

**Physiological Model of Encopresis  
(Davidson, 1958)**

**2 MAJOR FUNCTIONS OF COLON:**

- (a) Temporary storage of feces
- (b) Resorption of water and salts from stored feces

**NORMAL DEFECCATION PROCESS**

- Rectum remains empty until feces, stored in the sigmoid colon, enters the rectal vault and initiate a series of coordinated autonomic reflexes.
- Distention of and/or pressure against the internal anal sphincter alerts the brain (via afferent neural pathways) that defecation is necessary and imminent.
- If defecation is inconvenient or socially inappropriate, the external anal sphincter is contracted voluntarily and defecation is postponed for a short period.
- When defecation is convenient and socially appropriate, closure of the glottis, voluntary contraction of the abdomen wall and application of downward pressure against the abdominal organs exerted by the fixation of the diaphragm and inflation of the lungs, plus voluntary release of the external anal sphincter, initiate defecation.

**Initial Symptoms of Chronic Constipation:**

- (a) Infrequent bowel movements (< 3 weekly)
- (b) Palpable (obvious) abdominal mass
- (c) Painful bowel movements
- (d) Severe stool withholding.

**NOTE:** painful defecation, chronic constipation, and toileting refusal appear involved in the pathogenesis of functional encopresis.

**Toileting Refusal: Possible Contributing Factors**

- (a) Psychosocial stressors
- (b) Coercive or overpermissive toilet training
- (c) Fear of toilets
- (d) Differential maternal attention to refusal
- (e) Lack of adequate foot supports required for bearing down during defecation
- (f) Mild constipation, episodic hard-stooling, painful defecation, and/or anal-fissure irritation
- (g) Oppositional behavior

**ASSESSMENT**

- (a) Rule Out organic causes (i.e., medical/pediatric consult)
- (b) Obtain stooling history from parents/caregivers:
  - (1) Patterns of stooling
  - (2) Stooling frequency
  - (3) Stool size
  - (4) Stool consistency
  - (5) Other factors (e.g., anal-skin irritation, fissures)
- (c) Family medical history
- (d) Child's toilet training history (onset, duration, method, training outcomes, soiling history, functional analysis).
- (e) History of health habits (diet, exercise)
- (f) Toilet training checklists (see text)

**Basic Treatment Approach:**

- (a) Education of parents
- (b) Fecal disimpaction
- (c) Prevention of future impaction with daily administration of milk of magnesia taken by mouth
- (d) Promotion of regular bowel habits with dietary fiber and milk of magnesia
- (e) Positive reinforcement for toilet sitting and toilet use for bowel movements

**Toilet training** acquaints the child with the relevant proprioceptive feedback from the colon and rectum and helps the child coordinate abdominal pressure and relaxation of the external anal sphincter with timely positioning over the toilet.

**Constipation:** significant changes in the frequency, size, consistency, and/or ease of passing stools. These variables change with child development and diet:

- (a) Normal infants tend to pass a stool after each feeding;
- (b) Breast-fed infants generally have lower stooling frequencies than formula-fed infants;
- (c) A progressive decrease in stooling frequency, with a corresponding increase in stool size, typically begins around 6 months of age and continues until about the 4th year, when the normal child tends to pass one stool per day (Weaver & Steiner, 1984).

**Factors related to Constipation:**

- (a) Hereditary factors (e.g., long gastrointestinal transit time, overly efficient gastrointestinal absorption of water).
- (b) Dietary habits (e.g., insufficient consumption of dietary fibers, excessive consumption of bland foods and/or dairy products).
- (c) Environmental effects (e.g., lead poisoning).
- (d) Illnesses (e.g., irritable bowel syndrome) and medications.
- (e) Behavioral factors (e.g., insufficient exercise, insufficient fluid intake, changes in daily routine, excessive use of laxatives, incompetent toilet training, voluntary bowel-movement withholding to avoid painful defecation or to obtain secondary gain).

**Mechanism by which toileting refusal contributes to loss of bowel control:**

- (a) Voluntary bowel movement withholding prevents defecation and progressive impaction ensues as peristaltic movements of the colon compress bowel matter into a firm, hard mass.
- (b) When normal bowel capacity is exceeded, a large caliber stool is passed painfully.
- (c) To avoid recurrence of painful event, the constipated child inadvertently initiates a vicious pain-retention cycle in which each stool-withholding episode decreases colonic motility, increases constipation and fecal desiccation, and leads to progressive fecal hardening and impaction.
- (d) Occasional liquid fecal matter and fecal-stained mucous passing involuntarily around and/or through the hardened fecal mass produces overflow incontinence.
- (e) Well-intentioned parents may misinterpret the overflow as diarrhea (paradoxical diarrhea) and administer antidiarrheal agents to the child - which further exacerbates the problem (i.e., they hasten resorption of water and salts from the bowel contents and thus make the stool dryer, harder, more impacted, and more painful to pass).
- (f) Impacted bowel distends to accommodate the large fecal mass; chronic dilation of the rectum and colon secondary to impaction contributes to reduced rectal and sigmoidal motility, diminished normal sensation of rectal fullness, reduced bowel-muscle tone, and impaired coordination of internal & external anal sphincters for normal defecation.