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Constipation in Children

Amy Tsai, M.D.
Providence Pediatric Gastroenterology
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Conflicts of interest

- No disclosures

Rome III diagnostic criteria for functional constipation

- For a child with a developmental age <4 years
- In the absence of organic pathology, 2 of the following must occur:
  - </= 2 defecations per week
  - At least 1 episode of incontinence per week after the acquisition of toileting skills
  - History of excessive stool retention
  - History of painful or hard bowel movements
  - Presence of a large fecal mass in the rectum
  - History of large-diameter stools that may obstruct the toilet
- Other symptoms may include irritability, decreased appetite, early satiety, which may disappear immediately following passage of a large stool

"Evaluation and Treatment of Functional Constipation in Infants and Children: Evidence-Based Recommendations From ESPGHAN and NASPGHAN." JPGN Volume 58, Number 2, February 2014

Rome III diagnostic criteria for functional constipation

- For a child with a developmental age > 4 years with insufficient criteria for irritable bowel syndrome
- In the absence of organic pathology, 2 of the following must occur:
  - </= 2 defecations in the toilet per week
  - At least 1 episode of fecal incontinence per week
  - History of retentive posturing or excessive volitional stool retention
  - History of painful or hard bowel movements
  - Presence of a large fecal mass in the rectum
  - History of large-diameter stools that may obstruct the toilet.

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Definitions

- Intractable Constipation: Constipation not responding to optimal conventional treatment for at least 3 months.
- Fecal Impaction: A hard mass in the lower abdomen identified on physical examination or a dilated rectum filled with a large amount of stool on rectal examination or excessive stool in the distal colon on abdominal xray

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History

- Age of onset of symptoms
- Success or failure of toilet training
- Frequency and consistency of stools (preferably expressed according to existing stool scales such as the Bristol scale)
- Pain and/or bleeding when passing stools
- Abdominal pain or fecal incontinence (if present, whether it is also nocturnal)
- Withholding behavior
- Dietary history
- Changes in appetite, nausea and/or vomiting, and weight loss

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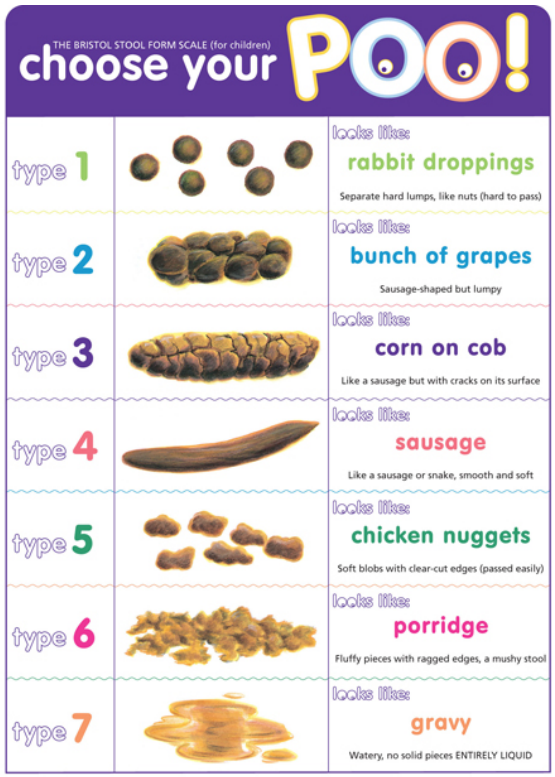
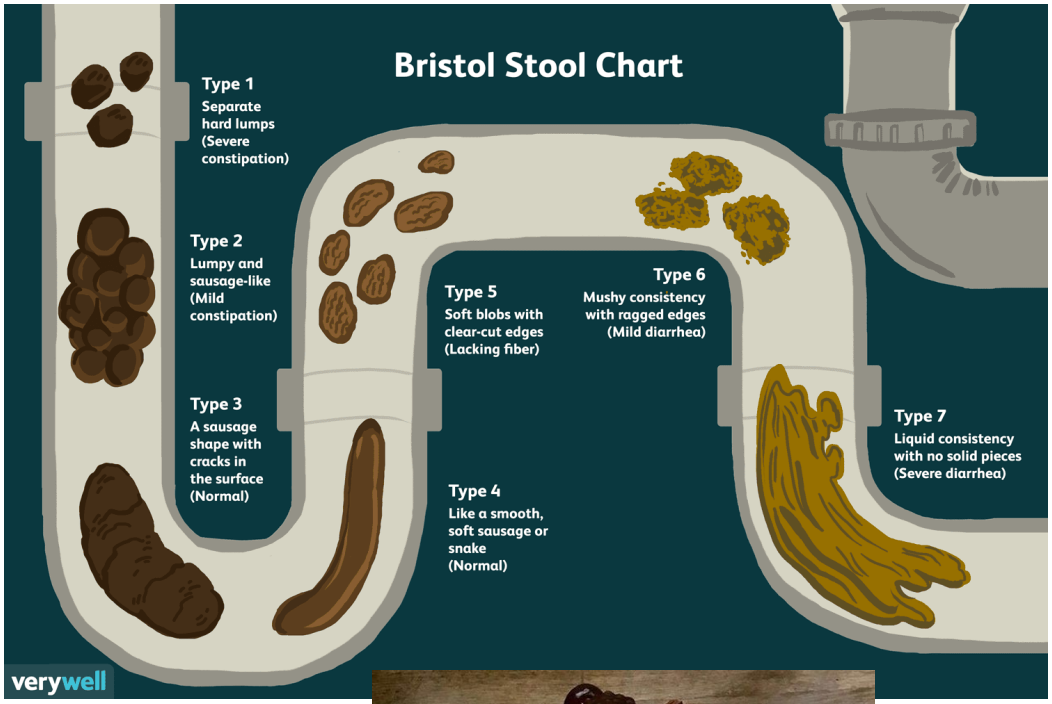
Bristol stool chart





Meconium stools

- Onset of symptoms in infants <1 month old raises the suspicion of an organic condition such as Hirschsprung disease.
- The timing of passage of the first meconium is especially relevant to the risk of having HD.
- Delayed passage of meconium by 48 hours in a term neonate suggests the need for definitive testing to rule out the diagnosis.
- Although 99% of healthy term neonates pass their first meconium before 48 hours of life, 50% of children with HD also pass meconium within 48 hours of birth.
- Thus, the failure of passage of meconium within the first 48 hours of life, although suggestive of HD, does not establish the diagnosis.

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Diet and bowel management

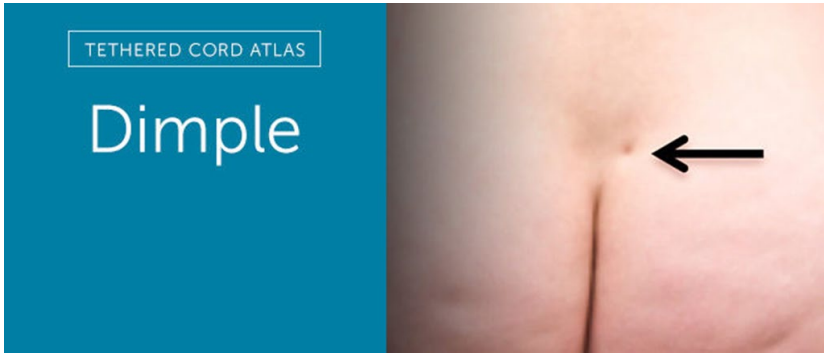
- Evaluate dietary and fluid intake
- Medication history should be collected, including the use of oral laxatives, enemas, suppositories, herbal treatments, behavioral treatment, and other medications.

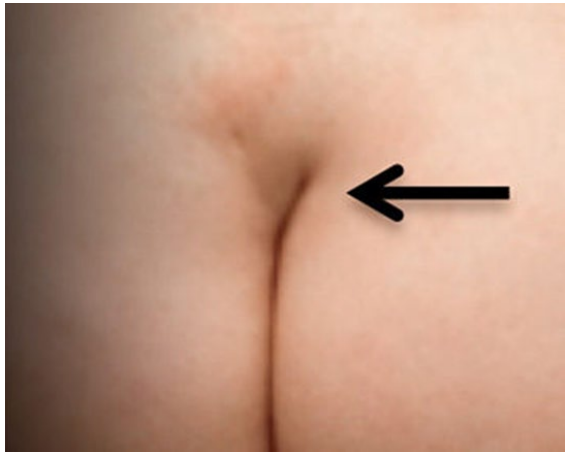
More history

- General development and psychosocial history
- Disruption of child or family life and activities, interaction with peers, and temperament
- Family history: gastrointestinal diseases (HD, food allergies, inflammatory bowel disease, celiac disease, urinary bladder disease), autoimmune disease, thyroid disorder or cystic fibrosis

Physical exam

- Growth parameters
- Abdominal examination (muscle tone, distension, fecal mass)
- Inspection of the perianal region (anal position, stool present around the anus or on the undergarments, erythema, skin tags, anal fissures)
- Exam of the lumbosacral region (dimple, tuft of hair, gluteal cleft deviation, sacral agenesis, flat buttocks)
- Digital rectal examination: anal stenosis, fecal mass or the evacuation of explosive stools after withdrawal of the finger





https://notes.childrenshospital.org/tethered-spinal-cord-early-detection/

Congenital Brain and Spinal Cord Malformations and Their Associated Cutaneous Markers. Pediatrics October 2015, VOLUME 136 / ISSUE 4

https://abdominalkey.com/caudal-regression-syndrome-and-sacral-agenesis/

Physical exam

- Anal and cremasteric reflex
- Lower limb neuromuscular exam including tone, strength, and deep tendons reflexes should be ascertained if a neurological condition is suspected.
- Extreme fear during anal inspection and/or fissures and hematomas in combination with a history of smearing feces should raise the suspicion of sexual abuse.

Alarm signs and symptoms in constipation

- Constipation starting extremely early in life (<1 mo)
- Passage of meconium >48 h
- Family history of HD
- Ribbon stools
- Blood in the stools in the absence of anal fissures
- Failure to thrive
- Fever
- Bilious vomiting
- Abnormal thyroid gland
- Severe abdominal distension
- Perianal fistula
- Abnormal position of anus
- Absent anal or cremasteric reflex
- Decreased lower extremity strength/tone/reflex
- Tuft of hair on spine, sacral dimple, gluteal cleft deviation
- Extreme fear

Differential diagnoses of constipation

- Celiac disease
- Hypothyroidism, hypercalcemia, hypokalemia
- Diabetes mellitus
- Dietary protein allergy
- Drugs: Opiates, anticholinergics, antidepressants, chemotherapy, heavy metal ingestion (lead), Vitamin D intoxication,
- Botulism
- Cystic fibrosis
- HD
- Anal achalasia
- Colonic inertia
- Anatomic malformations
- Imperforate anus
- Anal stenosis
- Pelvic mass (sacral teratoma)
- Spinal cord anomalies, trauma, tethered cord
- Abnormal abdominal musculature (prune belly, gastroschisis, Down syndrome)
- Pseudo-obstruction (visceral neuropathies, myopathies)

Diagnosis

- Evidence does NOT support the use of digital rectal examination to diagnose functional constipation.
- Evidence does NOT support the use of abdominal radiography to diagnose functional constipation.
- Evidence does NOT support the routine use of colonic transit studies to diagnose functional constipation

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Diagnosis

- The evidence is conflicting for allergy testing to diagnose cow's-milk allergy in children with functional constipation.
- A 2 to 4 week trial of avoidance of CMP may be indicated in the child with intractable constipation.
- Do NOT recommend routine laboratory testing for hypothyroidism, celiac disease, and hypercalcemia in children with constipation in the absence of alarm symptoms.

Diagnosis

- Anorectal manometry (ARM) is not recommended as the sole diagnostic tool to diagnose HD in neonates and infants.
- A rectal suction biopsy is the gold standard for diagnosis of HD.
- ARM is a useful screening test in older children presenting with constipation and further symptoms suggesting HD.
- A barium enema should not be performed as an initial diagnostic tool for HD. It does not represent a valid alternative to rectal biopsy or ARM to exclude or diagnose HD, regardless of age.
- A barium enema study can be used to assess the extent of the aganglionic segment before surgery.

Management/Treatment

- Evidence does NOT support the use of:
  - Fiber supplements in the treatment of functional constipation. Normal fiber intake is recommended.
  - Extra fluid intake in the treatment of functional constipation. Normal fluid intake is recommended.
  - Pre- or probiotics in the treatment of childhood constipation
  - Biofeedback as additional treatment is not recommended in childhood constipation
- Expert opinion does recommend demystification, explanation, and guidance for toilet training (in children with a developmental age of at least 4 years) in the treatment of childhood constipation.
- No RCT's for Alternative Medicine (including acupuncture, homeopathy, Mind-Body Therapy, musculoskeletal manipulations such as osteopathic and chiropractic and yoga)-thus not recommended

Management of fecal impaction

- Evidence shows that polyethylene glycol (PEG) and enemas are equally effective for fecal disimpaction.
- PEG is preferred because it can be given orally.
- The use of PEG with or without electrolytes orally 1g to 1.5 g/kg/day for 3 to 6 days is recommended as the first-line treatment for children presenting with fecal impaction.
- An enema once per day for 3 to 6 days is recommended for children with fecal impaction, if PEG is not available.

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Weight-Based Dosing for Miralax Clean-out/Prep

Weight (lb)	Weight (kg)	Capfuls	Fluid (oz)	Sennoside dose
20-24	9-11	2	16	None
25-29	12-13	3	24	7.5mg BID
30-39	14-17	4	32	7.5mg BID
40-49	18-22	5	40	7.5mg BID
50-59	23-27	6	48	15mg BID
60-69	28-31	7	56	15mg BID
70-79	32-36	8	64	15mg BID
80-89	37-40	9	72	15mg BID
90-99	41-45	10	80	30mg BID
100-109	46-50	11	88	30mg BID
110 and above	51 and above	12	96	30mg BID

Maintenance bowel regimen

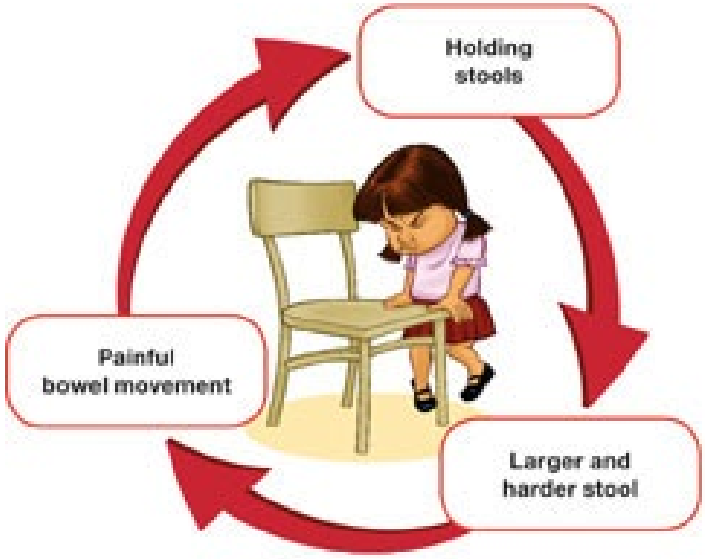
- Evidence shows that PEG is more effective compared with lactulose, milk of magnesia, mineral oil, or placebo.
- PEG maintenance starting dose 0.4 g/kg/day with dose adjusted to clinical response
- More studies have been performed evaluating the effectiveness of lactulose than studies evaluating the effect of milk of magnesia and mineral oil in children with constipation.
- More important, lactulose is considered to be safe for all ages. For these reasons, lactulose is recommended in case PEG is not available
- Enemas are not recommended in addition to chronic use of PEG in children with constipation.

Maintenance therapy

- Maintenance treatment should continue for at least 2 months. All symptoms of constipation symptoms should be resolved for at least 1 month before weaning of laxatives.
- Treatment should be decreased gradually.
- Based on expert opinion, in the developmental stage of toilet training, medication should only be stopped once toilet training is achieved.

Stool withholding behavior

https://Parenting.mountsinai.org



http://Childhealth.com.au

75% behavior modification

25% maintenance bowel regimen

Prognosis of functional constipation

- 50% referred to Peds GI will recover (meaning >/= 3 bowel movements per week without fecal incontinence) and weaned off of laxatives in 6 to 12 months.
- An additional 10% will do well while continuing to take laxatives.
- 50% to 80% of children are recovered after 5 to 10 years and the vast majority will no longer need laxatives.

When to refer

- Fax number: 971-282-0106
- Phone number: 503-216-6050
- Epic code for internal referrals (peds gastroenterologist): REF70J
- Epic code for internal referrals (peds dietitian): REF30H

Questions?

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