



NCC Pediatrics Continuity Curriculum

Constipation in Children:

Making A Hard Topic Soft & Gentle

Goal

To understand the differential diagnosis & management of constipation in the pediatric patient.

Objectives

Upon completion of this module, the pediatric resident will:

- Name 8 diagnoses in the differential diagnosis of constipation.
- Identify at least 5 “red flags” in the history of a patient presenting with constipation.
- Using a finger inserted into a balled fist, simulate the digital rectal examination findings of Hirschsprung’s, neurologic dysfunction, functional constipation, and normal anal tone.
- List the medications (oral and rectal) used in constipation and their indications.
- Write out the behavioral and dietary management of constipation.

Pre-Meeting Preparation

- Read the review article on pediatric constipation from American Family Physician.
- Skim through the article on the prevalence of constipation from the Journal of Pediatrics
- Prepare thyself to discuss the cases below in order to fulfill the objectives.



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Constipation Cases

Case #1: Nicholas is a 6 year old male presenting with fecal soiling on a daily basis, which began in late October. He claims he "can't tell when" he is about to soil. His parents report multiple bouts daily of fecal urgency where he rushes to the toilet, only to pass small amounts of diarrheal stool. His toilet sitting behavior is peculiar in that he sits far back on the toilet seat with his knees extended and his toes pointed, straining at defecation. Once or twice weekly he will pass a very large caliber formed stool, which has on occasion plugged the plumbing. This pattern was not thought to be a problem by his parents as it began shortly after they began potty training him at two years old so that he could enter preschool earlier than rest of the neighborhood children.

1) What additional history would you like to know?

The dietary history finds that he eats the school breakfast and lunch, and will often not touch his vegetables at supper. Closer questioning indicates he does not pick fruit or vegetables from the salad bar at school, and the school typically offers only sweet buns or a burrito for breakfast. Physical examination finds a midline mass in the lower abdomen, with a rectal examination that shows a normally placed anus with an intact anal wink and a perineum coated with stool. The anus is shortened with the internal anal sphincter dilated by a massive amount of formed stool. You are unable to accurately assess the diameter of the rectum as the stool appears to fill the pelvic bowl. The stool tests negative for occult blood.

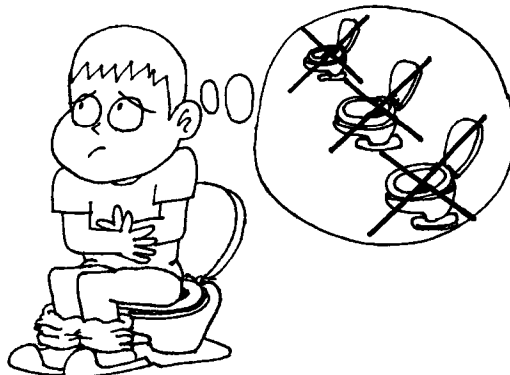
2) What diagnosis does this history/physical suggest? What is the pathogenesis of this diagnosis?

3) What are the key features of behavioral management for this patient?

4) How would you disimpact this patient?

5) What maintenance therapy would you provide?

6) What dietary recommendations would you make for this patient and family?





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Case 2: Mom calls you about Dina. She is a one month old female and mom is concerned because she hasn't stooled in 3 days. Previously, she had stooled four to five times a day. She was a term delivery with no issues and stooled within the first 48 hours of life.

1) What other history questions would be important at this time?

Dina is exclusively breastfed, she is urinating well, continues to eat well and seems happy and playful. Her weight was over birthweight at her 2 week well child and there were no concerns during that visit. Her abdomen seems a little fuller to mom, but Dina does not seem bothered by it.

2) Are you concerned?

3) What is your advice for this mom? Should she be seen immediately? Tomorrow?

Dina is now 5 months old. Mom brings her in for a visit because every time she tries to start solid foods, Dina goes from stooling every 3-4 days (which has been her norm) to "never". Mom reports the first time she tried solids (about 3 weeks ago) Dina went 7 days without stooling and was very uncomfortable and fussy. Mom finally gave her a glycerin suppository and stopped the solids for a little bit. A week or so later, she tried again with similar results. This time she had gotten some advice to try some clear juice, so she tried pear juice for 2 days with no success. Again, she had to give a suppository on the 7th day which produced a fairly explosive stool. She is growing well and is otherwise developmentally normal.

4) Are you concerned?

5) Is there other history you would like to obtain?

6) What would be important on exam for this infant?

7) What exam findings might increase your concern?

Evaluation and Treatment of Constipation in Infants and Children

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Constipation in children usually is functional and the result of stool retention. However, family physicians must be alert for red flags that may indicate the presence of an uncommon but serious organic cause of constipation, such as Hirschsprung's disease (congenital aganglionic megacolon), pseudo-obstruction, spinal cord abnormality, hypothyroidism, diabetes insipidus, cystic fibrosis, gluten enteropathy, or congenital anorectal malformation. Treatment of functional constipation involves disimpaction using oral or rectal medication. Polyethylene glycol is effective and well tolerated, but a number of alternatives are available. After disimpaction, a maintenance program may be required for months to years because relapse of functional constipation is common. Maintenance medications include mineral oil, lactulose, milk of magnesia, polyethylene glycol powder, and sorbitol. Education of the family and, when possible, the child is instrumental in improving functional constipation. Behavioral education improves response to treatment; biofeedback training does not. Because cow's milk may promote constipation in some children, a trial of withholding milk may be considered. Adding fiber to the diet may improve constipation. Despite treatment, only 50 to 70 percent of children with functional constipation demonstrate long-term improvement. (*Am Fam Physician* 2006;73:469-77, 479-80, 481-2. Copyright © 2006 American Academy of Family Physicians.)

► **Patient information:** Two patient information handouts on constipation in children, written by the authors of this article, are provided on pages 479 and 481.

Constipation has been defined as “a delay or difficulty in defecation, present for two or more weeks, sufficient to cause significant distress to the patient.”¹ This condition is responsible for an estimated 3 to 5 percent of physician visits by children.² Constipation often causes more distress to parents and other caregivers than to the affected child. Many caregivers worry that a child's constipation is the sign of a serious medical problem.

As children age, normal physiologic changes occur in the intestines and colon that decrease the daily number of stools from a mean of 2.2 in infants younger than one year to a mean of 1.4 in one- to three-year-old children (*Table 1*).^{1,3} Thus, less frequent stooling may not be constipation. If, however, constipation is defined as “failure to evacuate the lower colon completely,”⁴ even children who stool daily in small amounts may be considered to have constipation. Encopresis, which is the involuntary leakage of feces into the undergarments, may be an indication of constipation.

This article reviews the differentiation of organic and functional constipation in infants and children. The treatment of functional constipation also is reviewed.

Epidemiology

Up to one third of children ages six to 12 years report constipation during any given year.⁵ Constipation generally first appears between the ages of two and four years.⁶

Encopresis is reported by 35 percent of girls and 55 percent of boys who have constipation.⁷ In toddlers (ages two to four years), the distribution of constipation and soiling is equal in boys and girls. However, by school age (five years), encopresis is three times more common in boys than in girls.⁴ At the age of 10 years, approximately 1.6 percent of children still have some encopresis.⁴

Etiology and Pathophysiology

Continence is maintained by involuntary and voluntary muscle contractions. The internal anal sphincter has an involuntary resting tone that decreases when stool enters the rectum. The external anal sphincter is under voluntary control. The urge to defecate is triggered when stool comes into contact with the mucosa of the lower rectum.

If a child does not wish to defecate, he or she tightens the external anal sphincter and squeezes the gluteal muscles. These actions can push feces higher in the rectal vault and reduce the urge to defecate. If a

SORT: KEY RECOMMENDATIONS FOR PRACTICE

<i>Clinical recommendation</i>	<i>Evidence rating</i>	<i>References</i>
If a rectal examination cannot be performed, an abdominal radiograph can be used to diagnose rectal impactions in children.	C	8
Orally administered polyethylene glycol is recommended for disimpaction in children with functional constipation. This agent has been shown to be more effective than lactulose.	B	11
Behavioral treatment is recommended as an adjunct to medical therapy in children with functional constipation.	A	14, 15
Biofeedback is not recommended because it does not improve outcomes when it is combined with medical therapy for functional constipation in children.	B	16

A = consistent, good-quality patient-oriented evidence; B = inconsistent or limited-quality patient-oriented evidence; C = consensus, disease-oriented evidence, usual practice, expert opinion, or case series. For information about the SORT evidence rating system, see page 374 or <http://www.aafp.org/afpsort.xml>.

child frequently avoids defecating, the rectum eventually stretches to accommodate the retained fecal mass, and the propulsive power of the rectum is diminished.

The longer that feces remains in the rectum, the harder it becomes. Passage of a hard or large stool may cause a painful anal fissure. The cycle of avoiding bowel movements because of a fear of painful defecation may progress to stool retention and infrequent bowel movements, a condition that is termed functional constipation.

Most children who present with constipation have functional constipation. Rarely, however, constipation has a serious organic cause. For confident diagnosis of functional constipation, family physicians should be alert for warning signs that may indicate the presence of a pathologic condition (Table 2).⁵

**Differential Diagnosis:
Functional vs. Organic Constipation
NEONATES**

Organic causes of constipation most commonly are found in neonates (Table 3).¹ Failure to pass a meconium stool within 48 hours of birth should raise suspicion for Hirschsprung's disease (congenital aganglionic megacolon). Hirschsprung's disease occurs in one of 5,000 children and usually is diagnosed in infancy.¹

In neonates, it is important to confirm the anatomic position and patency of the anus. The absence of an anal wink or a cremasteric reflex, the presence of a pilonidal dimple or hair tuft, or a decrease in lower extremity tone, strength, or reflexes may suggest a spinal cord abnormality such as tethered cord, myelomeningocele, or spinal cord tumor.

INFANTS

If Hirschsprung's disease is not recognized in the neonatal period, the affected infant may present with symptoms such as abdominal distension, pencil-thin stools, failure to thrive, and bilious vomiting. If an infant has any of these symptoms, and the physical examination shows an empty rectum, Hirschsprung's disease should be suspected. A delay in diagnosing this disease places the infant at risk for enterocolitis, with fever, explosive bloody diarrhea, and abdominal distension, in the second or third month of life.

Hypothyroidism is suggested in an infant with bradycardia, poor growth, and large fontanelles. Cystic fibrosis may present with constipation and should be considered in an

**TABLE 1
Normal Frequency of Bowel Movements
in Infants and Children**

<i>Age</i>	<i>Mean number of bowel movements per week</i>	<i>Mean number of bowel movements per day</i>
0 to 3 months: breastfed	5 to 40	2.9
0 to 3 months: formula-fed	5 to 28	2.0
6 to 12 months	5 to 28	1.8
1 to 3 years	4 to 21	1.4
> 3 years	3 to 14	1.0

Adapted with permission from Fontana M, Bianchi C, Cataldo F, Conti Nibali S, Cucchiara S, Gobio Casali L, et al. Bowel frequency in healthy children. Acta Paediatr Scand 1989;78:682-4, with information from reference 1.

TABLE 2

Warning Signs for Organic Causes of Constipation in Infants and Children

<i>Warning signs or symptoms</i>	<i>Suggested diagnosis</i>
Passage of meconium more than 48 hours after delivery, small-caliber stools, failure to thrive, fever, bloody diarrhea, bilious vomiting, tight anal sphincter, and empty rectum with palpable abdominal fecal mass	Hirschsprung's disease
Abdominal distention, bilious vomiting, ileus	Pseudo-obstruction
Decrease in lower extremity reflexes or muscular tone, absence of anal wink, presence of pilonidal dimple or hair tuft	Spinal cord abnormalities: tethered cord, spinal cord tumor, myelomeningocele
Fatigue, cold intolerance, bradycardia, poor growth	Hypothyroidism
Polyuria, polydipsia	Diabetes insipidus
Diarrhea, rash, failure to thrive, fever, recurrent pneumonia	Cystic fibrosis
Diarrhea after wheat is introduced into diet	Gluten enteropathy
Abnormal position or appearance of anus on physical examination	Congenital anorectal malformations: imperforate anus, anal stenosis, anteriorly displaced anus

Adapted with permission from Felt B, Brown P, Coran A, Kochhar P, Opipari-Arrigan L. Functional constipation and soiling in children. University of Michigan Health System guidelines for clinical care 2003. Accessed online February 2, 2005, at: <http://cme.med.umich.edu/pdf/guideline/peds03.pdf>.

infant with constipation and concomitant rash, failure to thrive, fever, or pneumonia.

CHILDREN

Functional constipation is the cause of symptoms of constipation in more than 95 percent of children older than one year.⁵ However, when warning signs are present, organic causes must be considered (Table 2).⁵

Short-segment Hirschsprung's disease may remain undiagnosed until a child is older than three years. Metabolic causes of constipation include hypercalcemia; hypothyroidism; and, more rarely, diabetes insipidus. Other causes include gluten enteropathy, cystic fibrosis, and lead toxicity.

Children with developmental or behavioral issues (e.g., mental retardation, autism, oppositional defiant disorder, depression) may be taking constipating medications such as opiates, phenobarbital, and tricyclic antidepressants.¹

Clinical Diagnosis

The findings of the history and physical examination are instrumental in differentiating functional from organic constipation in all children. Because the causes of constipation differ according to age, algorithms for the differential diagnosis are different for neonates and infants (Figure 1)⁵ and for children older than one year (Figure 2).⁵

MEDICAL HISTORY

A careful history should be obtained to identify possible organic causes of constipation

(Table 4).⁵ Functional constipation is almost always the diagnosis in children older than one year. The medical history generally confirms this diagnosis.

The passage of infrequent, large-caliber stools is highly suggestive of functional constipation. Fecal soiling, especially after a child has been toilet trained for some time, suggests rectal impaction from functional constipation. One study⁸ found that 78 percent of children with encopresis had fecal

TABLE 3

Differential Diagnosis of Constipation by Age*

Infants	Children (older than 1 year)
Hirschsprung's disease	Functional constipation (more than 95 percent of cases)
Congenital anorectal malformations	Organic causes
Neurologic disorders	Hirschsprung's disease
Encephalopathy	Metabolic causes: hypothyroidism, hypercalcemia, hypokalemia, diabetes insipidus, diabetes mellitus
Spinal cord abnormalities: myelomeningocele, spina bifida, tethered cord	Cystic fibrosis
Cystic fibrosis	Gluten enteropathy
Metabolic causes: hypothyroidism, hypercalcemia, hypokalemia, diabetes insipidus	Spinal cord trauma or abnormalities
Heavy-metal poisoning	Neurofibromatosis
Medication side effects	Heavy-metal poisoning
	Medication side effects
	Developmental delays
	Sexual abuse

*—Diagnoses listed by frequency.

Information from reference 1.

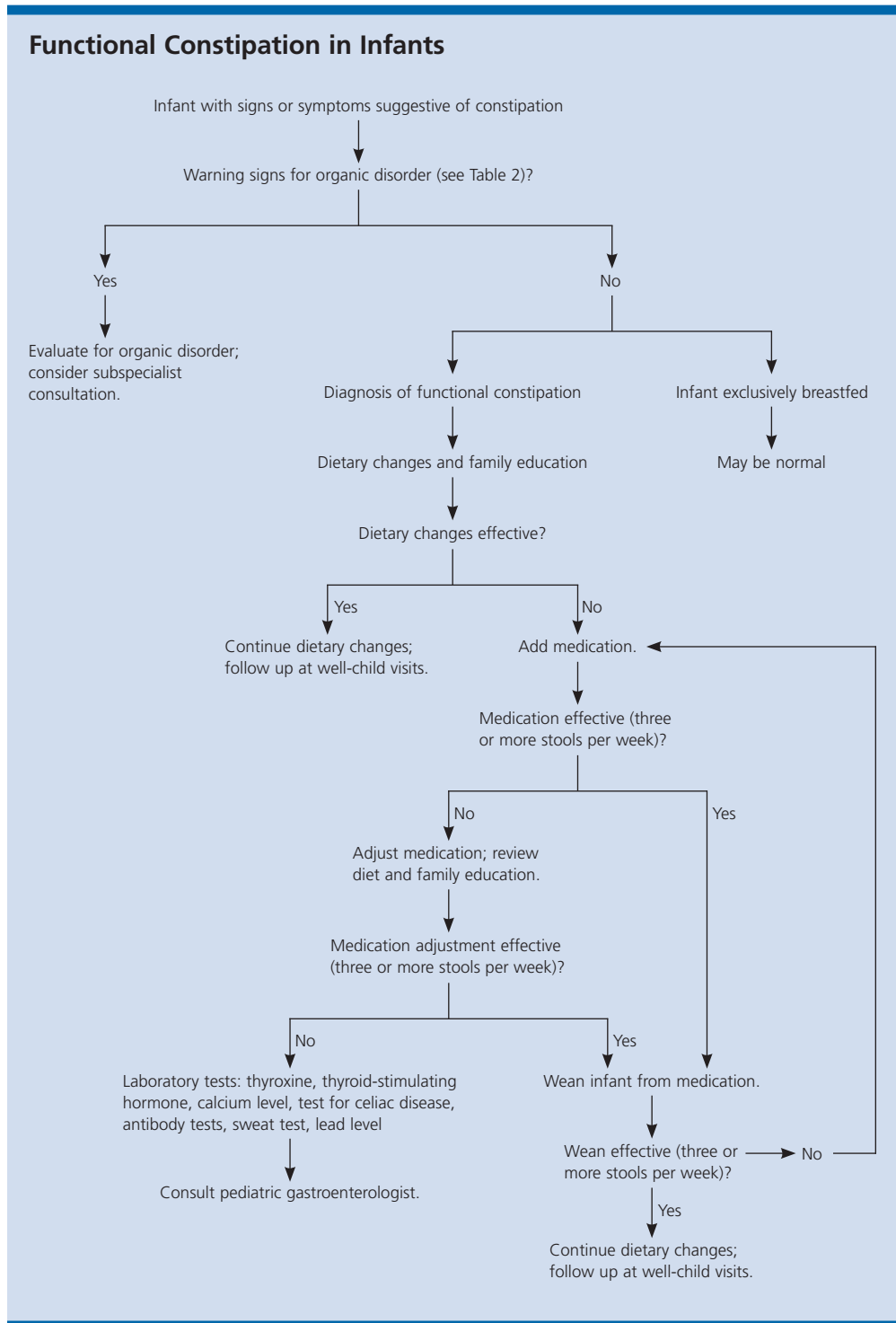


Figure 1. Diagnosis and management of functional constipation and encopresis in infants (age less than one year).

Adapted with permission from Felt B, Brown P, Coran A, Kochhar P, Opipari-Arrigan L. Functional constipation and soiling in children. University of Michigan Health System guidelines for clinical care 2003. Accessed online February 2, 2005, at: <http://cme.med.umich.edu/pdf/guideline/peds03.pdf>.

Functional Constipation in Children

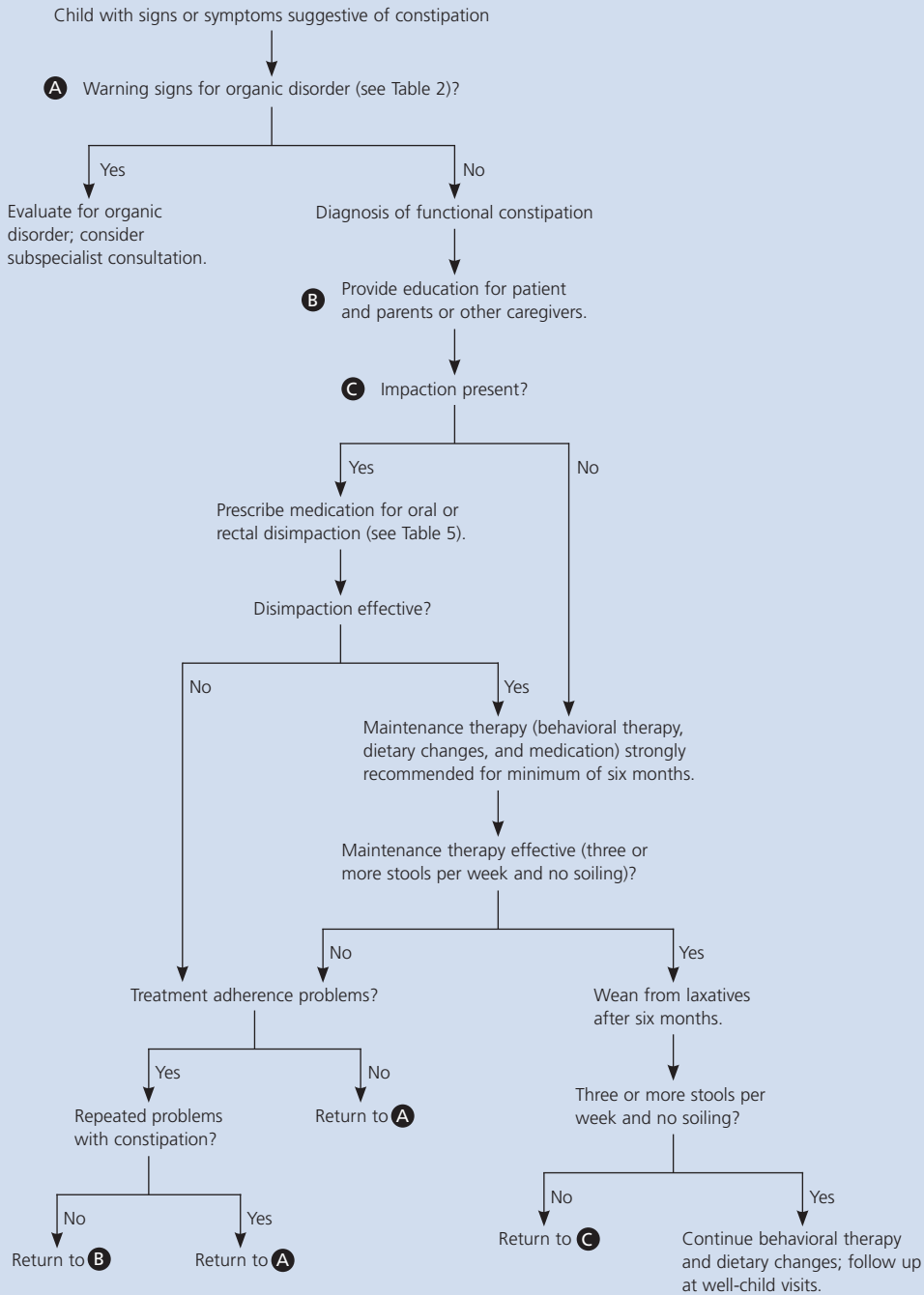


Figure 2. Diagnosis and management of functional constipation and encopresis in children (age older than one year).

Adapted with permission from Felt B, Brown P, Coran A, Kochhar P, Opipari-Arrigan L. Functional constipation and soiling in children. University of Michigan Health System guidelines for clinical care 2003. Accessed online February 2, 2005, at: <http://cme.med.umich.edu/pdf/guideline/peds03.pdf>.

Constipation in Infants and Children

impaction. Approximately three of every four children with constipation have pain with defecation.² The history may indicate that a child with constipation has a low-fiber diet containing few fruits and vegetables.

When evaluating children with constipation, family physicians should ask about toileting behavior, such as the timing of bowel movements, postures suggestive of stool retention (e.g., standing with legs crossed, rocking, squeezing the gluteal muscles), restricted access to toilets, and toilet avoidance or refusal.¹

PHYSICAL EXAMINATION

A digital rectal examination should be performed to assess rectal tone and determine the presence of rectal distention or impaction (Table 4).⁵ The finding of rectal impaction may confirm the diagnosis of functional constipation. The presence of anal fissures (or papillae indicative of chronic anal fissures) also suggests functional constipation.

DIAGNOSTIC TESTING

If the rectal examination reveals fecal impaction, no confirmatory imaging studies are

needed. If a rectal examination is not possible or is too traumatic for the child, abdominal radiography may be considered. One study⁸ found that a plain-film abdominal radiograph showing fecal impaction was highly predictive of the finding of fecal impaction on digital rectal examination. If stool is present in the rectum, a barium enema is no more useful than a plain-film radiograph. Computerized tomography is not indicated.

In the child with infrequent bowel movements and no signs of constipation, colonic transit time can be evaluated with radiopaque markers. When Hirschsprung's disease is suspected, anal manometry is useful. Appropriate relaxation of the anal sphincter reliably excludes this disease.¹

Treatment of Functional Constipation

Early intervention may improve the chance for complete resolution of functional constipation.⁷ Treatment goals include disimpacting the rectum and then maintaining a regular bowel-movement routine. Months of treatment may be necessary before maintenance medications can be weaned.

FAMILY EDUCATION

Education for parents and caregivers is an important component of treatment for functional constipation. The affected child also should be educated if old enough to understand this medical problem and its treatment.

By explaining the pathophysiology of functional constipation, family physicians can help parents and caregivers understand why the child is unable to have bowel movements of normal caliber and frequency. The child's fear of a painful bowel movement is the most common motivating factor for fecal retention. The fecal retention seldom is an oppositional behavior. Furthermore, encopresis in a child usually is involuntary.

Dietary modifications commonly are recommended for children with functional constipation. One randomized controlled trial⁹ showed that fiber supplementation improved constipation better than placebo, especially in children with encopresis. A double-blind crossover study¹⁰ found that constipation may be a manifestation of cow's

TABLE 4
Findings Consistent with Functional Constipation

History

Stool passed within 48 hours of birth
Extremely hard stools, large-caliber stools
Fecal soiling (encopresis)
Pain or discomfort with stool passage; withholding of stool
Blood on stools; perianal fissures
Decreased appetite, waxing and waning of abdominal pain with stool passage
Diet low in fiber or fluids, high in dairy products
Hiding while defecating before toilet training is completed; avoiding the toilet

Physical examination

Mild abdominal distention; palpable stool in left lower quadrant
Normal placement of anus; normal anal sphincter tone
Rectum packed with stool; rectum distended
Presence of anal wink and cremasteric reflex

Adapted with permission from Felt B, Brown P, Coran A, Kochhar P, Opipari-Arrigan L. Functional constipation and soiling in children. University of Michigan Health System guidelines for clinical care 2003. Accessed online February 2, 2005, at: <http://cme.med.umich.edu/pdf/guideline/peds03.pdf>.

TABLE 5

Suggested Agents for Disimpaction in Infants and Children with Functional Constipation

<i>Medications</i>	<i>Treatment side effects and comments</i>
Infants (younger than 1 year)	
Glycerin suppositories	No side effects
Enema: 6 mL (0.2 oz) per kg (maximum: 135 mL [4.5 oz])	If needed, administer the first enema in the physician's office.
Children (1 year and older)	
Rapid disimpaction	
Enemas: 6 mL per kg (maximum: 135 mL) every 12 to 24 hours one to three times	Invasive, risk of mechanical trauma
Mineral oil	Feces may not return after administration. Lubricates hard impaction
Normal saline	For large impaction, administer a normal saline or phosphate enema one to three hours after the mineral oil enema. Abdominal cramping
Hypertonic phosphate	May not be as effective as hypertonic phosphate enema Abdominal cramping Risk of hyperphosphatemia, hypokalemia, and hypocalcemia, especially in children with Hirschsprung's disease or renal insufficiency, or if the hypertonic phosphate solution is retained Some experts do not recommend phosphate enemas for children younger than 4 years; others do not recommend the enemas for children younger than 2 years.
Milk and molasses (1:1)	Used for impactions that are difficult to clear
Combination treatment: enema, suppository, and oral laxative	
Day 1: enema every 12 to 24 hours	See enema section above
Day 2: bisacodyl suppository (10 mg) every 12 to 24 hours	Abdominal cramping, diarrhea, hypokalemia
Day 3: bisacodyl tablet (5 mg) every 12 to 24 hours	Abdominal cramping, diarrhea, hypokalemia
Repeat three-day cycle one or two times if necessary.	
Oral or nasogastric polyethylene glycol electrolyte solution: 25 mL (0.8 oz) per kg per hour (maximum: 1,000 mL [33.3 oz] per hour) for four hours	Nausea, cramping, vomiting, bloating, aspiration Large volume of solution to be given Administration usually requires hospitalization and use of nasogastric tube.
Slower disimpaction	
Oral high-dose mineral oil: 15 to 30 mL (0.5 to 1.0 oz) per year of child's age per day (maximum: 240 mL [8 oz]) for three or four days	Risk of lipoid pneumonia Give chilled.
Oral senna: 15 mL every 12 hours for three doses	Abdominal cramping May not see output until dose two or three
Oral magnesium citrate: 1 oz per year of child's age per day (maximum: 300 mL [10 oz]) for two or three days	Hypermagnesemia
Maintenance medications (see Table 6)	Maintenance medications also may be used for disimpaction.

Adapted with permission from Felt B, Brown P, Coran A, Kochhar P, Opiari-Arrigan L. Functional constipation and soiling in children. University of Michigan Health System guidelines for clinical care 2003. Accessed online February 2, 2005, at: <http://cme.med.umich.edu/pdf/guideline/peds03.pdf>.

milk intolerance in some children. Therefore, a trial of withholding milk for a brief period may be considered.

DISIMPACTATION

Disimpaction can be accomplished with enemas, rectal suppositories, and oral agents (Table 5).⁵ No randomized controlled studies have compared methods of disimpaction.

Rectal disimpaction with enemas is rapid, but it is also invasive and possibly traumatic for the child. A common protocol in children older than two years is to administer a mineral oil enema followed by a phosphate enema.

Few studies have compared oral medications for disimpaction. In one study of children with chronic constipation,¹¹ the osmotic laxative polyethylene glycol

TABLE 6

Suggested Maintenance Medications for Use After Disimpaction in Children Older Than One Year with Functional Constipation*

Medications	Treatment side effects and comments
Oral administration	
Lubricant	
Mineral oil: 1 to 3 mL per kg per day given once daily or in divided doses twice daily	Softens stool and eases passage Chill or give with juice. Risk of lipoid pneumonia Adherence problems Leakage may occur if dose is too high or impaction is present.
Osmotic laxatives	
Lactulose (concentration: 10 g per 15 mL): 1 to 3 mL per kg per day given in divided doses twice daily	Retain water in stool, which adds bulk and softness Abdominal cramping, flatus Lactulose is a synthetic disaccharide.
Magnesium hydroxide (milk of magnesia; concentration: 400 mg per 5 mL): 1 to 3 mL per kg per day given in divided doses twice daily	With overdose or renal insufficiency: risk of hypermagnesemia, hypophosphatemia, or secondary hypocalcemia
Magnesium hydroxide (concentration: 800 mg per 5 mL): 0.5 mL per kg per day given in divided doses twice daily	
Polyethylene glycol powder (17 g per 240 mL of water or juice): 1 g per kg per day given in divided doses twice daily (approximately 15 mL per kg per day)	Titrate dosage at three-day intervals to achieve mushy stool consistency. Solution may be prepared in advance for administration over one to two days. Excellent adherence Less costly than lactulose
Sorbitol: 1 to 3 mL per kg per day given in divided doses twice daily	
Stimulants	
Senna syrup (8.8 g sennoside per 5 mL)	
Age two to six years: 2.5 to 7.5 mL per day given in divided doses twice daily	Short-term use only; improves effectiveness of colonic and rectal muscle contractions Risk of idiosyncratic hepatitis, melanosis coli, hypertrophic osteoarthropathy, analgesic nephropathy, abdominal cramping
Age six to 12 years: 5 to 15 mL per day given in divided doses twice daily	Melanosis coli improves after medication is stopped. Tablets and granules are available.
Bisacodyl (5-mg tablets): one to three tablets given once or twice daily	Abdominal cramping, diarrhea, hypokalemia
Rectal administration	
Glycerine suppository	
Bisacodyl suppository (10 mg): one-half to one suppository administered once or twice daily	No side effects Abdominal cramping, diarrhea, hypokalemia

*—A single agent may be sufficient to achieve daily, comfortable defecation.

Adapted with permission from Felt B, Brown P, Coran A, Kochhar P, Opiari-Arrigan L. Functional constipation and soiling in children. University of Michigan Health System guidelines for clinical care 2003. Accessed online February 2, 2005, at: <http://cme.med.umich.edu/pdf/guideline/peds03.pdf>.

(PEG 3350) was significantly more effective than lactulose during a two-week treatment period, and its use was preferred by 73 percent of caregivers. Randomized trials^{12,13} have found several different doses of polyethylene glycol to be effective for disimpacting children, with reasonable acceptance by parents and children. Other oral medications for rectal disimpaction include mineral oil, senna, polyethylene glycol electrolyte solution (GoLYTELY, NuLYTELY), and magnesium citrate.

MAINTENANCE

The goal is to maintain soft bowel movements once or twice a day. Ensuring regularity is important because rectal impaction can recur, restarting the constipation cycle.

Maintenance medications include mineral oil, lactulose, milk of magnesia, polyethylene glycol powder (MiraLax), and sorbitol. These and other maintenance medications vary in acceptance of use (Table 6).⁵

Adjuncts to maintenance medications have been studied. In two randomized tri-

als,^{14,15} more children who received behavioral treatment plus medications achieved remission of encopresis after three and six months than children who received medical treatment alone. (A behavioral treatment plan is described in one of the patient information handouts that accompany this article.)

A Cochrane review¹⁶ of data from eight studies found higher rates of persisting (up to 12 months) defecation problems when biofeedback training was added to conventional medical treatment. Therefore, biofeedback training is not recommended for children with functional constipation.

Long-Term Prognosis

Functional constipation is difficult to treat, and the relapse rate is high. In one study,¹⁷ 52 percent of children with constipation and encopresis still had symptoms after five years of treatment. A second study¹⁸ found that 30 percent of children who had been treated medically for constipation for a mean of 6.8 years continued to have intermittent constipation.

If a child's symptoms do not improve after six months of good adherence to a treatment regimen, referral to a pediatric gastroenterologist may be warranted.⁷

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PREVALENCE, SYMPTOMS AND OUTCOME OF CONSTIPATION IN INFANTS AND TODDLERS

VERA LOENING-BAUCKE, MD

Objective To determine the prevalence of constipation in children ≤ 2 years, describe the symptoms of constipation, and review how often specific interventions were effective.

Study design Retrospective chart review.

Results Of 4,157 children < 2 years of age, 185 children had constipation. The prevalence rate for constipation in the first year of life was 2.9%, and in the second year of life, the rate was 10.1%. Functional constipation was the cause in 97% of the children. Boys and girls were affected with equal frequency. Constipation was caused by an underlying organic disease in 1.6% of cases, and 97% of the children had functional constipation. Dietary changes and corn syrup were the initial treatment suggestions for 116 children; 93% of these children underwent follow-up examinations, and the constipation resolved in 25% of the children. Of 100 children treated with milk of magnesia or polyethylene glycol 3350 without electrolytes, 93 children underwent follow-up examinations, and the constipation was resolved with treatment in 92% of the children.

Conclusions Dietary changes, corn syrup, or both resolved constipation in 25% of children, and laxatives resolved constipation in 92% of children. Both milk of magnesia and polyethylene glycol were efficient and safe in infants and toddlers. (*J Pediatr* 2005;146:359-63)

Stool frequency depends on age in children. A number of studies revealed a decline in stool frequency from > 4 stools per day during the first week of life to 1.2 per day at 4 years of age, with a corresponding increase in stool size.¹⁻⁴ Fontana et al. showed that in the first 3 years of life, 97% of healthy children had at least 1 bowel movement (BM) every other day.⁴

Very little is known about the prevalence of constipation in infants and toddlers. Issenman et al⁵ reported that 16% of 22-month-old North American children were thought by their parents to be constipated, but it is not clear what definition for constipation was used. Constipation was defined by a group of pediatric gastroenterologists from the North American Society of Gastroenterology and Nutrition (NASPGHAN) as a delay or difficulty in defecation, present for 2 or more weeks and sufficient to cause significant distress to the patient.⁶ Functional constipation was defined by an international group of pediatric gastroenterologists in infants and preschool children as at least 2 weeks of scybalous, pebble-like, hard stools for most stools, or firm stools 2 or fewer times per week, in the absence of structural, endocrine, or metabolic disease, the ROME II criteria.⁷

Constipation in infants and toddlers is usually treated first with sorbitol-containing juices, such as prune, pear, and apple, the addition of pureed fruits and vegetables, formula changes, or medication with a high sugar content, such as barley malt extract or corn syrup. If, despite these dietary changes, the stool is still hard and painful to evacuate, then osmotic laxatives, such as lactulose, sorbitol, milk of magnesia, or polyethylene glycol 3350 without electrolytes, are given. The NASPGHAN committee suggested avoiding enemas, mineral oil, and stimulant laxatives because of potential adverse effects in young children.⁶

The aims of our study were to determine the prevalence of constipation in children 2 years or younger who were seen in our general pediatric clinics, determine the symptoms of constipation in this age group, and review how often dietary changes, corn syrup, or laxatives were effective.

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BM	Bowel movement	NASPGHAN	North American Society of Gastroenterology and Nutrition
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METHODS

Subjects

Between January 2000 and July 2003, a 42-month period, 4,157 children between 0 and 24 months were seen in our general pediatric clinics for health maintenance and acute care visits. This interval was chosen because it allowed follow-up examination of all children. The study was approved by the Institutional Human Research Review Committee.

A computer search using "0 to 24 months" and "constipation," defined by the ICD codes 564.0, 564.1, 564.2, 564.09 as search terms, identified 215 children, 0 to 24 months of age. We performed a retrospective chart review on all 215 patient records. Twelve children did not have symptoms of constipation reported in their chart for the visit date indicated on the computer printout or on any other of their visits and were excluded. Eighteen well-nourished infants were exclusively breastfed and had long intervals between soft-to-loose BMs (2-14 days; mean, 5.4 ± 3.0 days). This bowel pattern was considered normal in breastfed infants. They did not fit either NASPGHAN⁶ or ROME II⁷ criteria for constipation because they had soft-to-loose BMs and no distress. These infants were healthy, had normal growth and development, had no abdominal distention or other symptoms of constipation, and passed soft-to-liquid stools, but infrequently. This left 185 children <2 years of age with constipation for study.

Measures

Data collected included age, duration of constipation, symptoms and signs of constipation such as BM frequency, BM consistency (scale: 1, rock-hard or hard; 2, formed; 3, soft; 4, loose; 5, watery), the presence of pain (reported by the mother as screaming with BMs), stool withholding, blood with BMs, and the presence of rectal impaction or abdominal fecal mass. We evaluated symptoms, duration of constipation, and their relationship to treatment and outcome. Successful treatment was defined as soft-to-formed stool consistency, absence of pain, stool withholding and blood, and no fecal abdominal mass palpable.

Statistical Analysis

Symptoms and data were evaluated for the whole group and for each treatment group. Data obtained in all children during the initial visit were compared with the data obtained during follow-up visits and with similar parameters for the different treatment groups, such as treatment with dietary changes, corn syrup, and laxatives. The statistical analysis included *t* tests and Chi-square tests with significance accepted at the 5% level. Results were expressed as the mean \pm SD or percent.

RESULTS

Prevalence of Constipation

A total of 185 of the 4,157 infants and toddlers had constipation. The prevalence rate for constipation for children

≤ 2 years of age was 4.45%. The age distribution of these 4,157 children and the prevalence rate by age is given in the Figure. The prevalence rate for constipation in children in the first year of life was 2.9% and was significantly lower than in the second year of life (10.1%; $P < .001$). The ratio of constipated boys to girls was 1.1:1.

Infant Dyschezia

Ten otherwise healthy infants younger than 6 months had significant discomfort and excessive straining associated with passing soft stools. They exhibited straining and crying for >10 minutes, followed by successful passage of soft stool. These infants fit the NASPGHAN criteria for constipation⁶; having significant difficulties in defecation and significant distress, they had infant dyschezia. The symptoms improved without intervention in all 10 infants. The data for these 10 infants were not included in the data on symptoms of constipation.

Organic Causes of Constipation

Constipation was caused in only 3 children (1.6%) by underlying organic disease, because of an ovarian tumor in 1 child and because of anal stenosis in the other 2 (a boy who had surgery for Hirschsprung's disease and a girl who had a low anal atresia with perineal fistula repaired).

Functional Constipation

Most of our constipated infants and toddlers had functional constipation; 166 children (97%) had functional constipation and were otherwise healthy and growing normally. Four children had poor growth: 1 had cartilage-hair hypoplasia, 2 had severe neurologic deficits, and 1 had Down syndrome. Two children had a history of milk protein intolerance as infants; both had bloody loose stools as infants; none had constipation as infant.

Only 132 of the 172 children (77%) met the NASPGHAN or ROME II criteria for functional constipation requiring symptoms for 2 or more weeks. Forty children had <2 weeks of symptoms. As seen in Table I, the children with acute constipation were significantly younger ($P < .001$), and none had an abdominal fecal mass present, as compared with children with ≤ 2 weeks of symptoms ($P < .02$). Otherwise, the symptoms in children with acute constipation (<2 weeks duration) were not significantly different from those in children with constipation lasting ≤ 2 weeks. Therefore, the symptoms of children with acute and chronic constipation are presented together. The parameters from the history and physical examination of these 172 infants and toddlers (90 boys) are given in Table II.

Treatment and Follow-Up

After the examination of the child, all parents received education, including explanation about the stool-withholding maneuvers, foods that may help in the treatment of constipation, and the benign nature of the constipation. At least 1 more visit to our clinic was accomplished in 155

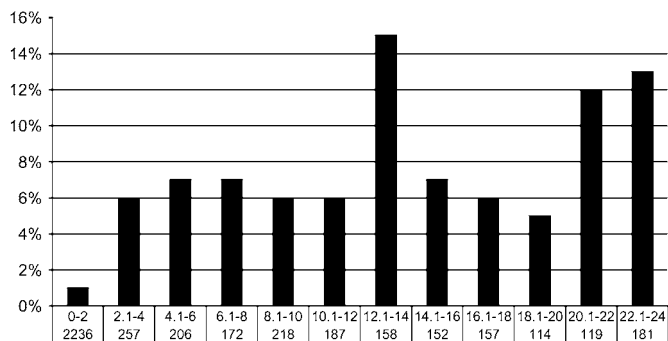


Figure. Prevalence of constipation for each 2-month age group to 24 months of age.

children (90%) after the initial evaluation to review progress, repeat the examination, and to discuss the treatment plan.

Dietary Changes Including Corn Syrup

The many physicians involved in taking care of these children gave their best advice. If the initial contact was with our nurses via telephone, dietary changes including corn syrup were advised. Dietary changes, corn syrup, or both were the initial treatment in 116 children and for 80% of children with <2 weeks of symptoms; 108 children (93%) returned for follow-up, and constipation resolved in 27 children (25%). Table III gives the initial symptoms of the 72 children treated with dietary changes, corn syrup only, or both. Dietary changes, such as fruit juices, fruits, and vegetables, were the initial treatment in 67 children, but were the only treatment suggestion in 42 children. Sixty-two of 67 children (93%) returned for follow-up. Ten children were treated with a change in formula. Seven of these children returned for follow-up, and constipation had resolved in all of them. Five of the 7 children were switched to a 100% whey-containing formula (Goodstart; Nestlé, Gendale, Calif), and 2 children were switched to soy formula. Thirty-nine children were treated with corn syrup, and in 20 children, it was the only treatment suggestion. Twenty-seven children (69%) returned for follow-up.

Milk of Magnesia and Polyethylene Glycol

One hundred children were treated with milk of magnesia (n = 30) or polyethylene glycol 3350 without electrolytes (MiraLax®, Braintree Laboratories, Braintree, Mass) (n = 70). This group included 44 children in whom prior treatment with dietary changes, corn syrup, or both had failed. Ninety-two of these 100 children were otherwise healthy, 4 were neurologically impaired to devastated, 3 had failure to thrive, and one was receiving soy formula because of cow's milk protein intolerance. The mean age was 16 months (range, 1-24 months) and the mean duration of constipation was 7 months (range, 4 days-23 months).

As seen in Table III, children treated with milk of magnesia and polyethylene glycol were significantly older (16 ± 6 vs 7 ± 6 months), had a longer duration of constipation (7 ± 7 vs 0.7 ± 1.1 months), were significantly more symptomatic (pain, stool withholding, or blood with BMs, P <.03), and more frequently had an abdominal fecal mass

Table I. Parameters from the history and physical examination in children ≤ 2 years of age with acute versus chronic constipation (mean ± SD)

	Acute constipation n = 40	Chronic constipation n = 132	P value
Duration of constipation	<2 weeks	≥2 weeks	
Duration of constipation (mo)	0.15 ± 0.7	6.7 ± 7.0	< .001
Age (months)	7.4 ± 7.1	13.7 ± 7.1	< .001
Boys	50%	52%	.797
BM frequency/week	7.0 ± 6.4	6.4 ± 6.8	.738
BM consistency	1.1 ± 0.2	1.1 ± 0.5	.203
Hard BMs	95%	92%	.632
Pain with BMs	41%	43%	.853
Stool withholding	41%	47%	.554
Blood with BM	15%	30%	.063
Rectal impaction [†]	33% (n=12)	57% (n=56)	.129
Abdominal fecal mass	0%	13%	< .02

[†]not all children had a rectal examination performed at the initial visit. The number in parenthesis gives the number of children with rectal examination.

Table II. Parameters from the history and physical examination in 172 children ≤ 2 years of age with constipation

	Mean ± SD	Range
Age (months)	12.2 ± 7.5	0 - 24
Boys	52%	
Duration of constipation (months)	5.0 ± 6.7	1 day to 23 months
BM frequency/week	6.5 ± 6.7	0.5 - 35
<3.5 BMs/week	35%	
<2 BMs/week	13%	
BM consistency	1.1 ± 0.4	1 - 3
Hard BMs	93%	
Pain with BMs	42%	
Stool withholding with BM	45%	
Blood with BM	27%	
Rectal impaction [†]	53%	
Abdominal fecal mass	10%	

[†]only 68 children (40%) had a rectal examination performed at the initial visit.

present (16% vs 1%, P <.003) than children treated with dietary changes, corn syrup only, or both.

Daily administration of laxatives, milk of magnesia (range, 0.5-1.8; mean, 1.0 ± 0.4 mL/kg body weight/day), and

Table III. Comparison of symptoms in children treated with dietary changes versus milk of magnesia and polyethylene glycol without electrolytes (mean ± SD)

	Treated with dietary changes/corn syrup n = 72	Treated with laxatives n = 100	P Value
Age (months)	7 ± 6.1	16.1 ± 6.1	< .001
Boys	54%	50%	NS
Duration of constipation (months)	0.7 ± 1.1	7.1 ± 7.3	< .001
BM frequency/week	7.1 ± 7.7	5.8 ± 5.6	NS
BM consistency	1.1 ± 0.4	1.1 ± 0.4	NS
Hard BMs	93%	93%	NS
Pain with BMs	27%	51%	< .002
Fear/withholding with BM	36%	53%	< .03
Blood with BM	9%	41%	< .001
Rectal impaction [†]	26% (n=19)	63% (n=68)	< .01
Abdominal fecal mass	1%	16%	< .003

†number of children with a rectal examination are given in parenthesis.

polyethylene glycol 3350 without electrolytes (range, 0.4-1.9; mean, 1.0 ± 0.6 g/kg body weight/day) were the treatments used. Ninety-three children (93%) returned for follow-up visits. Significant improvements in all parameters as compared with the initial data were achieved with laxative treatment. BM frequency/week increased (from 6 ± 6 to 9.4 ± 5.5; $P < .001$), stool consistency improved (from 1.1 ± 0.4 to 2.6 ± 0.8; 4% still had hard BMs; $P < .001$), the percent of children with abdominal pain decreased (from 51% to 3%; $P < .001$), the percent of children with stool withholding decreased (from 53% to 5%; $P < .001$), and the percent of children with blood in the stool decreased (from 41% to 0%; $P < .001$). Laxative treatment was successful in 92% of the children. Both milk of magnesia and polyethylene glycol were efficient and safe. Only one 14-month-old girl refused to take milk of magnesia. Both laxatives were easily administered by the parent and well accepted by the children.

DISCUSSION

We found that the prevalence rate for constipation in children ≤2 years of age who attended the general pediatric clinics was 4.5%. The prevalence rate in the first year of life was 2.9%, and in the second year of life it was 10.1%. The ratio of constipated boys to girls was 1.1 : 1. Most of the infants and toddlers who were constipated (97%) had functional constipation. Constipation should not be defined by symptom duration of >2 weeks or by frequency of BMs only, but rather by hard stool consistency and symptoms such as pain with BMs, withholding of BMs, and blood with BMs.

Constipation in early life is a special situation because of the possibility of a serious congenital disorder. Hirschsprung's disease, involving the rectosigmoid colon, had been diagnosed and treated shortly after birth in 1 infant, 1 patient had low anal atresia with fistula, and in 1 patient the constipation was caused by an ovarian tumor.

The most common cause of constipation in children is an acquired behavior after experiencing a painful defecation. This notion is supported by 93% of the parents in this study reporting hard to rock-hard stools, 27% of the parents reporting having seen blood around their child's stool, and 42% of children were crying and screaming when passing BMs. Then fear of defecation leads to the voluntary withholding of stool, which is called retentive posturing.⁸ Instead of relaxing the pelvic floor for defecation, the retentive child will contract the pelvic floor and gluteal muscles in an attempt to avoid defecation. Infants will often grunt, arch their backs, and stiffen their legs; toddlers often rise on their toes and rock back and forth while stiffening their buttocks and legs, or assume other unusual postures. These maneuvers are often misinterpreted by parents as straining for defecation. Forty-five percent of the children in this studied exhibited stool-withholding behavior. Parents should be counseled to be attentive to painful BMs and taught to intervene quickly to lessen the risk that their child will develop chronic constipation or fecal soiling.^{9,10}

Ten otherwise healthy infants younger than six months had significant discomfort and excessive straining and crying for >10 minutes, followed by successful passage of a soft stool. Dyschezia is seen in the first few months of life and can occur several times a day. The symptoms improved without intervention in all children. Parents were reassured about its benign nature and that this phenomenon is part of the child's learning process, that there is no intervention necessary, and that they should abstain from rectal stimulation.

Hyams et al¹¹ had evaluated the stool characteristics of young healthy infants and found that breastfed infants as a group passed twice as many BMs than infants receiving cow's milk formulas and that infants receiving soy formula significantly more often had hard/firm stools than breastfed and other formula-fed infants. It is also known that infants who are exclusively breastfed may have infrequent soft bowel movements.¹² One of our breastfed infants did not pass a stool

for 14 days. One breastfed infant in the literature was reported to have passed a stool only after 26 days.¹²

Twenty-five percent of children responded to dietary changes including corn syrup. These were children with mild symptoms or acute constipation. The other children needed laxatives for symptom relief. Evidence suggests that 2% and 4% lactulose in formula normalized stool passage and consistency in 90% of 220 infants with functional constipation.¹³ We used milk of magnesia and polyethylene glycol without electrolytes as laxatives. As we have shown, there is a wide range for dose requirement. After starting at a suggested dose, the optimal laxative dose needed to be established for each child to induce BMs daily that were loose enough to prevent pain, blood, and/or stool withholding. The duration of laxative treatment was determined by the recurrence of symptoms when laxatives were reduced or withdrawn. Both milk of magnesia and polyethylene glycol 3350 without electrolytes were efficient and safe in our infants and toddlers. The safety and efficiency of polyethylene glycol in children <18 months of age was also reported recently by Michail et al.¹⁴

It has been reported that cow's milk protein intolerance is a cause of constipation in young children.¹⁵ Intolerance to cow's milk protein occurs in 0.3% to 7.5% of otherwise healthy infants.¹⁶ Symptoms most often include vomiting and diarrhea; occasionally, they include constipation. Four of the 185 infants and toddlers in this study (2%) had cow's milk protein intolerance. Cow's milk protein may have been responsible for constipation in 2 of these children (1%).

In summary, constipation is a common complaint in infants and toddlers. Most of the constipated infants and toddlers in this study (97%) had functional constipation. Dietary changes resolved all symptoms of constipation in 25% of the infants and toddlers, and laxatives resolved all symptoms of constipation in 92% of the infants and toddlers.

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Chronic Constipation in Your Child

What is constipation?

Constipation is when bowel movements happen less often than every two days.

Constipation also can mean that stools are hard or painful to pass, even when bowel movements happen more often than every two days.

Constipation is called “chronic” if it is present for two weeks or more.

How common is chronic constipation?

Chronic constipation happens in up to 4 percent of preschool-age children and 2 percent of school-age children. In most children, constipation is not caused by a serious medical condition.

Why does my child have constipation?

When constipation happens because of a change in normal bowel function, this is called “functional constipation.”

These children have pain with every bowel movement. They often want to avoid passing another painful stool, so they resist the urge to have a bowel movement. They may squeeze their buttocks together and stand very straight until the urge to have a bowel movement goes away.

If children keep trying to avoid bowel movements, stool builds up in their lower bowel. The stool becomes larger and harder. Passage of the stool can tear the anus (the rectal opening).

This causes pain and makes the children want to avoid having bowel movements even more.

Over time, the muscles and nerves of the bowel change in these children. The lower bowel stretches because of the amount of stool stored in it.

An impaction (hard stool lump) may build up in the lower bowel. Liquid stool may leak around the impaction and into the child’s underwear. Children with impaction cannot keep this from happening.

What else causes constipation?

Diet can be an important cause of chronic constipation. Children can become constipated if they do not eat enough high-fiber foods, such as whole grains, fruits, and vegetables.

Constipation also can happen when children do not drink enough liquids.

Some children who drink a lot of milk become constipated.

Certain medicines can cause constipation.

How can the doctor tell if my child has constipation?

The pattern of your child’s bowel movements may show that he or she has constipation. You can help the doctor by keeping a day-by-day list of your child’s bowel movements.

It also is important to note unusual changes in your child’s stools or behavior. Here are some things to watch for:

- Stools that are large in diameter
- Stools that are very hard



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Chronic Constipation in Your Child *(continued)*

- Small amounts of bright red blood on the toilet tissue after your child has a bowel movement
- Stomach pain and bloating
- Loss of appetite
- Crying or screaming during bowel movements
- Avoiding the toilet or resisting toilet training

The doctor also will do a physical exam. This may include an exam of your child's rectum. The doctor also may order an x-ray of your child's abdomen (stomach).

How is chronic constipation treated?

Your child's bowels need to be cleaned out. This can be done with enemas or oral medicines.

After the cleanout, your child may need to take medicine every day. The medicine helps make your child's stool soft, so that bowel movements do not hurt.

When your child is having three or more soft stools per week with no soiling, the medicine is decreased slowly. After some time, your child may not have to take any medicine.

Your doctor may ask that you limit your child's milk intake to 2 to 3 cups a day.

The doctor may ask you to add more fiber and liquid to your child's diet.

A patient information handout called "Help for Your Child's Constipation" gives more

information on what you can do if your child has chronic constipation.

When will my child be better?

Chronic constipation takes time to develop. It also takes time to treat.

Even with the best treatment, chronic constipation can come back. Sometimes, constipation only partly improves, and children may never have daily, soft bowel movements.

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Notes:

This handout is provided to you by your family doctor and the American Academy of Family Physicians. Other health-related information is available from the AAFP online at <http://www.familydoctor.org>.

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Help for Your Child's Constipation

Keep a positive attitude.

If your child has constipation or stool leakage, it is important for you to maintain a positive attitude. Getting angry or making your child feel ashamed can make matters worse.

When it is time for your child to try to have a bowel movement, use simple positive words, such as “Now it is time to sit on the toilet.” Praise your child for each toilet-sitting and for other cooperation.

Remember the way your child's body works.

After a person eats, the intestines squeeze to move food along. You can use this natural urge to help your child.

Place your child on the toilet after each meal. If your child's feet do not touch the floor, provide a footstool for support.

Have your child stay on the toilet for 5 to 10 minutes. During this time, you can read to your child, or your child can listen to a tape or CD.

Keep a list of your child's bowel movements.

Here are some things you should write down:

- When your child sat on the toilet
- How long your child sat on the toilet
- What your child's stools looked like

- If your child had any soiling of his or her underwear

Start a reward program.

Begin rewarding your child for just sitting on the toilet. For example, if your child sits on the toilet at the planned time, reward the child with a favorite activity. If your child refuses to sit on the toilet, the activity does not happen until after the next planned toilet-sitting.

If your child has a bowel movement, give your child praise and a reward. Try not to use food as a reward. Some children like to be awarded with stickers or stars on a chart. Older children like to add up points for a larger reward, such as a trip to a movie theater.

Add more fiber to your child's diet.

Whole grains, fruits, and vegetables contain fiber. Most food labels list fiber content. The table in this handout shows the fiber content of some foods.

Each day, the grams of fiber in your child's diet should equal his or her age in years plus 5. For example, a five-year-old should consume 10 grams of fiber a day.

Encourage your child to drink more water.

Increase your child's fluid intake by 1 or 2 cups of water a day. A 35-pound child should drink about 7 cups (8 ounces in a cup) of fluid a day, and a 60-pound child should drink about 9 cups (8-ounce size) of fluid a day. If



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Help for Your Child's Constipation *(continued)*

your child is already drinking this much fluid, substitute water for one or two glasses of the milk or juice your child already is drinking.

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Amount of Fiber in Some Foods

<i>Food</i>	<i>Grams of fiber</i>
1 apple with skin	3.7
2/3 cup of raisins	4
1 cup of strawberries	3.4
1 orange	3
1 medium carrot	2
1 ear of corn	2
1 package of instant oatmeal	3
1 large biscuit of shredded wheat cereal	2.5
1 cup of raisin bran cereal	8
1 slice of whole wheat bread	2
1 baked potato with skin	5
1 cup of baked beans	14
1 cup of lima beans	13

Notes:

This handout is provided to you by your family doctor and the American Academy of Family Physicians. Other health-related information is available from the AAFP online at <http://www.familydoctor.org>.

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Chronic Constipation in Your Child

What is constipation?

Constipation is when bowel movements happen less often than every two days.

Constipation also can mean that stools are hard or painful to pass, even when bowel movements happen more often than every two days.

Constipation is called “chronic” if it is present for two weeks or more.

How common is chronic constipation?

Chronic constipation happens in up to 4 percent of preschool-age children and 2 percent of school-age children. In most children, constipation is not caused by a serious medical condition.

Why does my child have constipation?

When constipation happens because of a change in normal bowel function, this is called “functional constipation.”

These children have pain with every bowel movement. They often want to avoid passing another painful stool, so they resist the urge to have a bowel movement. They may squeeze their buttocks together and stand very straight until the urge to have a bowel movement goes away.

If children keep trying to avoid bowel movements, stool builds up in their lower bowel. The stool becomes larger and harder. Passage of the stool can tear the anus (the rectal opening).

This causes pain and makes the children want to avoid having bowel movements even more.

Over time, the muscles and nerves of the bowel change in these children. The lower bowel stretches because of the amount of stool stored in it.

An impaction (hard stool lump) may build up in the lower bowel. Liquid stool may leak around the impaction and into the child’s underwear. Children with impaction cannot keep this from happening.

What else causes constipation?

Diet can be an important cause of chronic constipation. Children can become constipated if they do not eat enough high-fiber foods, such as whole grains, fruits, and vegetables.

Constipation also can happen when children do not drink enough liquids.

Some children who drink a lot of milk become constipated.

Certain medicines can cause constipation.

How can the doctor tell if my child has constipation?

The pattern of your child’s bowel movements may show that he or she has constipation. You can help the doctor by keeping a day-by-day list of your child’s bowel movements.

It also is important to note unusual changes in your child’s stools or behavior. Here are some things to watch for:

- Stools that are large in diameter
- Stools that are very hard



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Chronic Constipation in Your Child *(continued)*

- Small amounts of bright red blood on the toilet tissue after your child has a bowel movement
- Stomach pain and bloating
- Loss of appetite
- Crying or screaming during bowel movements
- Avoiding the toilet or resisting toilet training

The doctor also will do a physical exam. This may include an exam of your child's rectum. The doctor also may order an x-ray of your child's abdomen (stomach).

How is chronic constipation treated?

Your child's bowels need to be cleaned out. This can be done with enemas or oral medicines.

After the cleanout, your child may need to take medicine every day. The medicine helps make your child's stool soft, so that bowel movements do not hurt.

When your child is having three or more soft stools per week with no soiling, the medicine is decreased slowly. After some time, your child may not have to take any medicine.

Your doctor may ask that you limit your child's milk intake to 2 to 3 cups a day.

The doctor may ask you to add more fiber and liquid to your child's diet.

A patient information handout called "Help for Your Child's Constipation" gives more

information on what you can do if your child has chronic constipation.

When will my child be better?

Chronic constipation takes time to develop. It also takes time to treat.

Even with the best treatment, chronic constipation can come back. Sometimes, constipation only partly improves, and children may never have daily, soft bowel movements.

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