trial. Tabbers et al.  

• Systematic review of randomised controlled trials: Probiotics for functional constipation. Chmielewska et al.  
  World J Gastroenterology. 2010 January 7; 16(1): 69-75