

# Pediatric Constipation Primary Care Pathway

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Suspect constipation if child presents with:

- Dry, hardened stools (Bristol type 1 or 2), which may be painful, of large diameter, and/or associated with straining;
- Stools occurring < 3 times per week, except in breastfed infants; and/or
- Excessive stool retention by history or physical exam +/- retentive posturing and fecal incontinence after the acquisition of toileting skills

## 1a. Key history and physical exam

- Symptoms and age of onset
- Assess for growth, behaviour and development
- Systemic exam – if unwell, sick, febrile
- Abdominal, perianal +/- rectal exam
- Spine and neurological exam
- Medication review
- Consider bloodwork/other investigations only if indicated by clinical features or family history

## 1b. Alarm features / red flags

- URGENT assessment in ED if any of the following:
  - Unwell, fever > 38°C, bilious vomiting, severe abdominal distention
- Referral to Pediatric Surgery if any of the following:
  - Ribbon-like stool, abnormal position of the anus, perianal fistula, stenosis
- Referral to Pediatrics if any of the following:
  - Onset < 1 month of age or passage of meconium > 48 hours
  - Blood in stool in absence of anal fissures
  - Malnutrition or hypothyroidism concern
  - Abnormal spinal or lower extremities neurological exam suggestive of spinal abnormalities
  - Developmental delay or behavioural or mental health concerns
  - Anal scars or suspicion of abuse

Provide education, reassurance, reassess in 2-4 weeks.  
No rectal stimulation or laxatives.

## 2. Normal variations in healthy infants?

- Infrequent BMs in exclusively breastfed infant more than two weeks old
- Infant dyschezia (>10 minutes of straining/crying before passage of soft stools)

## 5. Management (< 6 months of age)

- Verify diet/formula preparation (modify intake, as needed)
- If no improvement in 2-4 weeks:
  - First line approach: 100% undiluted prune, pear, or apple juice (if > 4 months) in addition to normal feeding. Start with 2 tbsp and slowly increase as needed to a max of 8 tbsp/day. Reduce dose to minimum required to maintain soft stools.
  - Second line approach: Lactulose (½ g/kg/day) in 1-2 doses
  - Occasional ½-1 pediatric glycerine suppository, if needed
- Once normal stool is established, maintain for 1-2 months, then wean from juice and/or laxatives and observe for 1 month

## 3. Functional constipation diagnosis (Rome IV criteria, see expanded details)

- 2 or more symptoms present for > 1 week (treatment can be initiated earlier)
- Assess triggers and risk factors, including nutrition to guide management

## 4. Management principles

- Family education
- Monitoring, diary of symptoms, and interventions
- Toilet training and behavioural modification (as age appropriate)
- Laxatives (oral route preferred) and fluid intake
- Dietary modifications - not a substitute for laxatives; implement only **after** normal stool patterns are re-established

Seek advice  
or refer to  
Pediatrics

## 6. Is fecal impaction present?

- Assess functional retention by history (large stools that may plug up the toilet, fecal incontinence, and/or incomplete/infrequent evacuation)
- Assess for excessive amount of stool in the colon by abdominal exam

## 7. Bowel cleanout/disimpaction

- PEG 3350 orally 1-1.5 g/kg/day x 3-6 days (until passage of clear, watery stools)
- If PEG ineffective, add oral stimulant (e.g. Senna, Bisacodyl) as additional cleanout agent

\* Rectal therapies are considered second line

Assess in 5-7 days if clean out achieved

## 8. Laxatives and fluid intake

- Initial goal is BM Bristol stool 4-5
- Ensure adequate fluid intake
- PEG 3350: 0.5-1 g/kg/day or
- Lactulose: 1-2g/kg/day in 1-2 doses or
- Mineral oil (lubricant laxative) if painful BMs\*

\* do not use below 1 year of age

Response in 2-4 weeks?

## 9. Maintenance therapy for 6-12 months

- **Essential for long term success**
- Reinforce family understanding of management concepts and the need for long-term intervention
- Maintain laxatives, slowly transition to BM Bristol stool 3-4
- Add dietary modifications

Relapse?

## 11. Optimize management

- Reassess / re-educate
- Query fecal impaction (if yes, return to #7)
- Ensure adherence
- Change laxatives / optimize dosing
- Query behavioural / mental health factors

Non responsive/  
need advice

Seek advice  
or refer to  
Pediatrics

## 10. Wean and observe for 6-12 months

- Decrease laxatives by 25% every 1-2 months
- Reinforce high risk of recurrence and importance of early intervention as needed

[Provider resources](#)

[Background](#)

[Provide Feedback](#)

This primary care pathway was co-developed by primary and specialty care and includes input from multidisciplinary teams. It is intended to be used in conjunction with specialty advice services, when required, to support care within the medical home. Wide adoption of primary care pathways can facilitate timely, evidence-based support to physicians and their teams who care for patients with common low-risk GI conditions and improve appropriate access to specialty care, when needed. To learn more about primary care pathways, check out this [short video](#).

## PEDIATRIC CONSTIPATION PATHWAY PRIMER

- Constipation is the subjective complaint of the passage of abnormal stool: dry, hardened feces that may be accompanied by straining or pain, and/or is less frequent than expected for age.
- Organic causes of constipation are rare in children without any 'red flags' or alarm features. Children presenting with 'red flags' require further evaluation to rule out organic disorders (see [Appendix A](#)).
- Because most cases of pediatric constipation are non-organic, lab investigations are not needed in the absence of red flags.
- Over 95% of childhood constipation is due to disorganized function and interaction of the otherwise normal colon, rectum, or pelvic floor musculature and is classified as "functional."
- **Functional constipation in children has a complex pathophysiology**, as children undergo developmental changes affecting their responses to internal and external stimuli. **As the etiology is unlike the one in adults, it requires different management.**
- In up to 60% of cases, especially among young children, it is caused by voluntary withholding of feces due to fear of defecation (in the anticipation of pain or other triggers) or avoidance. Repeated painful bowel movements establish a pain-retention-pain cycle.
- Some children may not recognize the urge to defecate due to inattention or developmental stage. Chronic rectal distension in functional constipation may also lessen sensation, preventing recognition of rectal fullness with a normal-sized stool.
- Continuing retention can then result in encopresis, due to formed, soft, or liquid stools bypassing the fecal mass ("sneaky poops"), and/or involuntary external sphincter relaxation.
- Management includes education, cleanout/disimpaction, long-term maintenance therapy with oral laxatives, toilet training and behaviour modification, nutrition counselling, and close follow up.<sup>1</sup>
- Management should start right away to prevent chronic constipation which can lead to fecal incontinence, abdominal pain, anorexia, and enuresis; these can affect family dynamics, school/social success, and self-esteem.
- The most frequent reasons for treatment failure include:
  - inadequate family education (triggers, behavioral components, and the expected length of treatment),
  - ineffective clean out, and
  - suboptimal laxative use, including dose and consistent (daily) use for enough time to allow for behavioral changes to be implemented.

## EXPANDED DETAILS

**1 a/b. Key history and physical exam is important to exclude alarm features and red flags** such as a life-threatening bowel obstruction, anatomic abnormalities affecting patency of gastrointestinal tract, neuromuscular disorders that prevent normal gut motility or relaxation of the anal sphincters, or rare disorders of other systems resulting in constipation.

<sup>1</sup> Tabbers MM, DiLorenzo C, Berger MY, Faure C, Langendam M, Nurko S, et al. Evaluation and treatment of functional constipation in infants and children: Evidence-Based Recommendations From ESPGHAN and NASPGHAN. J Pediatr Gastroenterol Nutr. 2014 Feb;58:258–74.

Table 1. Alarm features and red flags requiring referral and further work up

<b>ED</b>	<ul style="list-style-type: none"> <li>• Unwell, sick child</li> <li>• Fever &gt; 38°C</li> </ul>	<ul style="list-style-type: none"> <li>• Bilious vomiting</li> <li>• Severe abdominal distension</li> </ul>
<b>Surgery</b>	<ul style="list-style-type: none"> <li>• Ribbon stools only</li> <li>• Abnormal position of the anus</li> </ul>	<ul style="list-style-type: none"> <li>• Perianal fistula</li> <li>• Anal stenosis</li> </ul>
<b>Pediatrics</b>	<ul style="list-style-type: none"> <li>• Onset &lt; 1 month</li> <li>• Passage of first meconium &gt; 48 hours</li> <li>• Family history of Hirschsprung disease</li> <li>• Blood in the stools in the absence of anal fissures</li> <li>• Malnutrition, abnormal growth pattern</li> <li>• Symptoms of systemic disease/ hypothyroid</li> </ul>	<ul style="list-style-type: none"> <li>• Gluteal cleft deviation</li> <li>• Tuft of hair on spine, sacral dimple</li> <li>• Decreased lower extremity strength/tone/reflex</li> <li>• Absent anal or cremasteric reflex</li> <li>• Developmental delay, behavioral, or mental health issues</li> <li>• Suspicion of abuse, anal scars</li> </ul>

## History

- Bowel obstruction must be ruled out in patients with bilious vomiting, severe abdominal distension, poor feeding, and lack of stools. These patients are usually unwell and may be febrile. They should be redirected immediately to ED for further work up and management.
- Onset of constipation within the first month of life has a higher likelihood of being caused by an underlying disorder or congenital anomaly.
- Passage of first meconium beyond 48 hours after birth and/or family history should raise suspicion of Hirschsprung disease.
- Malnutrition or abnormal growth pattern (weight loss, poor weight gain, abnormal growth velocity, unexplained short stature) suggest an underlying organic pathology.
- Other signs and symptoms that raise suspicion for an underlying disorder include: poor appetite, nausea, and non-bilious vomiting; fever; blood in the stools in the absence of anal fissures; significant abdominal distension; polyuria; polydipsia; dehydration; pulmonary disease; steatorrhea; and rectal prolapse (see [Appendix A](#)).
  - If suspected, these conditions require workup in the medical home or by a Pediatrician.
- Developmental delay, behavioural challenges or mental health concerns (e.g. Autism Spectrum Disorder, ADD, ADHD, Oppositional Defiant Disorder) may affect the child's attention necessary to process defecation signals, and the ability and willingness to respond to body clues. They contribute significantly to defecation disorders and require further work up by a Pediatrician.
- Child maltreatment (e.g. physical, sexual, or emotional abuse) must be ruled out. If maltreatment is suspected, inspect for anal scars. Consult appropriate community resources. The Child Abuse Hotline is available for reporting concerns 24/7 at 1-800-387-5437.
- Trauma, including exposure to civil unrest or war, may also contribute to constipation and other functional GI disorders.
- Consider diet history (features of high processed food, low fibre, low fluid). Diet changes to be reviewed and addressed in the maintenance stage of treatment.

## Physical examination

- Complete a detailed perianal inspection to identify rare anatomic anorectal malformations (see Appendix A for more information).
  - The anal opening should be well-defined, aligned with the ischial tuberosities and in the female located one-third of the distance between the coccyx and the fourchette. In males, the diagnosis is made if the distance from the base of the scrotum to the anal aperture is <46% of the total distance from scrotum to coccyx.

- In the absence of an anal opening, a fistula may be formed that opens anywhere from just anterior to the normal position of the anus to along the median raphe and up to the penile shaft in boys. With a fistula to the urogenital system, meconium staining may be seen at the urethral opening in both boys and girls, and vaginal opening in girls. All require further work up by Pediatric Surgery.
- Digital rectal examination is most valuable if there is an anatomic concern and should be done by a healthcare provider who is comfortable with the assessment and management of anatomical abnormalities that can lead to constipation.
- Neuromuscular etiologies should be suspected with a history of abnormal gait, delayed walking, or any of the following findings on physical exam:
  - Flat buttocks with poorly discernible buttock groove
  - Gluteal cleft that is not straight; deviation may indicate suggest spinal cord anomaly
  - Tufts of hair or abnormal skin dimples over the spine; a shallow midline dimple within 2cm of the anus is normal
- Spinal abnormalities will result in abnormal innervation of lower extremities and perianal area resulting in decreased tone, strength and abnormal deep tendon reflexes of lower extremities, lack of sensation in the saddle area and absence of the anal wink and cremasteric reflex (in boys).

#### Medication review

- Certain medications may cause or contribute to constipation (anti-depressants, chemotherapy, opiates, anticholinergics, vitamin D intoxication), and should be suspected if onset of constipation coincides with start of medications. Stop or modify the offending agent if possible then reassess.

#### Investigations

- **Abdominal x-rays lack specificity and should not be routinely used to diagnose or rule out constipation.** Other imaging is rarely necessary, unless recommended by a specialist.
- Routine lab testing is not recommended in the absence of other features of underlying organic disease during clinical evaluation.

## 2. Normal variations in healthy infants?<sup>2,3</sup>

- Variation in stool frequency is normal and decreases with a child's age as a result of the colon's improved ability to conserve water.
- Greater variation is observed in infants, especially in breastfed infants before solids are introduced. If the infant is growing normally without evidence of obstruction, diarrhea, or other clinical symptoms there is little cause for concern.
- From birth to six months of age, normal stools can be runny, pasty, or even liquid on occasion.
- Hard, dry stools in exclusively breastfed infants are extremely rare. Assess hydration.
- Provide education and reassurance on the importance of **soft** stools and the range of normal stool frequency (see [Appendix B](#)).

#### Infant dyschezia

- Affects up to 3% of infants up to 9 months of age.
  - Infants have straining, crying, and turn red in the face when trying to defecate (for up to 10-20 minutes), followed by the passage of soft stools.
  - Represents lack of coordination between increased intra-abdominal pressure and pelvic floor relaxation. Resolves spontaneously as the infant matures (usually by 9 months).
  - Medical intervention is not necessary – provide parental reassurance.
  - Avoid rectal stimulation and laxatives for infant dyschezia.

<sup>2</sup> Steer CD, Emond, AM Golding, J, Sandhu, B. The variation in stool patterns from 1 to 42 months: a population-based observational study. Arch Dis Child. 2009;94:231-4. Abstract available from: <https://www.ncbi.nlm.nih.gov/pubmed/18676434>

<sup>3</sup> Dietitians of Canada. Knowledge Pathways: Gastrointestinal System - Pediatric/Paediatric Constipation. In: Practice-based Evidence in Nutrition [PEN] [Internet]. 2018-04-19 Available from: <http://www.pennutrition.com>

### 3. Functional constipation diagnosis

- Functional constipation can be diagnosed if the history and physical examination are consistent with Rome IV criteria, and the symptoms cannot be attributed to another medical condition and are insufficient for diagnosis of irritable bowel syndrome (see [Appendix C](#)).

Table 2. Rome IV criteria for the diagnosis of pediatric functional constipation

Infants and toddlers up to 4 years of age (developmental age)	Children above 4 years of age (developmental age)
Two or more symptoms present for > 1 month <ul style="list-style-type: none"><li>• Two or fewer defecations per week</li><li>• History of excessive stool retention</li><li>• History of painful or hard bowel movements</li><li>• Presence of a large fecal mass in the rectum</li></ul> Additional criteria that may be used in toilet trained children: <ul style="list-style-type: none"><li>• At least one episode/week of fecal incontinence</li><li>• History of large diameter stools that may obstruct the toilet</li></ul>	Two or more symptoms present for > 1 month, at least once/week <ul style="list-style-type: none"><li>• Two or fewer defecations in the toilet per week</li><li>• History of retentive posturing or excessive volitional stool retention</li><li>• History of painful or hard bowel movements</li><li>• History of large diameter stools which may obstruct the toilet</li><li>• Presence of a large fecal mass in the rectum</li><li>• At least one episode/week of fecal incontinence</li></ul>

- Triggers and risk factors:
  - Functional constipation most commonly starts at transition times. Identifying the impact of transition times helps with family education and intervention. Common transition times include:
    - Diet changes in infancy: Transitions (e.g. breast milk to cow's milk or liquids to solids) may alter stool consistency and lead to stool withholding.
    - Toilet training: If attempted when the child is not physiologically or psychologically ready, may result in anxiety around toileting, conflict with parents, and emotional trauma. These factors may lead to the inability to relax the pelvic floor for defecation and subsequent stool retention.
    - Start of school: Changes in routines, avoidance of school bathroom, and inability to use the bathroom when needed, may result in dysfunctional toileting behavior.
  - Nutritional concerns (e.g. low fibre diet, consumption of low nutrient dense foods, limited family meals, irregular meal patterns) and inadequate fluid intake may lead to hard, painful stooling and initiate a pain-retention-pain cycle.
  - Developmental delay, behavioral or mental health problems that may impact child's maturity or ability to recognize and respond to normal physiological cues.
  - Home and school related psychological stress (e.g. separate parental households, poor parenting skills, family dysfunction).
  - Child maltreatment or trauma (e.g. physical, sexual, or emotional abuse; exposure to civil unrest or war).

### 4. Management principles

- The best outcomes occur with effective treatment started within 3 months of symptom onset.
- **Five components are required (see details below):**
  - Family education
  - Monitoring and use of a diary of symptoms/interventions (see [Patient Resources](#) for examples)
  - Toilet training and behavioral modification (appropriate for age)
  - Laxatives (including for cleanout/disimpaction if required)
  - Diet modifications (**after** normal stool patterns have been re-established)

### Family education (see [Patient Resources](#))

- Family education about normal intestinal function and the pathophysiology of functional constipation is essential to facilitate successful management.
- It is critical to verify the family's understanding of the concepts.
- **Only about 50% of children treated for constipation will recover and be without laxatives after one year.** The remaining patients require long-term treatment (up to 10 years) or may remain symptomatic despite laxatives.
  - Provide anticipatory guidance to families about long-term treatment required for successful behavioural modification and return of rectal tone/sensation to prevent disappointment, improve long-term compliance, and prevent early discontinuation of therapy leading to symptom recurrence and poor outcomes.

### Monitoring (diary of symptoms and interventions)

- Encourage families to keep a calendar or diary of symptoms (Bristol stool type and frequency) and interventions. This can help to monitor progress, provide positive reinforcement, and support the family's self-management.
- The diary also helps to facilitate the provider and family's review/reassessment if interventions do not achieve the necessary improvement.

### Toilet training/behavioural modification (as age appropriate)

- Encourage a positive and supportive parental attitude, to reduce the child's toileting avoidance and anxiety. Identify reasons for toilet avoidance. Punishment is unwarranted and counterproductive.
- Educate parents about helping their child to recognize the urge to defecate. Parents need to learn to recognize that "stool withholding behaviours" signal "the urge to go". When parents observe these behaviours, they need to redirect the child to use the bathroom. When the urge to defecate occurs, it must become a habit for the child to use the toilet.
- Institute a regular toileting schedule. The child should try to defecate for 5 minutes on the toilet within 30 minutes of a meal, to take advantage of the gastrocolic response. This routine allows the gradual re-establishment of normal bowel habits.
- Ensure proper positioning – the child must feel safe and comfortable on the toilet seat or potty. No dangling feet! Placing feet on a footrest (or a squatty potty) for support helps to flatten the anorectal angle and facilitate stool expulsion.
- Children may need to learn the sequence of abdominal wall straining and pelvic floor relaxation required for normal defecation. Recommend activities that promote relaxation, generate an increase in intra-abdominal pressure, and show the child how to Valsalva in a coordinated fashion (e.g. have the child gently blow air using bubble wands, party noise makers, a pin wheel, or play harmonica while seated on the toilet).
- A reward system using stickers or small gifts may be helpful. Positive reinforcements or rewards should be given for the child sitting on the toilet not just stooling in the toilet. Positive reinforcement increases the likelihood of a child participating in the sit time. NOTE: Food rewards are not recommended.

### Diet modifications (after normal stool patterns have been re-established)

- Low dietary fibre intake may contribute to constipation; however, increased fibre should not be used as the initial treatment in children. It is not feasible to increase fibre sufficiently to resolve constipation/fecal impaction in a timely manner, without also causing gas, bloating, and/or other symptoms that may be uncomfortable for the child.
- Ensure adequate fluid and fibre intake to maintain a healthy bowel routine after constipation is resolved (#9).

## Management for children < 6 months of age

### 5. Management (< 6 months of age)

- Initial intervention should focus on verifying diet/formula preparation and modifying intake as needed.
  - Breast fed infants should feed on demand. Ensure they are well hydrated and gaining weight appropriately. For babies under 6 months, there is no need to give the baby fluids other than breastmilk. If there are concerns about lactation or breastfeeding, recommend consultation with a public health nurse or lactation consultant.
  - If the infant is formula fed, ensure the formula is being prepared according to directions. Iron fortified formula does not cause constipation and is important to prevent iron deficiency anemia.
  - Daily fluid intake guidelines for infants under 6 months:
    - 700 ml (24 oz), assumed to be from breastmilk
    - If drinking formula, range 420-1170 ml (14-39 oz)
  - Adequate fluid intake can be determined by assessing intake (e.g., breastmilk and formula) and comparing to the patient's output (i.e. wet or dirty diapers).
  - Ensure any solid foods are age-appropriate.
    - For babies 0-4 months, discontinue solid foods.
    - For babies 4-6 months, discontinue foods that are suggested for infants >6 months.
- If no issues are identified with baby's diet or modifications are made without improvement after 2-4 weeks, pursue additional diet modifications and/or laxatives:
  - For infants >4 months, provide sorbitol-containing juices (100% undiluted prune, pear, apple) outside the feedings. Start with two tablespoons between feedings and slowly increase to a maximum of eight tablespoons/day. If infant has a bowel movement within 24 hours, reduce to minimum amount required to maintain soft stools. Note – prune juice has a stronger effect than apple or pear juice, so a smaller amount may be required. Monitor to ensure breastmilk or formula consumption is not affected.
  - Lactulose is safe and effective in infants. It works by drawing water into the intestinal lumen through an osmotic gradient.
    - Dose at 1-2g/kg/day (1.5-3ml/kg) in 1-2 doses. Adjust dose according to response.
  - Glycerin suppositories can be a useful treatment option in infants, without notable adverse effects.
  - PEG 3350 should only be used on the advice of a specialist.
  - Stimulant laxatives, phosphate enemas, and mineral oil are not recommended, due to potential adverse effects in infants.
  - Honey should be avoided for infants up to 12 months, due to the risk of Clostridium botulinum spores and infant botulism.
  - If a breastfed baby has no response to laxatives and diet modifications, a two-week trial of cow's milk elimination in the mother's diet may be considered. If effective, consider consulting a Registered Dietitian to support proper substitutions and/or supplementation to ensure adequacy of the mother's diet, due to risk of inadequate calories, protein, calcium, and vitamin D on a cow's milk elimination diet.
  - For infants on cow's milk based formula, a 2-3 week trial of hypoallergenic formula is appropriate.
- Once normal stools are established with laxatives and diet adjustments, monitor for 1-2 months. If no relapse, wean from laxatives and observe for one month.
- If no improvement after 1-2 months, or there is a later relapse, optimize management through reassessment, adjusted use of laxatives, and ensuring parental adherence to recommendations.
- Referral or advice from a pediatrician may be beneficial.



## Management for children > 6 months of age

### 6. Is fecal impaction present?

- Fecal impaction or functional retention may be present when there is one or more of the following:
  - Markedly increased amounts of stool in the colon (significant stool mass palpable)
  - History of large stools (that may plug up the toilet)
  - Fecal incontinence/leakage
  - Incomplete evacuation (e.g. small stools, “rabbit poops,” stool looks “broken off”)
  - Very infrequent evacuation.

#### Physical exam

- Assess the size of the fecal mass through percussion and/or by palpating the abdomen on either side of the rectus muscle.
- Inspect the perineum to determine the presence of anal fissures (frequently explains the presence of small amounts of blood that may be alarming to caregivers but are strongly suggestive of fecal retention).
- Digital rectal examination is not necessary but if the provider is comfortable performing this examination, it may be informative to rule out fecal impaction if not obvious by history or abdominal palpation.

#### Imaging for fecal impaction (if needed)

- Fecal impaction can normally be determined by history and physical exam.
- If unclear after history and physical exam, x-ray could be ordered to assess for excessive stool in the left-sided colon/rectum (lacks specificity).

### 7. Bowel cleanout/disimpaction (if required, for children > 6 months of age)

- Osmotic laxative PEG 3350 has superior outcomes as a first-line treatment. Prescribe PEG 3350 orally (1-1.5 g/kg/day for 3-6 days). See the [CHEO handout](#) for dosing information (also found in [Patient Resources](#)). Advise parents that passage of large volume of watery stools for 2-3 days is likely sufficient. Reassess in 5-7 days to determine if clean-out achieved.
    - If clean-out achieved, proceed to #8.
    - If clean-out not achieved, consider:
      - Oral stimulant such as Senna or Bisacodyl (see Table 3 for dosing)
      - Glycerin suppository (one daily x 3 days)\*
      - Pico-salax (under advice of a specialist)
      - Sodium phosphate enema (only for children > age 2, see Table 3 for dosing)
- \*Rectal therapies are considered second line because they are more invasive. They may compound the problem of uncomfortable defecation that is often at the heart of functional constipation.*
- If clean-out not achieved with addition of secondary treatment, refer to pediatrician or use an advice service.

### 8. Laxatives and fluid intake

- Once fecal impaction is resolved, re-establish a healthy bowel routine through use of laxatives and adequate fluid intake.
- The initial goal of laxative use and increased fluids is to achieve stool consistency of Bristol type 4 or 5 (see [Appendix D](#)). The goal at this stage is to induce very soft stools so that holding is not necessary or easy to do. This is the first stage of long-term intervention.
- Assess after 2-4 weeks to evaluate the child's response to treatment.
  - If Bristol 4-5 has been achieved, proceed to the maintenance stage (#9).
  - If not achieved, optimize management (#11).



## Laxatives

- Laxatives are initiated at this stage with dosage adjusted to induce a daily soft bowel movement (see Table 3 for dosage information). Remind families that laxatives will be utilized for an extended period to allow for bowel retraining and behaviour modification.
- Lubricant or osmotic laxatives with polyethylene glycol (PEG) are the preferred initial treatment due to ease of administration, palatability, fewer side effects, and superior outcomes.
- Osmotic laxatives are poorly absorbed substances that draw water into the intestinal lumen through an osmotic gradient. They include non-toxic organic polymers (PEG), poorly absorbed sugars (lactulose, sorbitol), and inorganic salts (magnesium compounds).
- Mineral oil (lubricant laxative) is less effective than PEG. It is worth considering if defecation is painful. It is not recommended for children < 1 year of age or children unable to protect their airways due to the risk of aspiration.
- If osmotic laxatives are not sufficient to achieve the goal of a daily soft bowel movement, seek specialty advice as a different approach to bowel retraining may be required.
- Other medications such as lubiprostone, linaclotide, and prucalopride should not be used for initial treatment in children. Although they are effective in adults, neither lubiprostone nor prucalopride was shown to be effective in children.<sup>4,5,6,7,8</sup>

Table 3. Laxatives for children > 1 year old

Generic name	Trade name	Dosage
<i>*adjust to meet the goal of at least 1 soft stool/day that is easy to pass – Bristol 4/5</i>		
<b>Osmotic laxatives – first line</b>		
PEG 3350 (preferred)	LAX-A-DAY Restoralax Relaxa	<b>Cleanout dose:</b> 1-1.5 g/kg/day <b>Usual dose:</b> 0.5-1.0 g/kg/day See <a href="#">CHEO handout</a> for more details
Lactulose	Lactulose	• 1-2g/kg/day (=1.5-3 ml/kg) in 1-2 doses (max 60mL/day)
Magnesium hydroxide	Milk of Magnesia	• 2-5 years: 0.4-1 g/day in 1-2 doses • 6-11 years: 1-2.4 g/day in 1-2 doses • 12-18 years: 2.4-4.8 g/day in 1-2 doses
<b>Lubricant laxative – if defecation is painful</b>		
Mineral oil	Mineral Oil Lansoyl	• 1-18 years: 1-3 ml/kg/day, in 1-2 doses (max 90ml/day) <i>*do not use in children &lt;1 year or children unable to protect their airways or with GERD</i>
<b>Stimulant laxatives – <u>add</u> if insufficient effect of osmotic laxatives alone (choose based on patient preference)</b>		
Bisacodyl	Dulcolax Bisacodyl	• 3-10 years: 5 mg/day • 10-12 years: 5-10 mg/day • > 12 years: 5-15 mg/day

<sup>4</sup> Benninga, M. A., Hussain, S. Z., Sood, M. R., Nurko, S., Hyman, P., Clifford, R. A., O’Gorman, M., Losch-Beridon, T., Mareya, S., Lichtlen, P., & Di Lorenzo, C. (2022). Lubiprostone for pediatric functional constipation: Randomized, controlled, double-blind study with long-term extension. *Clinical Gastroenterology and Hepatology*, 20(3).

<sup>5</sup> Hyman, P. E., Di Lorenzo, C., Prestridge, L. L., Youssef, N. N., & Ueno, R. (2014). Lubiprostone for the treatment of functional constipation in children. *Journal of Pediatric Gastroenterology & Nutrition*, 58(3), 283–291.

<sup>6</sup> Medina-Centeno, R. (2020). Medications for constipation in 2020. *Current Opinion in Pediatrics*, 32(5), 668–673.

<sup>7</sup> Mugie, S. M., Korczowski, B., Bodi, P., Green, A., Kerstens, R., Ausma, J., Ruth, M., Levine, A., & Benninga, M. A. (2014). Prucalopride is no more effective than placebo for children with functional constipation. *Gastroenterology*, 147(6), 1285–1295.

<sup>8</sup> Winter, H. S., Di Lorenzo, C., Benninga, M. A., Gilger, M. A., Kearns, G. L., Hyman, P. E., Vandeplassche, L., Ausma, J., & Hoppenbrouwers, M. (2013). Oral Prucalopride in children with functional constipation. *Journal of Pediatric Gastroenterology & Nutrition*, 57(2), 197–203.

Generic name	Trade name	Dosage
		<i>*adjust to meet the goal of at least 1 soft stool/day that is easy to pass – Bristol 4/5</i>
Senna	Senokot or Exlax	<ul style="list-style-type: none"> <li>• 2 to &lt; 6 years: <math>\frac{1}{2}</math> tablet (4.3 mg sennosides) at bedtime, not to exceed 1 tablet (8.6 mg sennosides) twice daily</li> <li>• 6 to &lt; 12 years: 1 tablet (8.6 mg sennosides) at bedtime, not to exceed 2 tablets (17.2 mg sennosides) twice daily</li> <li>• <math>\geq 12</math> years: 2 tablets (17.2 mg sennosides) at bedtime, not to exceed 4 tablets (34.4 mg sennosides) twice daily</li> </ul> <i>*Senokot syrup is 8.8mg/5ml</i>
Sodium picosulfate/ Magnesium oxide/citric acid	Pico-Salax Purg-Odan	<b>Only use on advice of a specialist</b> (mainly used for bowel cleanout/bowel prep). <ul style="list-style-type: none"> <li>• 1/4 sachet for kids aged 1-5</li> <li>• 1/2 sachet 6-12 years</li> <li>• 1 sachet for &gt; 12 years.</li> </ul> Start with one dose and repeat if necessary.
<b>Rectal therapies</b>		
Bisacodyl	Dulcolax or Bisacodyl suppository	<ul style="list-style-type: none"> <li>• 2-10 years: 5 mg once/day</li> <li>• &gt; 10 years: 5-10 mg once/day</li> </ul>
Mineral oil	Fleet Oil	<ul style="list-style-type: none"> <li>• 2-10 years: 30-60 ml once/day</li> <li>• &gt; 10 years: 60-150 ml/day</li> </ul>
Sodium phosphate	Fleet Enema	<ul style="list-style-type: none"> <li>• 2-12 years: 65 ml</li> <li>• &gt; 12 years: 130ml</li> </ul>
NaCl	Fleet Saline Enema	<ul style="list-style-type: none"> <li>• &gt; 1 year: 6 ml/kg once or twice per day</li> </ul>

### Fluid intake

- Ensure the child has adequate fluid intake as per below.

Table 4. Fluid intake guidelines<sup>9</sup>

Age	Water obtained from drinks per day* from breast milk, formula, milk, juices, drinking water
7-12 months	<ul style="list-style-type: none"> <li>• 600 ml (20 oz)</li> <li>• If drinking formula, range is 480-1110 ml (16-37 oz)</li> <li>• Review <a href="#">How Much Infant Formula to Prepare for Baby</a></li> </ul>
1-3 years	900 ml (30 oz)
4-8 years	1200 ml (40 oz)
9-13 years	1600-1800 ml (54-60 oz)
14-18 years	1800-2600 ml (60-88 oz)
*Recommended average daily intake to meet the needs of apparently healthy individuals. Does not take into account potential additional requirements for other conditions (e.g. environmental conditions, physical activity, and medical conditions).	

<sup>9</sup> Institute of Medicine. Water. In: Dietary reference intakes for water, potassium, sodium, chloride, and sulfate. Washington, DC: National Academy of Sciences; 2005. p.73-185.

## 9. Maintenance therapy for 6-12 months

- After regular, soft stools have been re-established through laxatives and fluid, **maintenance therapy for an extended period of time is essential to long-term treatment success.**
- The length of treatment must be of sufficient duration for behaviour modification, and return of rectal tone and sensation. This can range from a few months to several years.
- A long-term effective therapeutic relationship in the patient's medical home is necessary for a successful treatment outcome; periodic patient follow up and coaching improves the chance of a long-term successful outcome.
- If relapse occurs at any stage, see #11 to reassess/adjust interventions.
- Over time, soft stools allow children to lose the fear of defecation.

### Laxatives

- This stage represents a **long-term continuation** of laxatives initiated previously.
- It is common for families to discontinue laxatives too soon; confirm family understanding of management concepts and the importance of long-term therapy.
- The approach to treatment must be individualized. Stool consistency should be maintained at type 4-5, without encopresis, to prevent pain and withholding, and to promote bowel retraining – **at least 1-2 months.**
- With time, when behavioural modifications are established, slowly taper laxatives by 25% every 2-3 months, over a 6-12 month period, while maintaining daily, soft bowel movements (Bristol stool 3-5).

### Diet interventions<sup>10</sup>

- Low dietary fibre intake in children may contribute to constipation; however, adequate fibre should not be used as the initial treatment, especially in younger children. It is not feasible to increase fibre sufficiently to resolve constipation/fecal impaction in a timely manner, without also causing gas, bloating, and/or other symptoms that may be uncomfortable for the child.
- Dietary fibre may be used for maintenance of a healthy bowel routine once constipation is resolved.
- Fibre should be introduced gradually to allow the body to adjust. A sudden increase in fibre intake can cause discomfort, bloating, and gas.
- Increased fluid and fibre, in the form of vegetables, fruits, and whole grains, may prevent recurrence of constipation.
- Diets high in sugar, fat, protein, or milk products are generally low in fibre. See [Constipation in Babies and Children](#) for suggestions on adding more fibre to the diet.
- Diet changes are most successful when the entire family makes these healthy choices.
- Consider referral to dietitian for additional support and/or education. Visit the [Alberta Referral Directory](#) and search for nutrition counselling.

## 10. Wean and observe for 6-12 months

- If child continues to respond after 6-12 months of maintenance therapy, wean from laxatives by decreasing laxative dose by 25% every 1-2 months. Monitor to ensure Bristol stools 3-4 are maintained at lower dosage.
  - If there is a relapse, return to last successful dose of laxatives.
- Dietary fibre should replace laxatives to increase the content of water in the stool and stimulate the colon. Fibre should be introduced or increased and then maintained throughout this stage to prevent relapse.
- Families should be reminded of the high risk of recurrence at susceptible periods (dehydration associated with fever, hot weather vacation, hospital admissions, sports, physical activity; change of the life routines). Remind families of the importance of preventative strategies such as ensuring adequate dietary fibre and implementing early intervention at these susceptible periods.

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<sup>10</sup> Healthy Infants and Young Children: Management of Constipation. <https://www.albertahealthservices.ca/assets/info/nutrition/ifs-nfs-ng-healthy-infants-gi-function-management-constipation.pdf>

## 11. Optimize management

- In situations where the child does not respond to treatment as expected or experiences a relapse, consider these strategies to optimize management
  - Reassess for fecal impaction/functional retention and address if required (#6-7)
  - Re-educate on behaviour modification strategies (#4)
  - Review adherence to laxatives; adjust dosage if indicated (#8)
  - Consider behavioural/mental health concerns and whether a referral to a pediatrician and/or mental health supports is warranted.
  - Encourage positive diet interventions (fluid and fibre); consider referral to dietitian (#8-9)

## BACKGROUND

### About this Pathway

- Primary care pathways for adult were originally developed in 2015 as part of the Calgary Zone's Specialist LINK initiative. They were co-developed by the Department of Gastroenterology and the Calgary Zone's specialty integration group, which includes medical leadership and staff from Calgary and area Primary Care Networks, the Department of Family Medicine and Alberta Health Services.
- The pathways were intended provide evidence-based guidance to support primary care providers in caring for patients with common digestive health conditions within the medical home.
- Based on the successful adoption of the primary care pathways within the Calgary Zone, and their impact on timely access to quality care, in 2017 the Digestive Health Strategic Clinical Network (DHSCN) led an initiative to validate the applicability of the pathways for Alberta and to spread availability and foster adoption of the pathways across the province.

### Authors & Conflict of Interest Declaration

This pathway was developed through the DHSCN in 2022 by a multi-disciplinary team comprised of family physicians, pediatricians, pediatric gastroenterologists, and allied health professionals.

### Pathway Review Process

Primary care pathways undergo scheduled review every three years, or earlier if there is a clinically significant change in knowledge or practice. The next scheduled review is May 2025. However, we welcome feedback at any time. Click on the Provide Feedback button to provide your feedback.

Provide Feedback 

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### Disclaimer

This pathway represents evidence-based best practice but does not override the individual responsibility of health care professionals to make decisions appropriate to their patients using their own clinical judgment given their patients' specific clinical conditions, in consultation with patients/alternate decision makers. The pathway is not a substitute for clinical judgment or advice of a qualified health care professional. It is expected that all users will seek

advice of other appropriately qualified and regulated health care providers with any issues transcending their specific knowledge, scope of regulated practice or professional competence.

## PROVIDER RESOURCES

### Advice Options

Non-urgent advice is available to support family physicians.

- Non-urgent advice is available through Alberta Netcare eReferral Advice Request (responses are received within five calendar days). View the [Referring Provider – FAQ](#) document for more information.
  - Community pediatrics advice is available in the Calgary Zone
  - Pediatric gastroenterology advice is available in the Edmonton Zone
- Non-urgent telephone advice connects family physicians and specialists in real time via a tele-advice line. Family physicians can request non-urgent advice from a pediatrician:
  - In the Edmonton and North Zones by calling 1-844-633-2263 or visiting [pcnconnectmd.com](http://pcnconnectmd.com). This service is available from 9:00 a.m. to 6:00 p.m. Monday to Thursday and 9:00 a.m. to 4:00 p.m. Friday (excluding statutory holidays and Christmas break). Calls are returned within two (2) business days.
  - In the Calgary Zone at [specialistlink.ca](http://specialistlink.ca) or by calling 403-910-2551. This service is available from 8:00 a.m. to 5:00 p.m., Monday to Friday (excluding statutory holidays). Calls are returned within one (1) hour.

### Nutrition Services

To refer your patient to a Registered Dietitian, visit the [Alberta Referral Directory](#) and search for nutrition counselling.

## PATIENT RESOURCES

### Information

Description	Website
Website with handouts, videos, and other resources about childhood constipation	<a href="http://fcrc.albertahealthservices.ca/health-information/library/information-prescriptions/constipation/">http://fcrc.albertahealthservices.ca/health-information/library/information-prescriptions/constipation/</a>
Handout from the Children's Hospital of Eastern Ontario about childhood constipation, including detailed dosing/mixing information on PEG 3350	<a href="https://www.cheo.on.ca/en/resources-and-support/resources/P5593E.pdf">https://www.cheo.on.ca/en/resources-and-support/resources/P5593E.pdf</a>
"Poo Diary" for tracking bowel movements	<a href="https://www.eric.org.uk/Handlers/Download.ashx?IDMF=0e6361d4-b887-43c9-8793-85eb00f1686c">https://www.eric.org.uk/Handlers/Download.ashx?IDMF=0e6361d4-b887-43c9-8793-85eb00f1686c</a>
Food, Lifestyle, and Symptom Diary	<a href="https://www.albertahealthservices.ca/assets/info/nutrition/if-nfs-bowel-symptom-journal.pdf">https://www.albertahealthservices.ca/assets/info/nutrition/if-nfs-bowel-symptom-journal.pdf</a>
AHS Nutrition Services handout on dietary approaches to address constipation in babies and children	<a href="https://www.albertahealthservices.ca/assets/info/nutrition/if-nfs-constipation-in-babies-and-children.pdf">https://www.albertahealthservices.ca/assets/info/nutrition/if-nfs-constipation-in-babies-and-children.pdf</a>
A variety of handouts on healthy diet for infants, children, and families	<a href="https://www.healthyparentshealthychildren.ca/resources/printables-healthy-eating">https://www.healthyparentshealthychildren.ca/resources/printables-healthy-eating</a>
Resource page with a variety of videos and articles on toilet training	<a href="https://www.eric.org.uk/Pages/Category/potty-training">https://www.eric.org.uk/Pages/Category/potty-training</a>
Videos for parents that describe what leads to childhood constipation and provide general information about what is needed for successful treatment.	<a href="#">How to Make It Happen</a> <a href="#">Fibre FAQs</a>
Educational video for children, that explains constipation and encopresis	The Poo in You <a href="https://www.youtube.com/watch?v=SgBj7Mc_4sc">https://www.youtube.com/watch?v=SgBj7Mc_4sc</a>
Book – The Ins and Outs of Poop by Thomas R. Duhamel	Available at some libraries, and for purchase online

### Services Available

Description	Website
Health Link has Registered Dietitians available to answer nutrition questions. Call 8-1-1 and ask to talk to a Dietitian.	Visit <a href="#">Health Link</a> for more information.
Alberta Health Services has a variety of programs available across Alberta. To learn more about programs and services offered in your area, visit the AHS Nutrition Services Website.	<a href="http://www.ahs.ca/nutrition">www.ahs.ca/nutrition</a>

## APPENDIX A – Organic etiology of childhood constipation

Anatomic	Neuromuscular	Systemic	Drugs	Toxins
<ul style="list-style-type: none"> <li>Anal stenosis</li> <li>Imperforated anus</li> <li>Pelvic mass</li> </ul>	<ul style="list-style-type: none"> <li>Hirschsprung's disease</li> <li>Spinal cord anomalies/trauma</li> <li>Colonic dysmotility</li> <li>Abnormal abdominal musculature</li> </ul>	<ul style="list-style-type: none"> <li>Celiac disease</li> <li>Hypothyroidism</li> <li>Hypercalcemia/hypokalemia</li> <li>Diabetes</li> <li>Dietary protein allergy</li> <li>Multiple endocrine neoplasia (rare)</li> <li>Cystic fibrosis</li> </ul>	<ul style="list-style-type: none"> <li>Antidepressants</li> <li>Chemotherapy</li> <li>Opiates</li> <li>Anticholinergics</li> <li>Vitamin D intoxication</li> </ul>	<ul style="list-style-type: none"> <li><a href="#">Lead poisoning</a></li> <li><a href="#">Botulism</a></li> </ul>

Medical conditions presenting with constipation or inability to pass normal stools:

**More likely in a neonate/infant**, especially with clinical presentation of bowel obstruction (abdominal distention, failure to pass meconium, bilious vomiting):

- **Imperforated anus** indicates congenital anorectal malformation, possible urogenitary tract and other congenital anomalies.
- **Hirschsprung's disease** due to absence of ganglion cells in the rectum that are responsible for relaxation of the internal anal sphincter, diagnosed by rectal biopsy.
- **Spinal cord anomalies**, with/without associated anorectal anomalies, like spina bifida occulta, tethered cord, spinal tumor may be asymptomatic or lead to sensory-motor abnormalities, including neurogenic bowel and bladder. It is extremely rare for dysraphism to result in soiling or constipation in the absence of abnormal bladder control. See Physical exam paragraph.
- **Cystic fibrosis** presenting with meconium ileus (the obstruction of the terminal ileum with inspissated meconium).
- **Dietary protein allergy** may present with straining, hematochezia, and mucousy stools in an infant. The role of dietary protein allergy in constipation continues to be disputed but a 4-week trial off dairy in cases of unresponsive functional constipation can be considered.
- **Botulism** – constipation typically is an initial symptom followed by progressive weakness (weak cry, poor feeding, dehydration, hypotonia, hyporeflexia)

**More likely in young children**

- **Celiac disease** – the “classic” presentation with weight loss, malnutrition, diarrhea and abdominal distention in toddlers has been mostly replaced by later and less severe presentation with a variety of gastrointestinal and non-gastrointestinal symptoms. Although diarrhea still happens more frequently, constipation may be present in less than 10% of older children, who may also have short stature, poor weight gain, iron deficiency anemia and other non-gastrointestinal symptoms.
- **Hypothyroidism** presenting with constipation alone in children is very unlikely unless associated with concomitant growth failure and/or obesity and short stature, or genetic predisposition (trisomy 21).
- Constipation is common in patients with **cystic fibrosis** presenting with malnutrition, pulmonary disease, steatorrhea, abdominal distention, and rectal prolapse. Lack of stools with abdominal distention, poor appetite, nausea and/or vomiting associated with RLQ mass may indicate distal ileal obstruction in a CF patient.
- Diabetes of any type (mellitus, nephrogenic, central) can be associated with constipation in childhood secondary to dehydration.
- Hypokalemia must reach level 2.5- 3 mEq/L to cause constipation and will likely be accompanied by muscle weakness, cramps and myalgia.



- **Hypercalcemic** disorders in children may present with hypotonia, poor feeding, vomiting, constipation, abdominal pain, lethargy, polyuria, dehydration, failure to thrive, and seizures. In severe cases renal failure, pancreatitis and reduced consciousness may also occur and older children and adolescents may present with psychiatric symptoms. In children (especially infants), they are more likely due to genetics than acquired causes.
- Patients with inherited **multiple endocrine neoplasia (MEN)** develop parathyroid tumors (and other endocrine tumors) resulting in hypercalcemia. MEN3 causes intestinal autonomic ganglion dysfunction instead leading to dysmotility and megacolon.
- **Lead poisoning** is generally asymptomatic but can present with abdominal pain, constipation, anemia, fatigue, hearing loss, neuropathy, neurotoxicity, encephalopathy, or renal disease.

*More likely in adolescents:*

- **Celiac disease, hypercalcemic disorders, slow transit constipation, spinal cord trauma, drugs**

## APPENDIX B – Stool frequency<sup>11</sup>

1 – 4 weeks after birth	<ul style="list-style-type: none"> <li>• Average of 2–3/day for formula fed infants.</li> <li>• Average of 4/day for breastfed infants from one to two weeks of age.</li> <li>• Expected range from once every two days to 6/day at 4 weeks of age</li> </ul>
1 – 2 months	<ul style="list-style-type: none"> <li>• Frequency tends to decrease with age in both breastfed and formula fed infants, for term and preterm infants, especially after one month of age.</li> <li>• Expect exclusively breastfed infants continue to stool more frequently than formula-fed infants until 8 weeks of age.</li> <li>• Some healthy exclusively breastfed babies &gt; 2 weeks may have infrequent soft stool occurring once in 1-2 weeks or even longer. This is probably normal but requires an assessment for red flags if there is no stool for 2 weeks.</li> </ul>
2 -6 months	<ul style="list-style-type: none"> <li>• ~1 – 2 stools/day, but many infants have fewer than that.</li> </ul>
6 months – 3 years	<ul style="list-style-type: none"> <li>• Once solids are introduced (after 6 months), stool frequency decreases to an average of 2/day (with a range of 1-3).</li> </ul>
3+ years	<ul style="list-style-type: none"> <li>• ~1/day is usual but it can be as few as 3/week as long as stools are soft and easy to pass. Range once every two days to 3/day.</li> </ul>








## APPENDIX C – Rome diagnostic criteria for Irritable Bowel Syndrome

Must include all of the following for at least two months before diagnosis:

1. Abdominal pain at least 4 days per month associated with one or more of the following:
  - a. Related to defecation
  - b. A change in frequency of stool
  - c. A change in form (appearance) of stool
2. In children with constipation, the pain does not resolve with resolution of the constipation (children in whom the pain resolves have functional constipation, not irritable bowel syndrome)
3. After appropriate evaluation, the symptoms cannot be fully explained by another medical condition

<sup>11</sup> Steer CD, Emond, AM Golding, J, Sandhu, B. The variation in stool patterns from 1 to 42 months: a population-based observational study. Arch Dis Child. 2009;94:231-4. Abstract available from: <https://www.ncbi.nlm.nih.gov/pubmed/18676434>

## APPENDIX D – Bristol Stool Chart<sup>12</sup>

Type 1		Separate hard lumps, like nuts
Type 2		Sausage-shaped but lumpy
Type 3		Like a sausage but with cracks on the surface
Type 4		Like a sausage or snake, smooth and soft
Type 5		Soft blobs with clear-cut edges
Type 6		Fluffy pieces with ragged edges, a mushy stool
Type 7		Watery, no solid pieces.

<sup>12</sup> Reproduced with no changes from Figure 1 in Heidelbaugh, Joel & Andino, Nicole & Pineles, David & Poppers, David. (2021). Diagnosing Constipation Spectrum Disorders in a Primary Care Setting. Journal of Clinical Medicine. 10. 1092. 10.3390/jcm10051092.  
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