Robert P. Dillard, MD  
Division of Pediatric Gastroenterology  
University of Kentucky  
Lexington, KY
Guideline for Constipation in Infants and Children

LEARNING OBJECTIVES

- Know approach to constipated infant & child
- Know organic causes of constipation
- Understand that functional constipation is common
- Know major historical and physical finding to differentiate functional from “organic” constipation
- Know treatment
CASE: 5 1/2 Y/O MALE

- CC: “Something’s wrong with his bowels”
- HPI:
  - Daily multiple episodes of stool into underwear
  - Sticky, stains
  - No regular BM
  - Recalls huge stools (clogged toilet)
  - Blood seen
  - Used to stand in corner and hide
  - Red face/wriggle
  - Problem 1st around toilet training time
  - Punishing done at day care
  - Worried about starting school

CASE: 5 1/2 Y/O MALE

- PMA
  - Normal P/L/D/neonatal infancy
  - Straining with change to formula
- ROS
  - Generally healthy
  - Normal growth
  - No neurological/developmental problems
  - Urination normal
- FH - Mother has problem with constipation
- SH – parent, dog, cat, alligator, sister
CASE: 5½ Y/O MALE

Physical Exam
- Healthy appearing
- 50% ht/wt
- General exam nl
- Abdomen – distended, bowel sound present, palpable movable masses
- Back – intact, no hair tuff or pigmentation, buttocks normal contour
- Spine/sacrum– intact
- Perineum – anus normally placed, smear stool seen, stained underwear, normal sensation, normal anal wink, flattened anal canal, dilated rectum/hard stool mass, no urge to defecate moments after rectal exam, occult blood neg

CASE: 5½ Y/O MALE

Neurological –
cognition/behavior/tendon/cutaneous reflexes/tone – nl
MANY VARIATIONS TO THIS STORY!
- Struggles to have BM
- Have to help
- Cries with pain
- Reports pain
- Didn’t help to spank
- Outcast at school
- Stomach ache
- Poor appetite

THE WHOLE FAMILY IS MISERABLE
IDIOPATHIC CONSTIPATION
AKA: FUNCTIONAL WITHHOLDING

- 3% Visits: General Pediatric Clinic
- 10 - 25% Visits: Pediatric GI

Feels like 90%

SOCIO-ECONOMIC IMPORTANCE

- Laxatives $225 million/year business
- Estimated 1.5% of second grade school children are encopretic
- 3% of large clinic OPD pediatric visits are for constipation and soiling
- 10-25% of pediatric GI clinic visits for constipation and soiling*

*PCNA Vol. 35:2 April 88
NORMAL BOWEL FUNCTION

- Stool Frequency
- Stool Size
- Stool Consistency

What is Normal?
NORMAL BOWEL FUNCTIONS

- Infants: ± 4 times/day
- 1-4 year old children
  - 85% stool one to two times/day
  - 95% stool QOD to three times/day
  - Mean weight: 25 grams/each
  - Mean intestinal transient time - 33 hours
- Adults
  - At least 3 times/week to three times daily.


INTESTINAL TRANSIENT TIME

- Transient time increase with age
  - 1-3 months 8.5 hours
  - 4-24 months 16 hours
  - 3-13 years 16 hours
  - Young Adult 30-48 hours
  - Hospitalized Geriatric Patient 2 weeks
STOOL WEIGHT

- Varies greatly according to diet and dietary fiber intake
  - 35 gram stools difficult to pass (adult)

ETIOLOGY

“Organic”

“Functional”
## ORGANIC CAUSES OF CONSTIPATION

<table>
<thead>
<tr>
<th>Abnormalities of colon and Rectum</th>
<th>Systemic Disorders</th>
<th>Drugs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chronic intestinal pseudo-obstruction</td>
<td>Diabetes mellitus</td>
<td>Analgesics</td>
</tr>
<tr>
<td>Anal stenosis</td>
<td>Diabetes insipidus</td>
<td>Antacids</td>
</tr>
<tr>
<td>Anal or colonic stricture - post NEC or IBD</td>
<td>Hypothyroidism</td>
<td>Anticholinergics</td>
</tr>
<tr>
<td>Post-surgical repair of imperforate anus</td>
<td>Panhypopituitarism</td>
<td>Bismuth</td>
</tr>
<tr>
<td>Ectopic anus</td>
<td>Hypocalcemia</td>
<td>Iron</td>
</tr>
<tr>
<td>Spinal Cord Lesions</td>
<td>Hypercalcemia</td>
<td>Cholestyramine</td>
</tr>
<tr>
<td>Spina bifida</td>
<td>Dermatomyositis</td>
<td>Psychotropics</td>
</tr>
<tr>
<td>Meningomyelocele</td>
<td>Myotonic dystrophy</td>
<td></td>
</tr>
<tr>
<td>Sacral agenesis</td>
<td>Multiple sclerosis</td>
<td></td>
</tr>
<tr>
<td>Diastematomyelia</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spinal cord tumors (lipomas, cysts, teratomas)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neuropathic Lesions of the Gastrointestinal Tract</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hirschsprung disease</td>
<td></td>
<td></td>
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<tr>
<td>Intestinal neuronal dysplasia</td>
<td></td>
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</tr>
</tbody>
</table>

NEC = necrotizing enterocolitis
IBD = inflammatory bowel disease

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## HIRSCHSPRUNG’S DISEASE
- Described by Harald Hirschsprung - 1887
- Incidence approximately 1:5000 live births
- Most common cause intestinal obstruction of colon
  - 33% of all neonatal colonic obstructions
  - 20% aganglionic megacolon - Down Syndrome
HIRSCHSPRUNG’S DISEASE

- Absence of ganglion cells bowel wall
- Extends from anus proximal
  - 80% - limited to rectosigmoid
  - 15% - extend proximally to hepatic flexure
  - 3% - entire colon
- “Short Segment” - limited to anus/short segment rectum
  - Aganglionic Segment - normal caliber

HIRSCHSPRUNG’S DISEASE

- Clinical
  - Newborns:
    - Failure to pass meconium
    - Sx partial/complete intestinal obstruction (vomiting, distention, etc.)
    - Temporary relief Sx after rectal exam
    - Episodes constipation/diarrhea/colitis
HIRSCHSPRUNG’S DISEASE

Clinical:
- Older children
  - Chronic constipation/abd distention
  - “Never had a normal BM”
  - Repeated use enemas/laxative
  - Fecal mass but rectum empty
  - Stools - fluid/ribbon-like/pellets
  - Malnutrition, poor growth, sick
  - Intermittent obstruction possible

MAJOR DIFFERENCES
HIRSCHSPRUNG’S /FUNCTIONAL

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Functional</th>
<th>Hirschsprung's</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delayed Meconium Passage</td>
<td>rare</td>
<td>60%</td>
</tr>
<tr>
<td>Constipated Newborn</td>
<td>rare</td>
<td>very frequent</td>
</tr>
<tr>
<td>General Health</td>
<td>usually good</td>
<td>often poor</td>
</tr>
<tr>
<td>Onset After 2 Years</td>
<td>common</td>
<td>rare</td>
</tr>
<tr>
<td>Difficult Toilet Training</td>
<td>common</td>
<td>rare</td>
</tr>
<tr>
<td>Fecal Incontinence</td>
<td>common</td>
<td>rare</td>
</tr>
<tr>
<td>Toilet Avoidance</td>
<td>common</td>
<td>rare</td>
</tr>
<tr>
<td>Withholding Behavior</td>
<td>common</td>
<td>rare</td>
</tr>
<tr>
<td>Stool in Rectal Ampulla</td>
<td>common</td>
<td>rare</td>
</tr>
<tr>
<td>Obstructive Symptoms</td>
<td>rare</td>
<td>common</td>
</tr>
</tbody>
</table>

HIRSCHSPRUNG’S DISEASE

• Diagnosis
  • Non-prep BE
  • Transition Zone
  • Delayed Evacuation
  • May not be reliable in newborn
  • Bx - suction/full thickness (acetylcholinesterase)
  • Anorectal Manometry - useful with short segment
ANORECTAL INHIBITORY REFLEX
### FUNCTIONAL CONSTIPATION - FEATURE

#### Historical Features

<table>
<thead>
<tr>
<th>Feature</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male Predominance</td>
<td>1.5:1</td>
</tr>
<tr>
<td>Age of Onset</td>
<td></td>
</tr>
<tr>
<td>0-1 yr</td>
<td>25%</td>
</tr>
<tr>
<td>1-5 yrs</td>
<td>70%</td>
</tr>
<tr>
<td>5+ yrs</td>
<td>15%</td>
</tr>
<tr>
<td>Event at Onset</td>
<td>30%</td>
</tr>
<tr>
<td>Large Stools</td>
<td>75%</td>
</tr>
<tr>
<td>Withholding Behaviors</td>
<td>40%</td>
</tr>
<tr>
<td>Failed Toileting</td>
<td>30%</td>
</tr>
<tr>
<td>Problem at Toileting</td>
<td>40%</td>
</tr>
<tr>
<td>Soiling</td>
<td>70%</td>
</tr>
<tr>
<td>Family History</td>
<td>10-50%</td>
</tr>
<tr>
<td>Fissure/Rectal Bleeding</td>
<td>25%</td>
</tr>
<tr>
<td>Enuresis/UTIs</td>
<td>15%</td>
</tr>
</tbody>
</table>
FUNCTIONAL CONSTIPATION -
FEATURE
Historical Features (Cont.)
Abdominal Pain 10-50%
“Psychological Problems” 20%
Rectal Prolapse 3%
Poor Appetite 26%
Previous Therapy 26%

Physical Examination
Abdominal Distention 20%
Abdominal Mass 30-50%
Fecal Impaction 40-80%
Weight less than 5% 0-10%

FUNCTIONAL –
CHRONIC CONSTIPATION

• “Inherited Tendency”?
  • 38 - 65% of children with constipation had tendency toward constipation <6 months age

• Twins - Concordance for Constipation
  • 6x for identical compared with fraternal twins
ETIOLOGY - CONSTIPATION FUNCTIONAL

- Faulty Diet (excessive milk, no bulk)
- Chronic underhydration
- Under nutrition (beware infrequent stooling in breastfed baby)
- Cognitive handicaps
- Attention-deficit disorders

ETIOLOGY FUNCTIONAL

- SITUATIONAL
- COERCIVE TOILET TRAINING
- TOILET PHOBIA
- SCHOOL BATHROOM
- EXCESSIVE PARENTAL INTERVENTIONS
- SEXUAL ABUSE
- DEPRESSION
OTHER CAUSES

- Frenetic Lifestyles
PAIN - RETENTION - PAIN CYCLE

- Food Transition
- Toilet Training
- Fear of Bathroom
- Anal Fissure
- Illness
- Avoidance of School Bathroom
- Other Causes of Mild Constipation

Mild Constipation

Increased Constipation

Pain

Stool Retention to Avoid Pain
- Chronic rectal dilation
- Decreased sensitivity
- Increased stool holding
- Soiling

**EVALUATION**
- History
  - Must Be Complete
- Physical
  - Must Be Comprehensive
EVALUATION

- History
  - Onset:
    - Passage Meconium <48 h
    - Normal Stooling Infancy
  - Duration: Chronic vs Acute
  - Diet:
    - Formula is Constipating
    - Low Fiber Diet
  - Medication: Constipating Drugs

- Family/Social: History Constipation, Systemic Disease
  - Associated SX: FTT, urge to defecate, soiling, diarrhea, appetite, fever, etc.

PHYSICAL EXAM

- Vital Signs, Growth, General Appearance
- Abdomen:
  - Distention
  - Musculature
  - Stool Masses
  - Etc
- Back
  - Hair Tuft
- Perianal Area: Placement/Fissures/Soiling

- Rectal
  - Tone (↑↓), Sensation, Anal Wink
  - Stricture
  - Dilated Rectum with Stool/Empty
  - Fecal Material
  - Gush
  - Neurological
Failure to thrive
Abdominal distention
Lack of lumbo-sacral curve
Pilonidal dimple covered by a tuft of hair
Midline pigmented abnormalities of the lower spine
Sacral agenesis
Flat buttocks
Anteriorly displaced anus
Patulous anus
Tight empty rectum in presence of palpable abdominal fecal mass
Gush of liquid stool and air from rectum on withdrawal of finger
Occult blood in stool
Absent anal wink
Absent cremasteric reflex
Decreased lower extremity tone and/or strength
Absence or delay in relaxation phase of lower extremity deep tendon reflexes

Nothing
Radiology
Blood Tests
Urine
Specialized
  • Biopsy
  • Manometry
  • Transient time
RADIOGRAPHIC

- Plain Film
  - Stool
  - Obstructive signs
  - Mass
- Contrast
  - Hirschsprung
  - Stricture/Tumor/other
  - MRI

LAB

- As Required: CBC, ESR, Electrolytes, BUN, Mg, Ca, PO₄, D level, Pb.
- UA/Culture
- Thyroid
- Celiac serology
- Sweat chloride
TREATMENT
- Education
  - Common Problem
  - Pain - Retention - Pain
- Clean Out
- Diet
- Hydration
- Stool Softener
- Toilet Training
- Persistence
- Frequent Follow-up Visits

COUNSELING
- Education and “Demystification”
- Remove Blame
- Explain Treatment Plan
TREATMENT REGIMEN

- Many Modifications Possible
- Evacuation of Colon
  - Enema
  - Oral method
  - Combination
- High Fiber Diet
- Bulking Agent
- Hydration
- Laxative/Softeners
- Toilet Training
- Motility Agent
- Persistence

TREATMENT---CLEAN OUT

- Enema
  - Milk/Molasses - Equal Parts
    - Small Child ± 120 ml
    - Large Child ± 240 ml
  - Sodium Phosphate (CAUTION!!)
- Avoid under age two//renal disease
- Do not use/ organic obstruction
- Up to 6 ml/kg to max.(135ml)
  - Don't exceed recommended maximum
    - adult – 4.5 ounces
- NO SOAP SUDS
A REFERENCE HAND-BOOK FOR NURSES

BY AMANDA K. BECK

Graduate of the Illinois Training School for Nurses

Second Edition, Revised

PHILADELPHIA AND LONDON
W. B. SAUNDERS COMPANY
1912

48 REFERENCE HAND-BOOK FOR NURSES.

ANEMIA FOR FLATULENCE.

Molasses, 3 viij (240 c.c.); Milk, 3 viij (240 c.c.). Follow by 1 pint warm water within five minutes, to secure better results and relieve the fermentation that follows the injection.

NOURISHING ENEMAS.

1.  Malted milk, 3 ss (15 gm.); Somatose, 3 j (4 gm); Water, f 3 iv (118 c.c.); Sodium chlorid, gr. xx (1.3 gm.); White of 1 egg, Add peptonized milk or brandy, p. r. n.

2.  Peptonized milk, f 3 x (300 c.c.); White of 2 eggs, Alcohol (95 per cent.), f 3 ij (8 c.c.); Pinch of salt.

THE METHOD OF ADMINISTERING NUTRITIVE OR STIMULATING ENEMAS.

Prepare the fluid and heat to 95 degrees F. Pour the mixture into an enema pail or douche bag. To the tubing attach a large rubber catheter or small rectal tube by means of a glass nozzle. Place the patient on the left side with the knees flexed. Permit the fluid to flow through the tube to expel the air and then make pressure close to the point until ready to introduce it. Lubricate the catheter with vaselin or oil and insert gently eight or nine inches. Do not slip the catheter forward or backward unless absolutely necessary to encourage the fluid to flow, for it only increases the peristalsis and induces the patient to expel the contents which should be retained. Press the tube sufficiently to allow the solution to run very slowly, and occasionally make intermittent stoppage until it has all been given. Upon withdrawing the tube make digital pressure with a soft cloth against the anus for a minute or two. The use of an enema pail in place of a funnel insures more favorable results. Moreover, it is an easier and cleaner method and gives the advantage of having only the tube to take care of.

MISCELLANEOUS FORMULAE.

MUSTARD PLASTER.

White of 1 egg, Mustard, 1 tablespoonful; Flour, 3 tablespoonfuls; Glycerin, 1 tablespoonful. Heat well and spread between two layers of crape or soft linen. Apply from 15 to 30 minutes.

MUSTARD POULTICE.

Mustard, 2 parts; Ground flaxseed, 4 " Hot water, a sufficient quantity.

FLAXSEED POULTICE.

Ground flaxseed, 1/2 cupful; Olive oil, 2 teaspoonfuls. Add enough boiling water to make a thick paste. Cook for a few minutes, and heat thoroughly.

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TURPENTINE STUPES.

1. Add 3 teaspoonfuls of oil of turpentine to 1 pint of boiling water. Immerse the flannel and stir. Remove the flannel, wring it out in a twisted towel until it no longer drips. Anoint the skin with olive oil, and then apply fomentation until it causes some discomfort or blisters. If allowed to remain too long, it will blister the skin.

2. Oil of turpentine, 1 part; Olive oil, 7 parts. Apply with applicator or soft cloth every 4 or 6 hours, and fomentations p. r. n.

SPICE POULTICE.

Powdered cloves; powdered ginger; powdered cinnamon, of each from 1 to 2 teaspoonfuls; flour, a tablespoonful; whisky, enough to make a paste sufficiently soft to spread on flannel.
TREATMENT ORAL CLEAN OUT

- Oral
  - Polyethylene Glycol/Electrolytes
  - PEG 3350 NF
  - MINERAL OIL
  - MAGNESIUM CITRATE
  - (used alone and in combinations)

CLEAN OUT

- Polyethylene glycol –electrolyte solution
- (usually ends up NG)
- 25ml/kg/hr to 1000/hr until clear.
- Large amount/longer time needed for encopretic (4.7 to 19 L)
CLEAN OUT

- Mineral Oil
- 15—30 ml/year of age to 240ml/day
- (some have reported up to 300ml b.i.d.)
- Not used in infants, or older children at risk for aspiration

PEE3350NF CLEANOUT

- Capful (17g) 8oz clear liquid
- Drink every 30 minutes to an hour
- 8 doses a day
- Usually takes 2 days
- Small child (1.5g/kg per day)
**PEG3350NF * FLUSH***

- 1 capful (17 g)/8 oz water/other
- Drink every 10 - 15 minutes
- Total 15 glasses/or until clear
- Time: 3 - 4 hours

*David A. Grense, M.D.  
* PEG 3350 NF Powder

"Give him this laxative and run like hell."
MANAGEMENT

- Fiber
  - 5+ Age Years/25-30g daily
  - Provide Details
    - Whole Wheat
    - Graham Crackers
  - Bulking Agents
    - Psyllium
    - Methylcellulose

MANAGEMENT - HYDRATION

- Water
  - Quart Daily
  - Child’s Jug
- Juice
  - Apple
  - Pear
  - Prune
MANAGEMENT – ‘LAXATIVE’, ‘MINERAL OIL’

- Lubrication
  - Mineral Oil
  - 1-3 mL/kg/day ÷ 1-2 doses
  - Adjust To Enough

- Laxative
  - Mg(OH₂)(MOM)
  - 1-3 mL/kg/day (400/5ml)
  - PEG
    - 1/2 - 1 capful
    - 8 oz of water
    - 1g/kg/day

MAINTENANCE

- Right Amount is Enough
**MANAGEMENT – TOILET TRAINING**

- Toilet Training
  - Regular Time
  - Post Meals
  - Don’t Ignore Urges

**MANAGEMENT FOLLOW UP**

- 4-6 months of appropriate stooling before an attempt to wean the patient off medication
- Continue all other aspects of program for 2-3 years or relapse may occur
- Persisting emotional/psychosocial problems
  - Appropriate consultation and therapy
- Review diagnosis/further evaluate
  - Atypical presenting feature
  - Progressive features
  - Resistance to documented therapy
ONGOING MANAGEMENT

- PRIMARY CARE PHYSICIAN IDEAL
- SCHEDULE FREQUENT VISITS
- OPPORTUNITY TO CHANGE A CHILD’S LIFE.
- NO SPECIAL EQUIPMENT REQUIRED
Evaluation and Treatment of Constipation in Infants and Children:
Recommendations of the North American Society for
Pediatric Gastroenterology, Hepatology and Nutrition

NASPghan Constipation Guidelines

- Includes medication and dose
- Recommendations
- Google “NASPghan”
- *Journal of Pediatric Gastroenterology and Nutrition,*
  43:e1-e13 © September 2006 Lippincott Williams & Wilkins, Philadelphia