

Constipation: Pediatric

Gastrointestinal

Clinical Decision Tools for RNs with Additional Authorized Practice [RN(AAP)s]

Effective Date: June 9, 2022

Background

Constipation is one of the most common gastrointestinal complaints in children and a common concern for many parents and caregivers (Ferrara & Saccomano, 2017; Tambucci et al., 2018). Constipation is defined as difficult or infrequent passage of stool from the colon and is categorized as functional (chronic idiopathic) or organic (Ferrara & Saccomano, 2017). Functional constipation occurs in children with a healthy bowel without evidence of underlying pathology other than persistent symptoms of infrequent or difficulty passing stool (Ferrara & Saccomano, 2017). In contrast, organic constipation is due to an underlying disorder and referral to a physician/NP is warranted for further investigation. Functional constipation accounts for up to 95% of constipation cases in children (Ferrara & Saccomano, 2017).

Immediate Consultation Requirements

The RN(AAP) should seek immediate consultation from a physician/NP when any of the following circumstances exist:

- history of failure to pass meconium in the first 24 hours of life in an infant (one year of age or less) now presenting with difficulty passing stool;
- constipation in neonate;
- rectal examination: rectum empty, despite stool in colon (as revealed by abdominal exam);
- abnormal size and location of anus (ectopic or imperforate);
- abnormal findings on neurologic examination (e.g., absent anal or cremasteric reflex);
- suspected or evidence of sexual abuse (e.g., extreme fear during anal inspection or anal scarring);
- clinical indications of intestinal obstruction (e.g., vomiting, abdominal pain, decrease in bowel sounds);
- clinical indications of acute surgical abdomen (e.g., acute appendicitis);

- bloody diarrhea;
- fever;
- failure to thrive;
- anal stenosis;
- encopresis;
- fecal impaction requiring disimpaction; or
- family history of Hirschsprung's disease (Interprofessional Advisory Group [IPAG], personal communication, October 2, 2019; Tabbers et al., 2014).

Predisposing and Risk Factors

Predisposing conditions and risk factors for functional and organic causes of constipation include:

Functional	Organic
<ul style="list-style-type: none"> • stool withholding behaviour (e.g., related to coercive toilet training, toilet phobia, sexual abuse, negative experience with stooling), • depression, • low fibre diet, • dehydration, • underfeeding/malnutrition, • improperly mixed formula, • inactivity, • genetic predisposition or motility disorder (colonic inertia), or • developmental reasons (e.g., cognitive handicaps, attention-deficit disorder). 	<ul style="list-style-type: none"> • anatomic malformations (e.g., imperforate anus, anal stenosis), • metabolic and gastrointestinal conditions (e.g., hypothyroidism, hypercalcemia, diabetes, celiac disease), • neuropathic conditions (e.g., spinal cord abnormalities), • intestinal nerve or muscle disorders (e.g., Hirschsprung disease), • abdominal musculature abnormalities (e.g., gastroschisis, Down syndrome), • connective tissue disorders (e.g., Ehler-Danlos syndrome), • medications (e.g., iron supplements, opioids, phenobarbital, antacids), and/or • other (e.g., Vitamin D intoxication, botulism, cow's milk protein intolerance, food intolerance).

(Ferrara & Saccomano, 2017; Koppen et al., 2018)

Health History and Physical Exam

Subjective Findings

The circumstances of the presenting complaint should be determined. These include:

- duration of constipation symptoms;
- bowel movement frequency;
- past episodes of constipation;
- painful defecation;
- abdominal pain or cramping;
- fecal incontinence;

- change in stool width or consistency as stools often become hard, dry, and problematic to pass;
- bleeding associated with passing stool;
- straining while passing stool;
- weight loss;
- nausea and vomiting;
- medication history;
- diet history;
- psychosocial history;
- family history of constipation;
- soiled undergarments with small amount of liquid stool (e.g., encopresis);
- past or concurrent medical conditions that may cause constipation; and
- psychological assessment (including major family or life-changing events, toilet training techniques, bullying, and sexual or physical abuse) (Ferrara & Saccomano, 2017; Koppen et al., 2018; Leung & Hon, 2021).

Objective Findings

The RN(AAP) should:

- assess general appearance;
- perform vital signs;
- measure height and weight;
- perform an abdominal assessment to inspect for distention, palpate for discomfort and masses, and auscultate for bowel sounds;
- inspect the external perineum for anal position, soiling, hemorrhoids, anal fissures, and signs of infection;
- a digital rectal exam is not routinely required but should be performed whenever constipation is doubtful or when an organic cause is suspected;
- perform a neurological exam of infants to assess the back and spine, muscle strength, deep tendon reflexes, cremasteric reflex in males, and inspection for pilonidal dimple or hair tuft (Ferrara & Saccomano, 2017; Leung & Hon, 2021).

Differential Diagnosis

The conditions listed in the Organic column of the Predisposing and Risk Factors section should be considered as part of the differential diagnosis. In infancy, the possibility of Hirschsprung's disease causes the greatest concern. This diagnosis is most likely in an infant who has been severely constipated from birth and in whom passage of meconium was delayed for more than 24 hours after birth (Fidanza & Sables-Baus, 2019).

Making the Diagnosis

Often the client/caregiver presents with concerns over stool patterns that are within the normal range and only require reassurance after a detailed history and physical exam are conducted, as many people believe that a daily bowel movement is the norm. A presumptive diagnosis of

functional constipation can be made based on a thorough health history (including medication review) and physical examination (Thomas, 2019).

The Rome IV criteria (2016) is a resource that can be used to identify functional constipation in infants/toddlers and children/adolescents (Koppen et al., 2018). The Rome IV criteria varies by age.

For infants and children less than four years of age, two of the following signs/symptoms must be present for at least one month:

- two or fewer bowel movements per week,
- history of excessive stool retention,
- history of painful or hard bowel movements,
- history of large-diameter stools, or
- presence of a large fecal mass in the rectum (Koppen et al., 2018).

For children four years of age and older and adolescents, two or more of the following signs/symptoms must occur at least once per week for a minimum of one month duration:

- two or fewer bowel movements per week,
- at least one episode of fecal incontinence per week,
- history of stool retention,
- history of painful or hard bowel movements,
- presence of a large fecal mass in the rectum, or
- history of large-diameter stools that can obstruct the toilet (Koppen et al., 2018).

Investigations and Diagnostic Tests

The majority of infants, children and youth with constipation do not require diagnostic testing (Ferrara & Saccomano, 2017; Tambucci et al., 2018). Select clients may require diagnostic testing if they do not meet the Rome IV criteria, if their condition does not improve with conventional therapy, or if an underlying condition is suspected (Ferrara & Saccomano, 2017; Tambucci et al., 2018). The fecal immunochemical test (FIT) should be ordered when an infant or child presents with constipation and one or more of the following warning symptoms: 1) abdominal pain, 2) failure to thrive, 3) diarrhea, and/or family history of colon cancer or polyps (Ferrara & Saccomano, 2017). A urinalysis to rule out urinary tract infection should be completed if indicated by health history and physical exam (Ferrara & Saccomano, 2017). Thyroid-stimulating hormone and free thyroxine levels should be determined if hypothyroidism is suspected. Serum potassium, calcium and lead levels should be determined if hypokalemia, hypercalcemia, or lead poisoning, is suspected. Serological testing for celiac disease is indicated in children with functional constipation who have short stature, unexpected weight loss, persistent gastrointestinal symptoms, or a positive first-degree family history of celiac disease (Leung & Hon, 2021). Plain abdominal x-rays are not recommended for the diagnosis of functional constipation in pediatrics (Tambucci et al., 2018; Leung & Hon, 2021).

Management and Interventions

Goals of Treatment

The primary goals of immediate treatment are to treat impaction, increase the frequency of bowel movements, and assist the child and caregiver in addressing behavioural issues centred on stool withholding and toilet training (Ferrara & Saccomano, 2017).

Non-Pharmacological Interventions

The RN(AAP) should recommend, as appropriate, the following non-pharmacological options:

- increase dietary fibre and fluid intake, including: apple, pear, or prune juice for children older than six months as they may help due to sorbitol content;
- infants less than one year of age may benefit from hydrolyzed or partially hydrolyzed formula;
- limit dairy intake (≤ 8 years: 2 servings/day and 9-18 years: 3-4 servings/day) and assess for improvement;
- provide rewards, praise, encouragement, and reassurance for successful toileting and progress;
- encourage regular toilet times of three times per day for five minutes;
- ensure good support while sitting on the toilet (e.g., feet propped on stool);
- engage in regular exercise;
- avoid toilet training until child shows signs of readiness (e.g., pulls diaper off, verbalizing urge to defecate); and
- refrain from scolding or punishing children for soiled underwear or accidents (RxFiles Academic Detailing Program, 2021; Ferrara & Saccomano, 2017).

Pharmacological Interventions

The pharmacological interventions recommended for the treatment of constipation are in accordance with the *RxFiles: Drug Comparison Charts* (RxFiles Academic Detailing Program, 2021) and *Paediatrics: How to manage functional constipation* (Leung & Hon, 2021).

Categories of pharmacological agents for treatment of functional constipation in pediatrics include osmotic laxatives and stimulants. Avoid rectal preparations if able as they may be negatively perceived. Treatment will likely be required for at least 6 months. Treatment should be decreased gradually over several months when discontinuing (RxFiles Academic Detailing Program, 2021).

Osmotic Laxatives

Osmotic laxatives are poorly absorbed sugars that are broken down by colonic bacteria and work by drawing fluid in the colon and stimulating peristalsis.

	Drug	Dose	Route	Frequency	Duration
Pediatric (≤ 2 years)					
	Polyethylene glycol (PEG 3350)	0.8 g/kg/day (maximum 17 g/day)	p.o.	once daily (must drink at least 120-250 mL of fluid with each dose)	2 months
Pediatric (> 2 years)					
	Polyethylene glycol (PEG 3350)	0.4-1 g/kg/day (maximum 17 g/day)	p.o.	once daily (must drink at least 120-250 mL of fluid with each dose)	2 months
				(must drink at least 250 mL of fluid with each dose)	
Pediatric (≤ 1 year of age)					
	Lactulose 667 mg/mL	1-3 mL/kg/day (maximum 60 mL/day)	p.o.	divided, b.i.d.	2 months
Pediatric (> 1 to ≤ 6 years of age)					
	Lactulose 667 mg/mL	5 mL (maximum 60 mL/day)	p.o.	b.i.d.	2 months
Pediatric (≥ 2 to ≤ 12 years of age)					
	Sorbitol 70% solution	1-3 mL/kg/day (maximum dose of 60mL/day)	p.o.	daily to b.i.d.	2 months

	Drug	Dose	Route	Frequency	Duration
Pediatric (> 12 years of age)					
	Sorbitol 70% solution	15-30 mL (maximum dose of 90 mL/day)	p.o.	daily to b.i.d.	2 months
Pediatric (≤ 2year of age)					
	Magnesium Hydroxide	0.5 mL/kg/day (maximum 15 mL/day)	p.o.	daily	2 months
Pediatric (> 2 to ≤ 6years of age)					
	Magnesium Hydroxide	5-15 mL (maximum 15 mL/day)	p.o.	daily	2 months
Pediatric (6- 12 years of age)					
	Magnesium Hydroxide	15-30 mL (maximum dose of 15 mL/day)	p.o.	daily	2 months

Stimulant Laxatives

Stimulants work by altering colonic electrolyte transport, increasing fluids in the colon, and inducing peristalsis. Intended for use on a PRN basis only. Long-term laxative use can result in intermittent malabsorption, dehydration, fecal incontinence, and electrolyte imbalance.

	Drug	Dose	Route	Frequency	Duration
Pediatric (>3 to 12 years of age)					
	Bisacodyl	5-20 mg	p.o.	qhs prn	2 months
OR	Bisacodyl suppository	5-10 mg	p.r.	daily prn	2 months

	Drug	Dose	Route	Frequency	Duration
Pediatric (≥ 2 to ≤ 6 years of age)					
	Sennosides (1.7 mg/mL)	2.5-7.5 mL (maximum 10 mL daily)	p.o.	qhs prn or divided b.i.d.	2 months
Pediatric (6 to ≤ 12 years of age)					
OR	Sennosides (1.7 mg/mL)	5-10 mL (maximum 10 mL daily)	p.o.	qhs prn or divided b.i.d.	2 months
Pediatric (> 12 years of age)					
	Sennosides (1.7 mg/mL)	10-15 mL (maximum 30 mL daily)	p.o.	qhs prn or divided b.i.d.	2 months
OR	Sennosides	2-4 tablets (8.6 mg/tablet)	p.o.	qhs prn	2 months

Client and Caregiver Education

The RN(AAP) provides client and caregiver education as follows:

- Explain pathophysiology, as appropriate.
- Counsel about the appropriate use of medications (dose, frequency, compliance, etc.).
- Encourage adequate fluid intake and a high-fiber, high-bulk diet, as most children eat a diet low in fiber. A commitment on the part of the whole family is usually required to change this aspect of the diet. A good rationale for promoting a high-fiber diet for all family members is that high-fiber intake may reduce the risk of cancer in later life and evens out timing of carbohydrate absorption.
- Limit milk intake to 24 ounces daily for infants. Children eight years of age or less should have two servings of dairy/day and children eight years of age or more can have three to four servings/day.
- Reassure that stool withholding is not willful or defiant behaviour.
- Recommend comfort strategies for abdominal discomfort (e.g., application of warmth to the abdomen).
- Reinforce that success requires ongoing treatment and follow-up.
- Advise that soiling may worsen initially and can persist for 12 to 24 months.
- Educate about proper toilet training for toddlers, including regular attempts just after meals, proper position (hips flexed, feet flat), and no coercion.
- Consider a food and drink diary to help identify potential triggers (Ferrara & Saccomano, 2017; Thomas, 2019).

Monitoring and Follow-Up

The RN(AAP) should reassess the child treated for acute functional constipation in two or three days to see if the condition is improving. When constipation is resolved, step-down therapy should be implemented to maintain regular bowel function (Thomas, 2019).

Complications

The following complications may be associated with constipation in pediatric clients:

- overflow incontinence (encopresis) with fecal soiling which may be incorrectly characterized as diarrhea,
- impaction with chronic dilatation,
- urinary tract infection with or without vesicoureteral reflux,
- intestinal obstruction,
- enuresis, and
- school absenteeism (Koppen et al., 2018).

Referral

Refer to a physician/NP if client presentation is consistent with those identified in the *Immediate Consultation Requirements* section or the constipation is not resolving with appropriate treatment (IPAG, personal communication, October 2, 2019).

References

- Ferrara, L., & Saccomano, S. (2017). Constipation in children: Diagnosis, treatment, and prevention. *The Nurse Practitioner*, 42(7), 30-34. doi: 10.1097/01.NPR.0000520418.32331.6e
- Fidanza, S., & Sables-Baus, S. (2019). Alterations of digestive function in children. In K. McCance & S. Huether (Eds.), *Pathophysiology: The biologic basis for disease in adults and children* (8th ed., pp. 1373-1393). Elsevier.
- Koppen, I., Saps, M., Lavigne, J., Nurko, S., Taminiau, J., Di Lorenzo, C., & Benninga, M. (2018). Recommendations for pharmacological clinical trials in children with functional constipation: The Rome foundation pediatric subcommittee on clinical trials. *Neurogastroenterology and Motility*, 30(4). doi.org/10.1111/nmo.13294
- Leung, A. K., & Hon, K. L. (2021). Paediatrics: How to manage functional constipation. *Drugs in Context*, 10, 2020-11-12. <https://doi.org/10.7573/dic.2020-11-2>
- Rx Files Academic Detailing Program. (2021). *RxFiles: Drug comparison charts*. (13th ed.). Saskatoon Health Region.
- Lexicomp. (2022). *Sorbitol*.
http://online.lexi.com.ezproxy.saskpolytech.ca/lco/action/doc/retrieve/docid/patch_f/7693?cesid=37V0IWWXpwd&searchUrl=%2Flco%2Faction%2Fsearch%3Fq%3Dsorbital%26t%3Dname%26va%3Dsorbital
- Tambucci, R., Quitadamo, P., Thapar, N., Zenzeri, L., Caldaro, T., Staiano, A., ... Borrelli, O. (2018). Diagnostic tests in pediatric constipation. *Journal of Pediatric Gastroenterology and Nutrition*, 66(4), 89-98. doi.org/10.1097/MPG.0000000000001874
- Thomas, D. J. (2019). Common abdominal complaints. In L. Dunphy, J. Winland-Brown, B. Porter, & D. Thomas (Eds.), *Primary care: The art and science of advanced practicenursing – an interprofessional approach* (5th ed., pp. 529-544). F. A. Davis.

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