# FUNCTIONAL CONSTIPATION (FC) AND IRRITABLE BOWEL SYNDROME WITH CONSTIPATION (IBS-C) IN PEDIATRIC PATIENTS

ABBVIE MEDICAL AFFAIRS + HEALTH IMPACT

This resource should only be used by qualified medical professionals and is not intended to substitute for professional medical assessment and/or advice.

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Epidemiology and burden | Pathophysiology | Diagnostic criteria | Key Takeaways


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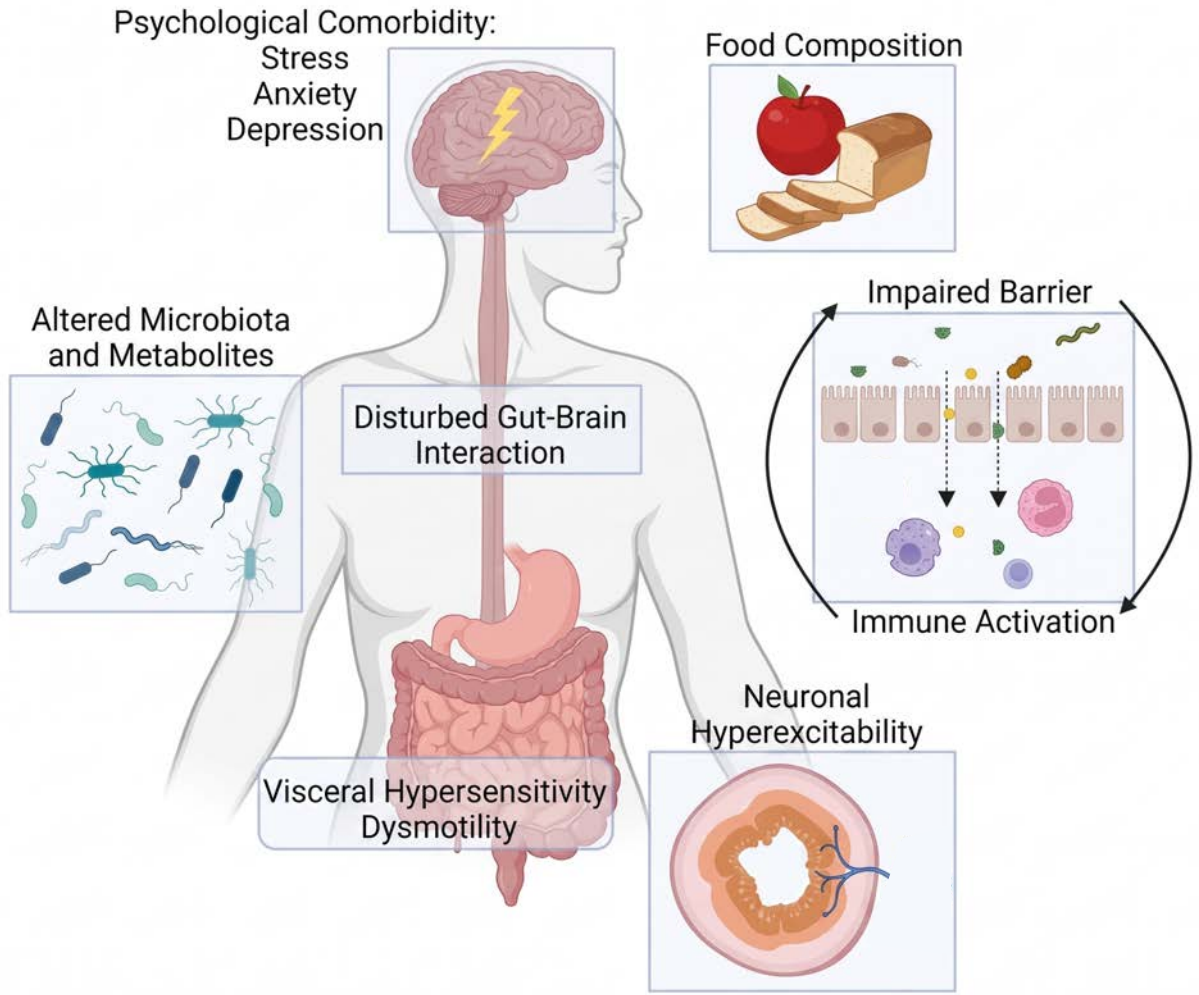
# DISORDERS OF GUT-BRAIN INTERACTIONS (DGBIs)[1]

DGBIs Involve Dysfunction in How the Brain Interprets Signals from the Gut.




## Pathophysiological Mechanisms In DGBIs Include:

- Food composition
- Psychological comorbidity
- Visceral hypersensitivity
- Altered microbiota and metabolites
- Neuronal hyperexcitability
- Impaired Barrier/Immune activation

1. Vamuytsel J, et al. BMJ 2023;72:787-798.

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# FUNCTIONAL CONSTIPATION IN PEDIATRIC PATIENTS

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# PEDIATRIC FC IS A COMMON GI DISORDER

**Pediatric FC is characterized by the presence of infrequent bowel movements, painful defecation, fecal incontinence, stool withholding behavior, and occasional passage of large-diameter stools.[1,2]**

Age and sex were not found to be associated with the prevalence of pediatric FC

Pediatric FC has a higher prevalence in the Americas and Europe, and lower prevalence in Asia

**GLOBAL PREVALENCE[3]**

**9.5%**

**US PREVALENCE[4]**

**14.1%**
**≥4 Years Old**

**17.2%**
**<4 Years Old**

FC=Functional Constipation; GI=Gastrointestinal;

1. Rajindrajith S, et al. *World J Clin Pediatr*. 2022;11(5):385-404. doi:10.5409/wjcp.v11.i5.385 2. Koppen IJN, et al. *Paediatr Drugs.* 2015;17(5):349-360. doi:10.1007/s40272-015-0142-4 3. Koppen IJN, et al. *J Pediatr.* 2018;198:121-130.e6. doi:10.1016/j.jpeds.2018.02.029 4. Data on file, AbbVie Inc. Pediatric functional constipation prevalence.

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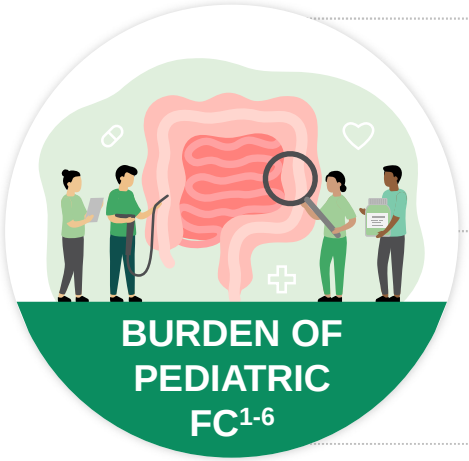
# PEDIATRIC FC IS ASSOCIATED WITH SUBSTANTIAL DISEASE BURDEN




**PEDIATRIC FC ACCOUNTS FOR:**

**~3%** of general pediatrician visits

**10–25%** of pediatric GI visits

**PEDIATRIC FC IN THE UNITED STATES:**

Represents $3.9 billion/year additional cost attributable to children with constipation

**PATIENTS WITH PEDIATRIC FC:**

- Have more outpatient and emergency room visits vs those without constipation
- Have lower school functioning HRQoL scores vs healthy children

In a study of children younger than 5 years, FC was reported to have the highest number of first-time medical visits compared to other chronic GI disorders, including abdominal pain and GERD.

Children with FC have significantly lower QoL scores compared with IBD and GERD, and equal QoL scores with IBS.

One-fourth to one-third of children with FC continue to have constipation into adulthood despite having tried multiple treatments.

FC=Functional Constipation; GERD=Gastroesophageal Reflux Disease; GI=Gastrointestinal; HRQoL=Health-related quality of life; IBD=Inflammatory Bowel Disease; QoL=Quality of life.

1. Koppen IJN, et al. *Paediatr Drugs*. 2015;17(5):349-360. doi:10.1007/s40272-015-0142-4 2. Liem O, et al. *J Pediatr*. 2009;154(2):258-262. doi:10.1016/j.jpeds.2008.07.060 3. Vriesman MH, et al. *J Pediatr*. 2019;214:141-150. doi:10.1016/j.jpeds.2019.06.059 4. Wang C, et al. *PLoS One*. 2013;8(10):e77273. doi:10.1371/journal.pone.0077273 5. Bongers ME, et al. *Pediatrics*. 2010;126(1):e156-e162. doi:10.1542/peds.2009-1009 6. Rajindrajith S, et al. *World J Clin Pediatr*. 2022;11(5):385-404. doi:10.5409/wjcp.v11.i5.385 7.

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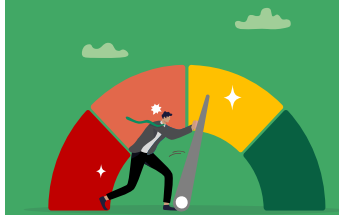
# PEDIATRIC FC CLINICAL PRESENTATION

## PATIENT SYMPTOM OVERVIEW[1,2]

- Infrequent defecation (≤2 BMs/week)
- Painful defecation
- Fecal incontinence/ encopresis (due to fecal impaction)
- Hard or large- diameter stools
- Withholding behavior

## PEDIATRIC BRISTOL STOOL FORM SCALE[3]*



**Type**

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| Looks like small hard lumps or balls, like pebbles | Looks like a fat sausage shape but lumpy and hard | Looks like a sausage but with cracks on it | Looks like a sausage or snake, smooth and soft | Looks like chicken nuggets, soft smooth blobs | Looks like oatmeal, fluffy, mushy pieces | Looks like a milkshake, watery |
| | | | | | | |

*The p-BSFS is a 7-point ordinal scale used to measure stool consistency developed by the sponsors for AbbVie clinical trials based on the original BSFS and refined based on qualitative research.
BM=Bowel movement; BSFS=Bristol Stool Form Scale; FC=Functional Constipation.

1. Rajindrajith S, et al. *World J Clin Pediatr*. 2022;11(5):385-404. doi:10.5409/wjcp.v11.i5.385 2. Koppen IJN, et al. *Paediatr Drugs*. 2015;17(5):349-360. doi:10.1007/s40272-015-0142-4 3. Linaclotide safety and efficacy in pediatric participants, 6 to 17 years of age, with irritable bowel syndrome with constipation (IBS-C) or functional constipation (FC). ClinicalTrials.gov identifier: NCT04026113. Updated May 3, 2023. Accessed May 9, 2023. https://www.clinicaltrials.gov/ct2/show/nct04026113

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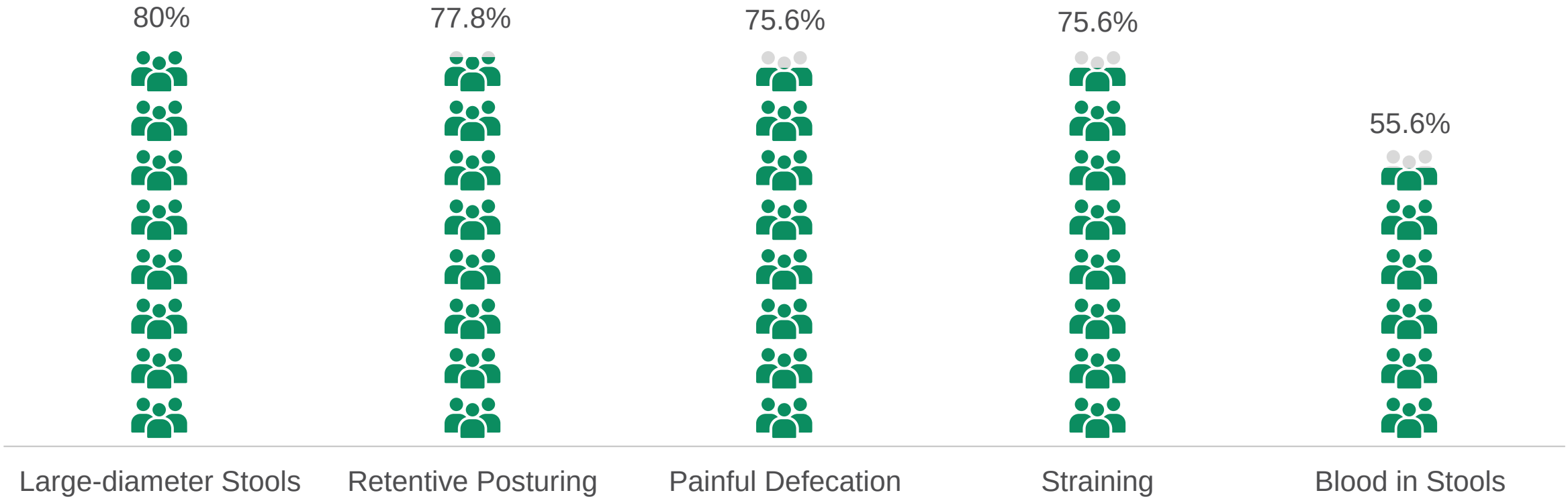
# FECAL INCONTINENCE IS COMMON IN PEDIATRIC FC

## Fecal Incontinence is Almost Always Associated with Constipation[1]

### FECAL INCONTINENCE CHARACTERISTICS[2]




FC=Functional Constipation; 1. Ali SR, et al. *Oman Med J.* 2011;26(5):376-378. doi:10.5001/omj.2011.94 2. Rajindrajith S, et al. *J Pediatr Gastroenterol Nutr.* 2010;51(4):472-476. doi:10.1097/MPG.0b013e3181d33b7d

= 10%

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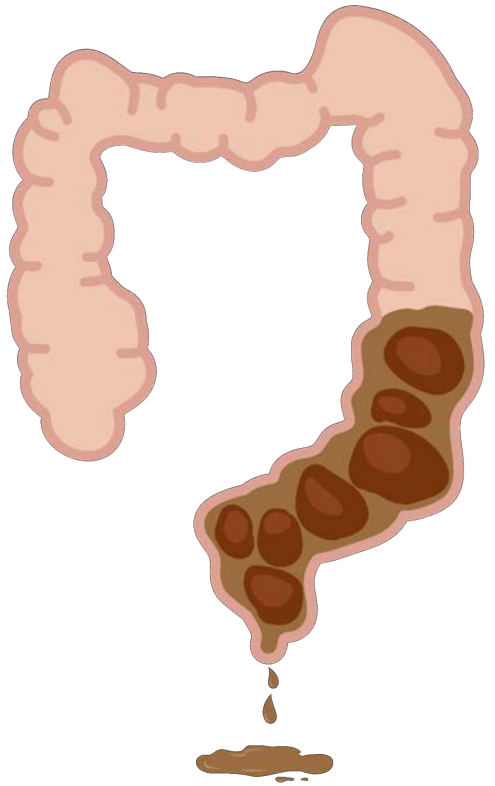
# FECAL INCONTINENCE IS COMMON IN PEDIATRIC FC

Constipation in children is a vicious cycle of painful evacuation of hard, large stools that often leads to stool withholding, accumulated stool in a distended lower colonic segment, and an irregular urge to defecate due to decreased rectal sensation[1]

Most cases of constipation and related fecal incontinence are secondary to functional disorders rather than organic causes[1]

Fecal incontinence results when softer stool from the more proximal colon cannot be held in the distended rectum and leaks around the bolus of hard stool[1]

- Due to lack of sensation in the distended distal colon, the child is not aware of softer stool passage until clothing is soiled[1]
  - This leads to marked loss of self-esteem and behavioral problems that affect quality of life for the child and family[1]



FC=Functional Constipation.

1. Ali SR, et al. *Oman Med J*. 2011;26(5):376-378. doi:10.5001/omj.2011.94 2. Rajindrajith S, et al. *J Pediatr Gastroenterol Nutr*. 2010;51(4):472-476. doi:10.1097/MPG.0b013e3181d33b7d

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# PEDIATRIC FC PATHOPHYSIOLOGY[1-4]

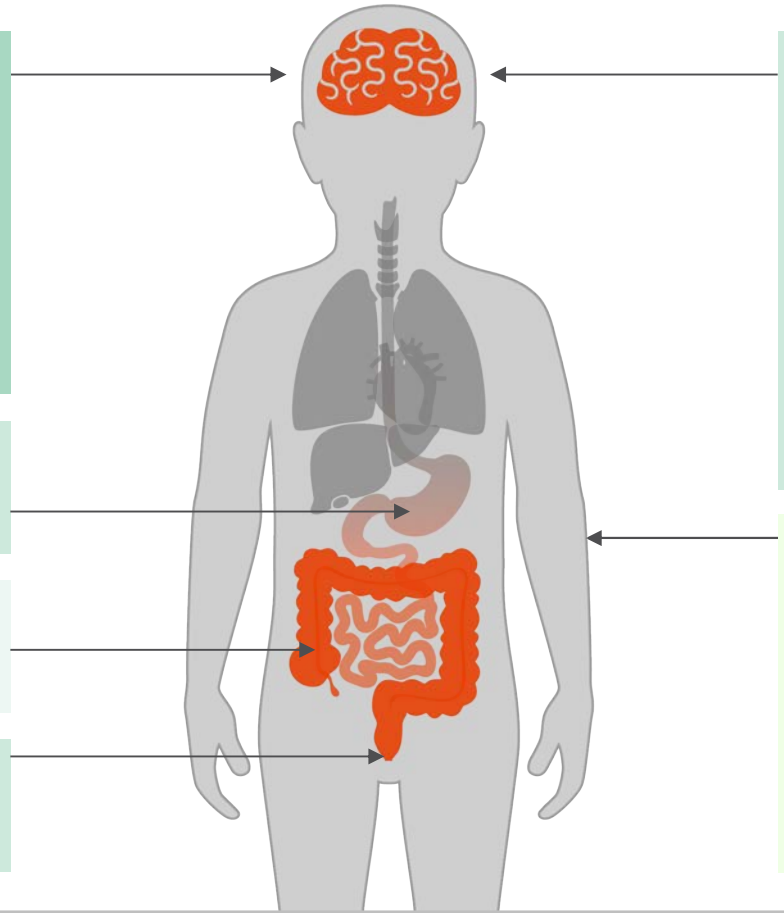
## The Etiology of Functional Constipation in Children is Largely Unknown but it is Believed to Be Multifactorial

**Behavioral disorders and behavioral factors**
- Autism
- ADHD
- Stool withholding behavior

**Gut microbiota**

**Colonic dysmotility**

**Impaired anorectal function**



**Psychosocial factors**
- Major life events
- Socioeconomic status
- Educational level
- Parental child-rearing attitudes
- Abuse
- Trauma

**Lifestyle factors**
- Diet (fiber)
- Fluid intake
- Obesity
- Physical activity

1. Rajindrajith S, et al. *World J Clin Pediatr*. 2022;11(5):385-404. doi:10.5409/wjcp.v11.i5.385; 2. Koppen IJN, et al. *Paediatr Drugs*. 2015;17(5):349-360. doi:10.1007/s40272-015-0142-4; 3. Olaru C, et al. *Gastroenterol Res Pract.* 2016;2016:3989721. doi:10.1155/2016/3989721; 4. Boilesen SN, et al. *Eur J Nutr.* 2021;60(8):4647-4655. doi:10.1007/s00394-021-02657-2

ADHD=Attention-Deficit/Hyperactivity Disorder; FC=Functional Constipation.

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# PSYCHOSOCIAL FACTORS INVOLVED IN THE PATHOPHYSIOLOGY OF FC IN CHILDREN[1]

## MAJOR LIFE EVENTS

- Stressful events
  - Separation from best friend
  - Failure in exam or bullied in school
  - Divorce/separation of parents
  - A parent's loss of a job
  - Severe illnesses in the family

## ABUSE

- Physical, emotional, and sexual abuse
- Psychological trauma associated with abuse and maltreatment

## PARENT-CHILD ATTITUDES

- Parents' rearing style during toilet training
- Authoritative parenting resulting in overprotective and rigid attitudes

## TOILET TRAINING

- Poor toilet training
  - Toilet training/potty training should be started between **18-30 months**

    **18 months** → **30 months**
  - Timing influenced by socioeconomic factors and cultural norms
- Toileting refusal may be due to fear of defecation, using the toilet, or strained family dynamics
  - This enhances withholding behavior

FC=Functional Constipation. 1. Rajindrajith S et al. *World J Clin Pediatr*. 2022;11(5):385-404. doi:10.5409/wjcp.v11.i5.385

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# IMPACT OF STOOL WITHHOLDING ON CHILDREN WITH FC [1,2]

- Most common pathophysiological mechanism in young children
- Faulty toilet training and painful defecation due to passage of hard and large fecal masses lead children to withhold stools
- Rectal mucosa absorb water in feces, and the fecal mass becomes rock hard and difficult to evacuate; occasional passage of the fecal mass causes pain in the perianal region, which further aggravates withholding
- Stretched rectal walls may lose normal contractility, which is necessary to propel feces

Changes in routine → Changes in diet → Stressful event → Postponing defecation (too busy) → Too early toilet training

1. Rajindrajith S, et al. World J Clin Pediatr. 2022;11(5):385-404. doi:10.5409/wjcp.v11.i5.385 2. Poddar U, Indian Pediatr. 2016;53(4):319-327. doi:10.1007/s13312-016-0845-9

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# ROME IV CONSTIPATION DIAGNOSTIC CRITERIA

## INFANTS AND TODDLERS (<4 YEARS OLD)

### ONE MONTH OF AT LEAST TWO OF THE FOLLOWING:

- **2** or fewer bowel movements per week
- History of excessive stool retention
- History of painful or hard bowel movements
- History of large-diameter stools
- Presence of a large fecal mass in the rectum

In toilet trained children:

- At least **1** episode/week of fecal incontinence
- History of large diameter stools that may obstruct the toilet

## OLDER CHILDREN (≥4 YEARS OLD)

### TWO OR MORE OF THE FOLLOWING ONCE PER WEEK OVER ONE MONTH:

- **2** or fewer bowel movements per week
- History of excessive stool retention
- History of painful or hard bowel movements
- Presence of a large fecal mass in the rectum
- At least **1** episode/week of fecal incontinence
- History of large diameter stools that may obstruct the toilet

1. Benninga MA et al. *Gastroenterol* 2016; 150:1443-1455 2. Hyams JM et al. *Gastroenterol* 2016; 150: 1456-1468

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# CLINICAL EVALUATION BASED ON GUIDELINES FOR THE EVALUATION AND TREATMENT OF THE CHILD WITH FC BY ESPGHAN AND NASPGHAN[1]

## HISTORY AND PHYSICAL

- Rome criteria is the recommended definition of FC for all age groups
- Diagnosis of FC:
  - Based on history and physical examination
  - If only one Rome criterion is present and the diagnosis of FC is uncertain, a digital examination of the anorectum is recommended
- Identification of underlying disease:
  - Alarm signs/symptoms and diagnostic clues

## IMAGING

- Abdominal X-ray
  - No role for routine use in diagnosis
  - May be used if fecal impaction is suspected but physical examination is unreliable/not possible

## LABS

- The following are not recommended for testing in the absence of alarm symptoms
  - Routine allergy testing for cow's milk allergy
  - Hypothyroidism
  - Celiac disease
  - Hypercalcemia

## PROCEDURES

- Colonic manometry
  - May be indicated in the evaluation of intractable constipation before surgical intervention is considered
- Rectal biopsy
  - Gold standard for diagnosing Hirschsprung disease*
- Barium enema
  - Not used as an initial diagnostic tool

*Hirschsprung disease is a birth defect in which some nerve cells are missing in the large intestine, so a child's intestine can't move stool and becomes blocked.[2]

ESPGHAN=European Society for Pediatric Gastroenterology, Hepatology, and Nutrition; FC=Functional Constipation; NASPGHAN=North American Society for Pediatric Gastroenterology, Hepatology, and Nutrition.

1. Tabbers MM et al. *J Pediatr Gastroenterol Nutr.* 2014;58(2):258-274. doi:10.1097/MPG.0000000000000266 2. Hirschsprung disease. https://www.niddk.nih.gov/health-information/digestive-diseases/hirschsprung-disease

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# CLINICAL EVALUATION BASED ON GUIDELINES FOR THE EVALUATION AND TREATMENT OF THE CHILD WITH FC BY ESPGHAN AND NASPGHAN[1]

- Passage of meconium >48 h in a term newborn
- Constipation starting in the first month of life
- Family history of Hirschsprung's disease
- Ribbon stools
- Blood in the stools in the absence of anal fissures
- Failure to thrive
- Fever
- Bilious vomiting
- Severe abdominal distension
- Perianal fistula

- Abnormal thyroid gland
- Abnormal position of the anus
- Absent anal or cremasteric reflex
- Decreased lower extremity strength/tone/reflex
- Sacral dimple
- Tuft of hair on spine
- Gluteal cleft deviation
- Extreme fear during anal inspection
- Anal scars

ESPGHAN=European Society for Pediatric Gastroenterology, Hepatology, and Nutrition; FC=Functional Constipation. NASPGHAN=North American Society for Pediatric Gastroenterology, Hepatology, and Nutrition.

1. Hyams JS, et al. Gastroenterology. 2016;150(6):1456-1468.e2. doi:10.1053/j.gastro.2016.02.015

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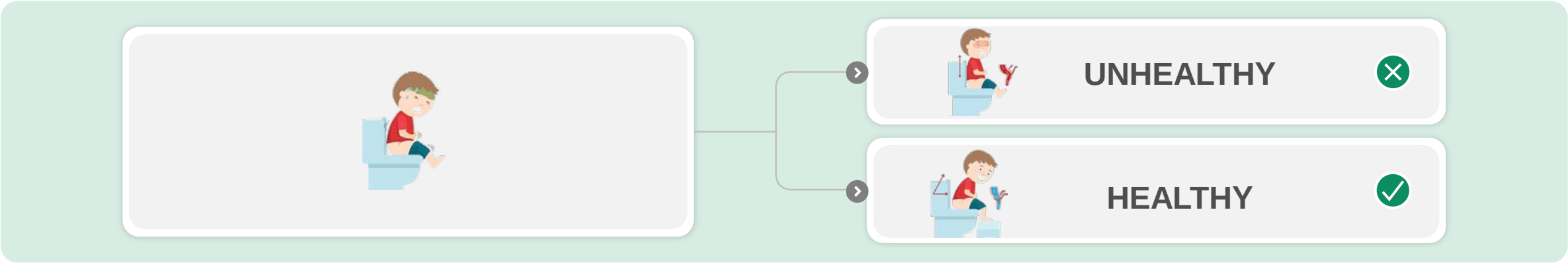
# NON-PHARMACOLOGICAL INTERVENTIONS




## BEHAVIORAL AND PHYSICAL INTERVENTION[1-3]

- Children should **sit on the potty or toilet for 5 min after wakening** and **after each meal** to take advantage of the gastrocolic reflex
- **Relaxed posturing should be encouraged** by providing foot support
- Parents should be encouraged to **reinforce positive behavior**, potentially with incentives for passing stools
- **Pelvic physiotherapy** may help improve constipation and fecal incontinence.

## BEHAVIORAL AND PSYCHOLOGICAL INTERVENTIONS[1]

- Mental health services should be utilized for children with behavioral problems **(toilet refusal, stress, fear of defecation)**

1. Rajindrajith S. *World J Clin Pediatr.* 2022;11:385-404; 2. Vriesman.MH, et al. *Nat Rev Gastroenterol Hepatol.* 2020;17:21-39; 3. van Engelenburg-van Lonkhuyzen ML, et al. *Gastroenterology.* 2017;152(1):82-91.

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# NON-PHARMACOLOGICAL INTERVENTIONS

**DIET**[1-3]

ESPGHAN/ NASPGHAN **recommends normal amount of fiber** for children with FC

| Dietary Need | Dietary fiber | Hydration |
|---|---|---|
| **Recommendation** | • Age (yrs) + **5 or 10 g/day**<br>• **7 to 15 g/day** for ages **2 to 5 y** | **32 to 64** ounces of water and nondairy liquids per day |

**PROBIOTICS**[1-3]

ESPGHAN/ NASPGHAN **does not recommend probiotics** for children with FC

**BIOFEEDBACK AND PELVIC FLOOR PHYSIOTHERAPY**[1-3]

Instrument-based and **neuromuscular conditioning techniques train relevant muscles** to promote regular BMs

RCT reported significant difference **favoring pelvic physiotherapy** vs standard medical care in children ages 5 to 17 years[4a]

ESPGHAN/NASPGHAN **does not recommend behavioral therapy or biofeedback** for children with FC

[a]RCT compared “successful treatment” defined as absence of FC according to Rome III criteria; AHF, American Health Foundation; 1. Koppen IJN. *Pediatr Drugs*. 2015; 17:349-360.; 2. Rajindrajith S. *World J Clin Pediatr*. 2022;11:385-404.; 3. Tabbers MM et al. *JPGN.* 2014;58:258-274.; 4. van Engelenburg-van Lonkhuyzen ML et al. *Gastroenterol.* 2017;152:82-91.

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# PRINCIPLES OF PHARMACOLOGICAL TREATMENT[1]

## DISIMPACTION

- Fecal impaction is defined as the presence of a large fecal mass in the rectum or abdomen
- Disimpaction recommended prior to initiation of maintenance

## MAINTENANCE

- Recommended to prevent re-accumulation of feces
- Effect of treatment should be evaluated 1 to 2 weeks after initiation
- Treatment should be continued for at least 2 months
  - Symptoms should be resolved for at least 1 month before weaning is initiated

## WEANING

- 50% of children with FC on maintenance can stop using treatment within 6–12 months after initiation
- Maintenance treatment should be gradually reduced, to prevent relapse
- Weaning can be considered when child maintains defecation frequency of ≥3 times per week

Koppen IJN, et al. *Paediatr Drugs*. 2015;17(5):349-360. doi:10.1007/s40272-015-0142-4
FC=Functional Constipation.

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# PEDIATRIC FC KEY TAKEAWAYS

## PED FC EPIDEMIOLOGY[2,3]

**Estimated global prevalence of 9.5%**

Prevalence in the US is **14.1%** in children **≥4** years old

## PED FC CHARACTERISTICS[1]

Common pediatric disorder characterized by infrequent defecation, hard or large diameter stools, painful defecation, withholding behavior and fecal incontinence.

Ped FC is associated with significant disease burden for patients and caregivers

## DIAGNOSIS AND MANAGEMENT[4,5]

**Ped FC can be diagnosed by using the Rome IV criteria with minimal lab testing and imaging**

Management consists of 3 stages:

- Disimpaction
- Maintenance
- Weaning

1. Koppen IJN, et al. *J Pediatr*. 2018;198:121-130.e6. doi:10.1016/j.jpeds.2018.02.029 2. Data on file, AbbVie Inc. Pediatric functional constipation prevalence. 3. Rajindrajith S, et al. *World J Clin Pediatr*. 2022;11(5):385-404. doi:10.5409/wjcp.v11.i5.385 4. Hyams JS, et al. *Gastroenterology*. 2016;150(6):1456-1468.e2. doi:10.1053/j.gastro.2016.02.015 5. Koppen IJN, et al. *Paediatr Drugs*. 2015;17(5):349-360. doi:10.1007/s40272-015-0142-4

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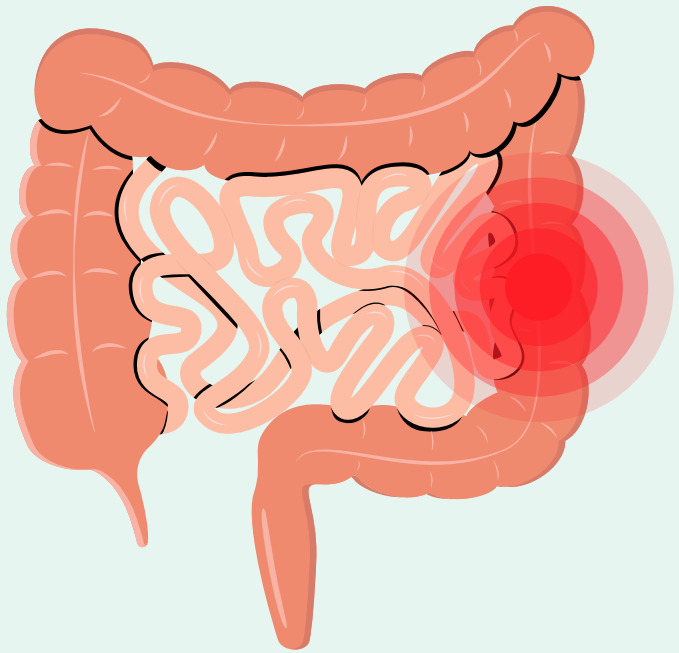
# IRRITABLE BOWEL SYNDROME WITH CONSTIPATION (IBS-C) IN PEDIATRIC PATIENTS



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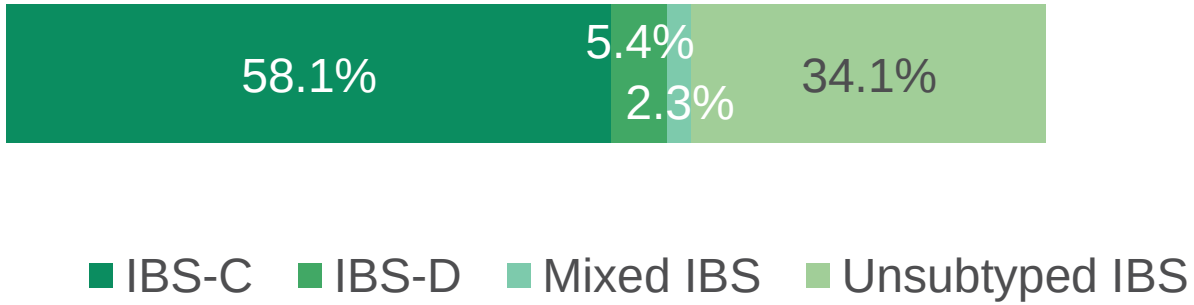
# IBS-C IS ONE OF THE MOST COMMONLY DIAGNOSED MEDICAL PROBLEMS IN PEDIATRICS[1]

## IBS PREVALENCE IN CHILDREN[2]

**Estimated global prevalence of 8.8% (95% CI, 6.2-11.9)***

**Reported US prevalence has ranged 1.6%-24.0%***

## IBS SUBTYPES IN CHILDREN[3]




IBS-C was the most common subtype in children†

*Based on a meta-analysis of 58 articles published by February 2014 that included 196,472 children ages 4-18 years with functional abdominal pain disorder. †Based on a prospective study of 129 patients ages 7-18 years who met pediatric Rome III IBS criteria and were part of larger studies of children with functional GI disorders, recruited from primary and tertiary centers. Participants were assigned IBS subtypes based on their reported stool information per adult Rome III criteria.
IBS=irritable bowel syndrome; IBS-C=irritable bowel syndrome with constipation; IBS-D=irritable bowel syndrome with diarrhea.

1. Chiou E, Nurko S. *Expert Rev Gastroenterol Hepatol*. 2010;4(3):293-304. doi:10.1586/egh.10.28 2. Korterink JJ, et al. *PLoS One*. 2015;10(5):e0126982. doi:10.1371/journal.pone.0126982 3. Self MM, et al. *Clin Gastroenterol Hepatol*. 2014;12(9):1468-73. doi:10.1016/j.cgh.2014.01.031

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# IBS BURDEN IN CHILDREN[1]

**Pediatric patients with GI disorders, including IBS, reported lower HRQoL vs healthy controls‡**

**THESE PATIENTS**

- Missed more school
- Spent more days in bed and needing care
- Had parents who missed more workdays, with greater impact on work
- Had greater healthcare utilization

‡Based on results from 689 families completing the Pediatric Quality of Life Inventory 4.0 Generic Core Scales. Patients had 1 of 7 physician-diagnosed GI disorders, including IBS. The healthy control sample included 1114 families.
GI=gastrointestinal; HRQoL=health-related quality of life

1. Varni JW, et al. *J Pediatr*. 2015;166(1):85-90. doi:10.1016/j.jpeds.2014.08.022

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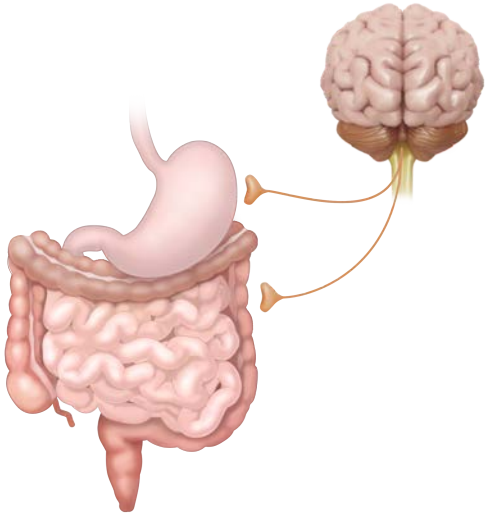
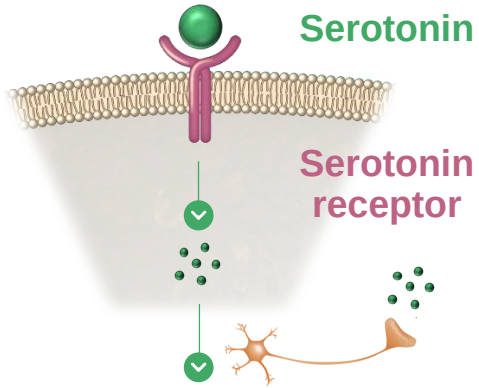
# THE PRECISE CAUSE OF IBS IS UNKNOWN, BUT A COMBINATION OF FACTORS MAY CONTRIBUTE TO IBS DEVELOPMENT

**BRAIN-GUT INTERACTION[1,2]**






Release of acetylcholine and other neurotransmitters

- Intestinal secretion
- Basal motor activity
- GI motility

Food, hunger, emotions, and stress impact the bidirectional communication between the GI tract and the nervous system. The neurotransmitter serotonin is a key mediator, and alteration of serotonergic signaling has been implicated in IBS.

GI=Gastrointestinal; IBS=Irritable Bowel Syndrome.; 1. Fichna J et al. *Front Pharmacol.* 2012;3(127):1-12. doi:10.3389/fphar.2012.00127

2. Pathophysiology of irritable bowel syndrome. https://www.uptodate.com/contents/pathophysiology-of-irritable-bowel-syndrome

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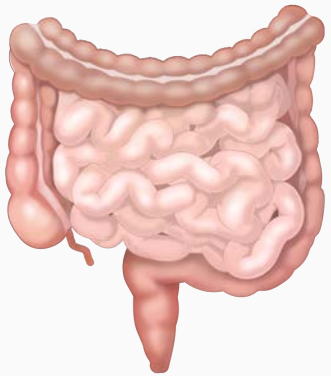
# THE PRECISE CAUSE OF IBS IS UNKNOWN, BUT A COMBINATION OF FACTORS MAY CONTRIBUTE TO IBS DEVELOPMENT

**ALTERED MOTILITY OF THE GI TRACT[1-3]**

**Delayed Motility**

**MORE water absorption**

**Hard/Lumpy Stool**



**Accelerated Motility**

**LESS water absorption**

**Loose/ Watery Stool**

GI=Gastrointestinal; IBS=Irritable Bowel Syndrome

1. Pathophysiology of irritable bowel syndrome. https://www.uptodate.com/contents/pathophysiology-of-irritable-bowel-syndrome 2. Feldman M et al. *Sleisenger and Fordtran's Gastrointestinal and Liver Disease: Pathophysiology/Diagnosis/Management*. 9th ed. 2010. 3. Chey WD et al. *Curr Gastroenterol Rep.* 2006;8(4):273-281. doi:10.1007/s11894-006-0047-z

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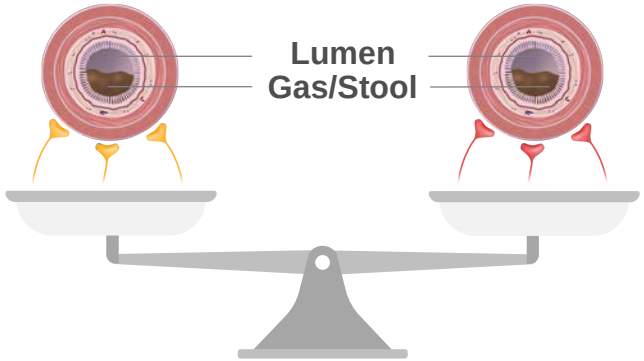
# THE PRECISE CAUSE OF IBS IS UNKNOWN, BUT A COMBINATION OF FACTORS MAY CONTRIBUTE TO IBS DEVELOPMENT

**VISCERAL HYPERSENSITIVITY[1-3]**

**Normal**

1. Gas or stool causes stretching of lumen
2. This is sensed by afferent nerves
3. May or may not be perceived by the brain and does not cause pain




**IBS**

1. Afferent nerves may be overly sensitive to stretching of the lumen
2. This causes increased signals to be sent to the brain
3. Produces perception of pain

***Local inflammation, alterations in gut flora, and psychological factors may also contribute to IBS.***

GI=Gastrointestinal; IBS=Irritable Bowel Syndrome

1. Pathophysiology of irritable bowel syndrome. https://www.uptodate.com/contents/pathophysiology-of-irritable-bowel-syndrome
2. Delvaux M. *Gut.* 2002;51(suppl 1):i67–i71. doi:10.1136/gut.51.suppl_1.i67 3. Karantanos T et al. *Gut Pathog.* 2010;2(1):3. doi:10.1186/1757-4749-2-3

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# THE ROME IV DIAGNOSTIC CRITERIA FOR IBS* IN CHILDREN/ADOLESCENTS[1]

## ROME IV CRITERIA

Criteria fulfilled for at least **2 months** prior to diagnosis

**Abdominal pain at least 4 days per month over at least 2 months, associated with one or more of the following**

- Defecation
- A change in frequency of stool
- A change in form (appearance) of stool

**In children with abdominal pain and constipation, the pain does not resolve with resolution of the constipation†**

**After appropriate evaluation, the symptoms cannot be fully explained by another medical condition**

*The Rome IV diagnostic criteria do not provide diagnostic criteria for IBS subtypes in children; †Children in whom the pain resolves have functional constipation and not IBS.

1. Rome Foundation. ROME IV diagnostic criteria for disorders of gut-brain interaction (DGBI). Published January 16, 2016. Accessed April 28, 2026. https://theromefoundation.org/rome-iv/rome-iv-criteria/

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# PEDIATRIC IBS-C KEY TAKEAWAYS

## PED IBS-C EPIDEMIOLOGY[8-10]

**Estimated global prevalence of 8.8%**

Prevalence in the US ranges from **1.6-24%** in children **≥4** years old

## PED IBS-C CHARACTERISTICS[1-7]

IBS-C is multifactorial and may involve brain-gut dysfunction, altered motility, visceral hypersensitivity, psychological factors, local inflammation, and altered gut flora.

Ped IBS-C is associated with significant disease burden for patients and caregivers

## DIAGNOSIS[11]

**Ped IBS-C can be diagnosed by using the Rome IV criteria. Children in whom the abdominal pain resolves have functional constipation and not IBS.**

1. Fichna J et al. *Front Pharmacol.* 2012;3(127):1-12. doi:10.3389/fphar.2012.00127 2. Pathophysiology of irritable bowel syndrome. https://www.uptodate.com/contents/pathophysiology-of-irritable-bowel-syndrome 3. Feldman M et al. *Sleisenger and Fordtran's Gastrointestinal and Liver Disease: Pathophysiology/Diagnosis/Management*. 9th ed. 2010. 4. Chey WD et al. *Curr Gastroenterol Rep.* 2006;8(4):273-281. doi:10.1007/s11894-006-0047-z 5. Delvaux M. *Gut.* 2002;51(suppl 1):i67–i71. doi:10.1136/gut.51.suppl_1.i67 6. Karantanos T et al. *Gut Pathog.* 2010;2(1):3. doi:10.1186/1757-4749-2-3 7. Varni JW, et al. *J Pediatr*. 2015;166(1):85-90. doi:10.1016/j.jpeds.2014.08.022 8. Chiou E, Nurko S. *Expert Rev Gastroenterol Hepatol*. 2010;4(3):293-304. doi:10.1586/egh.10.28 9. Korterink JJ, et al. *PLoS One*. 2015;10(5):e0126982. doi:10.1371/journal.pone.0126982 10. Self MM, et al. *Clin Gastroenterol Hepatol*. 2014;12(9):1468-73. doi:10.1016/j.cgh.2014.01.031 11. Rome Foundation. ROME IV diagnostic criteria for disorders of gut-brain interaction (DGBI). Published January 16, 2016. Accessed April 28, 2026. https://theromefoundation.org/rome-iv/rome-iv-criteria

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