

Encopresis: A Medical and Family Approach

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Bowel control is an important developmental milestone for children. Failure to achieve or loss of bowel control threatens both physical and mental health secondary to increased risks for skin and bladder infections, abdominal pain, and social embarrassment and rejection. Most children are successful at achieving bowel control by age four. Up to 3% of children under 12 years of age, however, suffer from a condition known as encopresis (Fishman, Rappaport, Schonwald, & Nurko, 2003). Encopresis is the medical term used to describe a pattern of withholding stool and ignoring the stimulus to defecate, leading to leakage of stool around the impaction and soiling of underwear. The child initially ignores the stimulus to defecate, and eventually loses the ability to recognize the need to defecate or to feel the leakage around the impaction. Some clinicians strive to separate soiling with or without retention and constipation, and reserve the label of encopresis for only those children who voluntarily or involuntarily use inappropriate locations for defecation (locations other than the toilet) (Murphy & Carney, 2004). However, encopresis without associated constipation and withholding is rare; 90% to 95% of those referred for encopresis also experience retention and constipation (Mason, Tobias, Lutkenhoff, Stoops, & Ferguson, 2004).

Encopresis is more common in boys than girls, with a 2:1 ratio, and is more common in children from abu-

Bowel control is an important developmental milestone for children. Failure to achieve or loss of bowel control by five years of age threatens both physical and mental health. Most children are successful at achieving bowel control by age four, but up to 3% of the pediatric population suffer from encopresis. Three in-depth case studies were reviewed, including the causes, symptoms, and treatment of this condition, one of which is presented in this article. Results indicate that treatment was successful when a combined approach using medical and behavioral strategies within the context of a developmental model was used. These results can be used by pediatric nurses, nurse practitioners, and pediatricians to assure more children will be identified and obtain the support they need for successful treatment of this complex condition.

sive and/or neglectful homes. The exact incidence has been hard to determine due to poor reporting guidelines, inconsistency in diagnostic criteria used, and geographical and cultural differences in seeking care. A conservative estimate for the United States is that 3% of children between 3 and 12 years of age suffer from encopresis with and without retention (Bloom, Seeley, Ritchey, & McGuire, 1993). Children with this condition range from 5 to 15 years of age. Even with treatment, as many as 30% of these children will continue to struggle with chronic constipation and related symptoms into adulthood (Benninga, 2004). Most of these children, however, are left unidentified as they and their family members try to understand and treat this problem alone; recent estimates indicate less than 40% of children with encopresis with or without retention seek advice from a physician (van der Wal, Benninga, & Hirasing, 2005).

Review of Literature

Encopresis is a term used to describe children involuntarily or intentionally passing feces in unacceptable locations (for example, in undergarments or on the floor) a minimum of one time per month for three months in a child over four years of age chronologically and/or developmentally (First & Tasman, 2004). This condition rarely occurs in isolation but more commonly accompanies chronic constipation with retention, resulting in large, infrequent stools passed less than three times per week,

leading to overflow leakage, difficulty with voluntary defecation, and eventually, to stool incontinence. The treatment of encopresis has been studied, but approaches to empirical research have been limited to isolated treatment strategies rather than a combined approach (for example, psychological methods) (Loening-Baucke, 1995), small sample sizes, lack of controls, and poor and/or inconsistent results. There has been a remarkable dearth of empirical studies on this condition over the past 15 years, with many treatment guidelines relying on results of studies conducted in the late 1980s or early 1990s (Mason et al., 2004; McGrath & Murphy, 2004). Several clinicians still rely on invasive enemas, high doses of laxatives, and inadequate follow up to treat this condition despite growing evidence that suggests success of treatment is improved with a combined approach addressing dietary changes; behavioral, family, and educational therapy; and individualized approaches to bowel management (Friman, Hofstadter, & Jones, 2006).

Identified Causes of Chronic Childhood Stool Retention and Encopresis

The causes of chronic childhood stool retention with encopresis can usually be traced back to an event or events occurring during the early toilet training period in a child's life that caused a painful or unpleasant bowel movement. Other contributing factors include a) chronic, early constipation during infancy, b) low overall muscle tone and

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poor coordination, c) slow intestinal motility, d) atypical attention span, and e) male gender. Many children with encopresis have a history of an event that made having a bowel movement uncomfortable or frightening (Cox et al., 2003). This event can range from constipation with pain upon defecation or fear of a toilet flushing, to repeated sexual abuse. It is important to note that most children struggling with encopresis have not been victims of sexual abuse, but children with a history of early sexual abuse have a higher than average rate of encopresis. For those children not having an identifiable event or events, the cause may be attributed to low muscle tone with or without poor muscle coordination, short attention span or difficulty focusing, oppositional and conduct disorders, obsessive-compulsive disorders, and/or cognitive delays and learning disabilities. Other risk factors include eating a high-fat diet, high intake of sugary fluids (such as soda pop, juices), low intake of dietary fiber, low activity level, and/or chronic and/or recurrent stress, specifically an unstable or unpredictable daily routine. A small percentage of children with encopresis (less than 5%) have a history of bowel abnormalities (such as Hirschsprung's disease) or neurological conditions (such as paralysis, spina bifida) (Borowitz et al., 2003; Feldman, 2009; Lewis & Rudolph, 1997). Table 1 summarizes the risk factors for encopresis for children 4 to 12 years of age. Table 2 summarizes the patterns of encopresis in most children.

Once a child withholds stool rather than passing stool, the colon begins to distend. This distention gradually stretches nerve fibers, and over time, the child has less and less sensation of the urge to pass stool. The stools become larger and larger, and the child becomes less able to feel or pass the stool voluntarily. The large stool becomes impacted, with loose, watery stool leaking around the impaction, causing the appearance of uncontrollable diarrhea. Eventually, if left untreated, the child cannot control when the large, impacted stool is passed, resulting in incontinence or soiling of large stools in the toilet or in socially unacceptable locations (see Table 2).

Symptoms of Encopresis

Early identification of encopresis by pediatric nurse practitioners leads to early treatment, which is far more

Table 1.
A Summary of Risk Factors for Encopresis

Which Child Develops Encopresis?

- Eating diets high in fat and sugar (junk food) and low in fiber.
- Not drinking enough water.
- Not exercising.
- Refusing to use the bathroom, especially public bathrooms.
- Having a history of constipation or painful experience during toilet training (ulcerative colitis or anal fissures). Note – 63% of children with encopresis have a history of painful defecation before 36 months of age (Lewis & Rudolph, 1997).
- Having cognitive delays such as autism or mental retardation.
- Having learning disabilities.
- Having attention deficit disorders or difficulty focusing.
- Having conduct or oppositional disorders.
- Having obsessive compulsive disorders.
- Having a poor ability to identify physical sensations or symptoms.
- Having a neurological impairment such as Spina Bifida or paralysis.
- Having a chaotic, unpredictable life.
- Suffering from abuse and/or neglect.

Note: Children with encopresis generally have three or more of the above risk factors.

Sources: Borowitz et al., 2003; Cox et al., 2003.

Table 2.
The Pattern of Encopresis

1. Initial withholding.
2. Loose, overflow soiling and release of large stools usually less than once every 5 to 7 days.
3. Eventual soiling of large, infrequent bowel movements, chronic soiling of overflow and large stools, abdominal pain, and social withdrawal.
4. Loss of control and the ability to feel the desire to pass stool**.

**At this point, parents, foster parents, teachers, siblings, and peers often become frustrated and blaming, wondering why a school-aged child cannot control his or her bowels, and how could he or she possibly claim he or she did not know he or she had soiled.

effective than treatment started years into the problem (McGrath & Murphy, 2004). Successful toilet training strategies have long been studied, with the accepted process including observing for readiness signs and developmental skills, including verbal description of elimination, fine and gross motor skills sufficient to pull pants up and down and to flush, cognitive skills (including being able to follow simple directions), holding onto and letting go on command, and being able to withhold urine for two hours. These readiness skills are followed by a positive parent training approach, including clear instructions, modeling, regular routine and opportunity, support, and praise. Most children in the United States are

generally toilet trained successfully between the ages of 24 and 48 months. Punitive approaches have consistently been related to poor outcomes and damaged parent-child relationships. Pediatric nurses and nurse practitioners are key professionals, helping parents toilet train their children successfully and identifying problems occurring during or after this developmental milestone.

Symptoms of encopresis generally follow a pattern related to withholding stool over time, starting during or soon after toilet training. The withholding of stool is followed by overflow soiling and voluntary or involuntary defecation in inappropriate locations (such as soiled underwear, places other than the toilet). Symp-

Table 3.
Diagnostic and Statistical Manual of Mental Disorders - IV (DSM-IV)
Criteria for Diagnosis of Encopresis

The voluntary or involuntary passage of stools, causing soiling of clothes by a child over four years of age. Encopresis can be divided into two groups. In the first group, there is a physiologic basis for the encopresis; in the second group, there seems to be an emotional basis.

- 1 – Encopresis is frequently associated with constipation and fecal impaction.
- 2 – Other causes may be related to a lack of toilet training or training at too early an age or an emotional disturbance, such as oppositional defiant disorder or a conduct disorder.
 - Accidentally or on purpose, the patient repeatedly passes feces into inappropriate places (clothing, the floor).
 - For at least three months, this has happened at least once per month. The patient is at least four years old (or the developmental equivalent).
 - This behavior is not caused solely by substance use (such as laxatives) or by a general medical condition (except through some mechanism that involves constipation).

Source: American Psychiatric Association, 2004.

toms may be primary, occurring in a child who has never gained bowel control or age-appropriate bowel behaviors, or secondary, occurring in a child who had bowel control and expected behaviors at one time for more than six months but then lost that control. The most common symptoms include:

- Avoidance or fear of using the bathroom, especially for bowel movements.
- Hiding soiled underwear.
- Having large, hard stools every 3 to 7 days rather than every day or every other day.
- Needing to have a bowel movement with little or no warning.
- Chronic plugging of the toilet following a bowel movement.
- Defecation in socially unaccepted places, such as in underwear or outside of a toilet.
- Having loose, small, watery stools.
- Staining of loose stools on underwear.
- Fecal smell.
- Soiled underwear with large, hard stools.
- Abdominal distention or bloating and pain.
- Frequent bladder infections.
- Lack of friends and frequent peer and sibling teasing regarding the smell of the child.
- Smearing of stool on walls or other surfaces in children with normal cognitive development. These children often have anger and social rejection, and have the

highest rate of treatment failures.

- Eneuresis.

Table 3 provides the diagnostic criteria for encopresis from the DSM-IV-TR (American Psychiatric Association, 2004).

Many of these children are evaluated only after they have struggled with soiling for months or years. In many cases, children have been punished by parents and teachers, ridiculed by peers, and have slowly withdrawn from social relationships due to their growing mortification. These children rarely participate in age-appropriate peer activities, such as team sports and birthday parties, due to their embarrassment and social rejection. The pattern can contribute to depression and anger. Children do not know how to stop the problem without support.

Diagnosis and Treatment Of Encopresis

The diagnosis and treatment for encopresis starts with a thorough history and physical examination to determine the presence of:

- An underlying neurological or bowel condition.
- A severe impaction that requires acute medical intervention.
- Risk factors (negative toilet training experiences, child abuse or neglect, fear of bathrooms).
- Co-morbid conditions that may have an impact on the treatment plan, including attention disor-

ders, cognitive delays or learning disabilities, or conduct and oppositional disorders.

- Associated symptoms of avoidance of bowel movements, retention, overflow soiling, and incontinence or defecation outside the toilet.

A review of approaches tried in the past is also important. The child's developmental level, school achievement, muscle tone, and attention span are also important risk factors and necessary to assess. This history and physical should be done by a nurse practitioner with interest in behavioral pediatrics and who is familiar and comfortable with treating this condition. Consultation and referral may include a child psychologist if behavioral and emotional and/or academic concerns are long-term and severe, or if sexual abuse is suspected, and/or a gastroenterologist if gastrointestinal pathology is suspected. Table 4 summarizes the history and physical evaluation for encopresis.

After the history and physical are completed, the treatment plan generally follows six main areas:

- Acute treatment of bowel impaction if necessary.
- Nutritional changes.
- Bowel training.
- Behavior management.
- Family support.
- Medications.

Acute Treatment of Bowel Impaction

Many children arrive for treatment with a history of passing large, hard stools less than three times per week. Some of these children will have recently passed a large stool within 24 hours of their examination. Therefore, it is important to note that not all children require extensive and invasive bowel cleansing procedures before starting treatment. For those children with prolonged retention causing dangerous physical symptoms of a bowel obstruction, removal of the bowel impaction is necessary. This process is usually conducted under the direct supervision of a physician experienced with this process. A study conducted by the Pains and Incontinence Program at Children's Hospital, Boston, involving 503 children treated for encopresis over a 19-year period from 1980 to 1999 indicated less than 5% of the children needed invasive treatment with enemas to remove impactions (Fishman et al., 2003).

Table 4.
Diagnostic Procedures for Encopresis

History	Physical Examination
<ul style="list-style-type: none"> • History of constipation and soiling • History of previous treatment and outcomes • Family history of constipation or other bowel conditions • Toilet training response • Family changes or stress • Soiling pattern • Diet • Activity level • History of associated conditions, including enuresis, behavioral and emotional problems, abdominal pain, school absentism • Peer and family relationships • Developmental skills • Academic progress 	<ul style="list-style-type: none"> • Abdominal examination • Developmental screening • Abdominal X-rays • Neurological examination • Rectal examination for fecal impaction

Figure 1.
Holiday-Segar Fluid Requirement Calculation Guidelines

1 to 10 kg* = 100 ml/kg
 11 to 20 kg = 1000 ml plus 50 ml/kg for each kg over 10 kg
 Over 20 kg = 1500 ml plus 20 ml/kg for each kg over 20 kg
 *Note. 1 kg = 2.2 lbs.

For example, a child weighing 60 pounds would need (27 kg = 1500 + (7 x 20 = 140 ml) = 1640 ml, or (1640/29.6*) = 55.4 ounces per day or six to seven 8-ounce glasses of fluid per day.

*Note. 1 ounce = 29.6 ml

Source: Holiday & Segar, 1957.

Therefore, most children, after confirming the absence of a large impaction, can start their treatment with educational and behavioral approaches for the child and parent(s), with an emphasis on changes in nutrition, behavior management, family support, and medications aimed at maintaining soft stools.

Nutritional Changes

Nutritional changes are imperative to the successful treatment of encopresis. The first and most important step is to add fiber to the diet at a predictable time each day. The recommended formula for calculating the amount of fiber is *age in years + 5 = number of grams of fiber/day* (Mason et al., 2004). Dietary fiber can be obtained through cereals, whole grain breads, fresh fruits and vegetables, and developmentally appropriate nuts. If dietary fiber is not

consumed regularly, then the benefits of this intervention are lost. Success in adding fiber at a predictable time has been achieved by having parents add bran in the form of flakes at quarter-teaspoon increments to cereal, eggs, and other breakfast foods in the morning once per day. This dose is increased by quarter-teaspoon increments until daily recommendations for fiber are reached or until stools are soft, passed without pain, and occurring once per day. The bran adds roughage to the diet, which helps increase bowel motility, softens the consistency of stools by increasing the water content in the stool, and increases the sensitivity of the colon, thereby increasing the awareness of the need to pass stool. Bran is the easiest method to add roughage in a consistent, predictable, and measurable manner.

The other nutritional change is to

decrease foods high in fat and sugar, including sodas, cookies and candies, French fries, and fast foods. This step takes both educating the parents about the importance of healthy nutrition, exploring values and beliefs about food, and helping families to problem solve on how to make healthy changes. The diet changes should also address constipating foods, such as excessive dairy products, bananas, caffeine-containing foods and drinks, white rice and white bread, and applesauce or other products containing apple peelings. Dairy should be limited to the equivalent of 8 to 12 ounces of milk per day. Fruit juices should be limited to four ounces daily and replaced with fresh fruits and vegetables. Overall fluid requirements are based on weight rather than age, and the Holiday-Segar Fluid Requirement Calculation is commonly used to provide recommendations for all fluids except fluids containing caffeine or alcohol (Holiday & Segar, 1957). See Figure 1 for the Holiday-Segar Fluid Requirement Calculation guidelines.

Any nutritional change should be accompanied with increased healthy and regular activity, including daily outside walking. Television and other screen time (such as video games, computer time) should be limited to less than an average of two hours per day.

Bowel Training

Bowel training is needed to help the child re-learn bowel control and regain awareness of a full rectum. This is best done by having the child sit for 10 minutes on the toilet 20 minutes after breakfast and again 20 minutes after dinner. This timing is the most likely time for the bowels to move. The child should also drink enough water to elicit urination every two hours. When urinating, the child should interrupt the stream two to three times before the bladder is empty. This exercise helps strengthen pelvic muscles and sphincter control

Children respond best to these exercises if explained and compared to an athlete trying to build muscles to perform his or her sport. Adding small rewards (such as stickers) and praise is also helpful.

Behavior Management

Many parents are unsure about what behavior management techniques are most helpful for these children. Punishment does not work and tends to increase rather than decrease

soiling. A better approach is to help children understand why the problem occurs using developmentally appropriate strategies, such as pictures, puppets, and stories; helping them maintain regular bathroom routines; improving their diet and exercise; and having them take on more responsibility for their bowel program as understanding and developmental skills permit. For example, most children can assist in cleaning up any soiled clothing and taking a bath if instructed; further, they should be given clear and appropriate guidelines. Children can also keep track of their successes on a calendar or behavior tracking record, and the family can agree on rewards for successes (for example, a movie on Friday evening to celebrate no soiling for five days). The goal is to have children learn internal control and praise, and self-regulation of their bowel patterns through understanding, behavioral and dietary changes, and improved self-efficacy. If concurrent conditions exist, such as attention deficit disorders or oppositional disorders, then counseling and treatment to address these disorders need to be included in the treatment plan (Friman et al., 2006).

Family Support

Although treatment is generally successful, it can take 6 to 12 months after treatment is started before a child regains bowel control and appropriate elimination behaviors. In the meantime, families must cope with soiled clothing, fecal smell of their child and parts of their home, sibling and peer teasing and rejection, and relapses and frustration. Family members need information for understanding, and support from other parents, health professionals, and if needed, case workers. Similar to sleeping problems of an infant, it is very reassuring for parents to hear the problem will get better with specific approaches and they are not alone in treating this challenging condition. The child needs continual monitoring to assess coping skills and to address secondary problems, such as enuresis, lowered self-efficacy or self-esteem in relation to bowel control and relationship skills, anger, and/or depression. Pediatric nurses are key team members to help parents monitor progress and adjust treatment plans as needed. Some children need social skills training and support to re-enter and be successful at social relationships (Baker et al., 1999).

Medications

Medications used to be the hallmark of treatment for encopresis, with many of these children being subjected to invasive enemas, suppositories, and excessive stool softeners. The general belief used to be that the impacted stool had to be removed through repeated enemas before treatment could begin. It is now known that treating a child with oral stool softeners and/or bran has better results and prevents a child from embarrassing, painful, expensive, and invasive enemas. Today, enemas are rarely needed and generally only needed for those few children with neurological impairments and/or with severe impactions. The most commonly used medications are oral stool softeners, such as MiraLax® or Senokot® or mineral oil. Each of these medications has specific side effects and should only be used under the guidance of a health professional and in addition to dietary and behavioral changes.

Regardless of the approach to treatment, the best outcomes occur when a team is brought together, including the child, parents, siblings, teachers, and health professionals, working together to develop a plan that is evidence-based and feasible, and includes ongoing support and monitoring. The leader of this team needs to follow up with the family weekly until the soiling is rare to absent; follow up needs to continue monthly for six months. Relapses can and do occur, especially if schedules or living situations change, including vacations and moves. Because of this tendency, extra effort to maintain schedules is needed during times of transition.

Case Study: Encopresis

Joel (the name has been changed to maintain confidentiality) was an 8-year-old boy described by his parents and teachers as being extremely bright and focused. His past included being born full-term to a 37-year-old mother without any known complications during labor or delivery. Joel was identified with low muscle tone and delayed fine and gross motor skills at age 3, and received physical therapy until age 5. Joel had no history of sexual abuse, physical abuse, or other medical problems. His developmental history indicated he was advanced in all developmental areas except a delay in motor skills due to generalized low

muscle tone ("soft muscles"). His parents expressed concern that he soiled his pants about twice per week, and did not seem to notice when he had stool in his pants. He also wet the bed nightly. His parents had tried punishing him, making him wear diapers, and rewarding him for dry nights and clean underwear at the end of the day, but none of these approaches made any difference. Risk factors for encopresis included:

- Male gender.
- A delay in toilet training, with poor parental guidance.
- Low muscle tone.
- A major move in the middle of toilet training, resulting in inconsistent approaches to toilet training by parents.
- Minimal awareness of body sensations, including pain and the need to eliminate.
- High level of focus on external environment and learning, and minimal focus on motor skills.

A physical examination revealed an alert 8-year-old male, with low muscle tone and poor coordination for age (for example, unable to complete finger-nose test or alternating finger test). His abdominal examination revealed a distended abdomen, and his rectal examination revealed hard stool in the rectal cavity. After a careful evaluation to make sure the problem was not caused by any physical conditions, Joel was put on the following treatment plan:

- Take a quarter teaspoon of bran once per day at the same time each day, increasing by a quarter teaspoon every third day until bowel movements are soft and occurring once per day.
- Increase water consumption to 64 ounces per day.
- Eliminate any caffeine and sugary drinks and high-fat foods from the diet (for example, soda pop, fast food hamburgers).
- Reduce dairy products to two to three servings per day.
- Reduce intake of bananas, tea, rice, and apple peelings.
- Increase roughage through whole grains and fresh fruits, vegetables and nuts.
- Increase exercise to a minimum of one hour per day of bike riding, skating, running, swimming, or team sports.
- Avoid drinking more than a sip of fluids after 6:30 p.m. each day.

- Make bathroom trips with an attempt at having a bowel movement and urinating 20 minutes after each meal.
- Give rewards for dry nights and clean underwear.
- Do bladder exercises with each urination (interrupt stream two to three times per urination, and wait up to 20 minutes to urinate after the first urge).
- Take daily multiple vitamins with calcium.

This plan proved successful after the first three weeks of treatment. Relapse occurred due to a change in diet and routine when school let out for the summer. At this point, Senekot was added once per day. Success was re-established, and Joel has been continent of bowel and bladder for three years now. He was weaned off the Senekot after continence was maintained for six months.

Conclusion

Encopresis is a problem that has an impact on approximately 3% of school-aged children. In spite of this prevalence, few studies have effectively demonstrated consistent and effective results supporting treatment options (Bloom et al., 1993; Fishman et al., 2003). Of those studies published, few used control designs, most had low participant numbers, and most occurred over 15 years ago (McGrath, & Murphy, 2004). This problem starts with the withholding of stool and ends with withholding and soiling beyond the control of the child. A team, including the child, parents, pediatric nurse practitioners and pediatric nurses, teachers, and other professionals as needed, provides the best support needed to develop the most effective treatment plan. The treatment plan needs to address nutritional changes, increased activity, bowel training, behavior management, family support, and medications. Even with the most effective treatment, children with encopresis generally take up to six months or longer to regain bowel control consistently and relapses can occur during times of change or transition. Positive outcomes take dedication and time. These children with encopresis need understanding, support, and encouragement to be successful at learning what to do to reach a milestone that many of us take for granted.

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