Constipation in Childhood: The Back(ed) Up Plan

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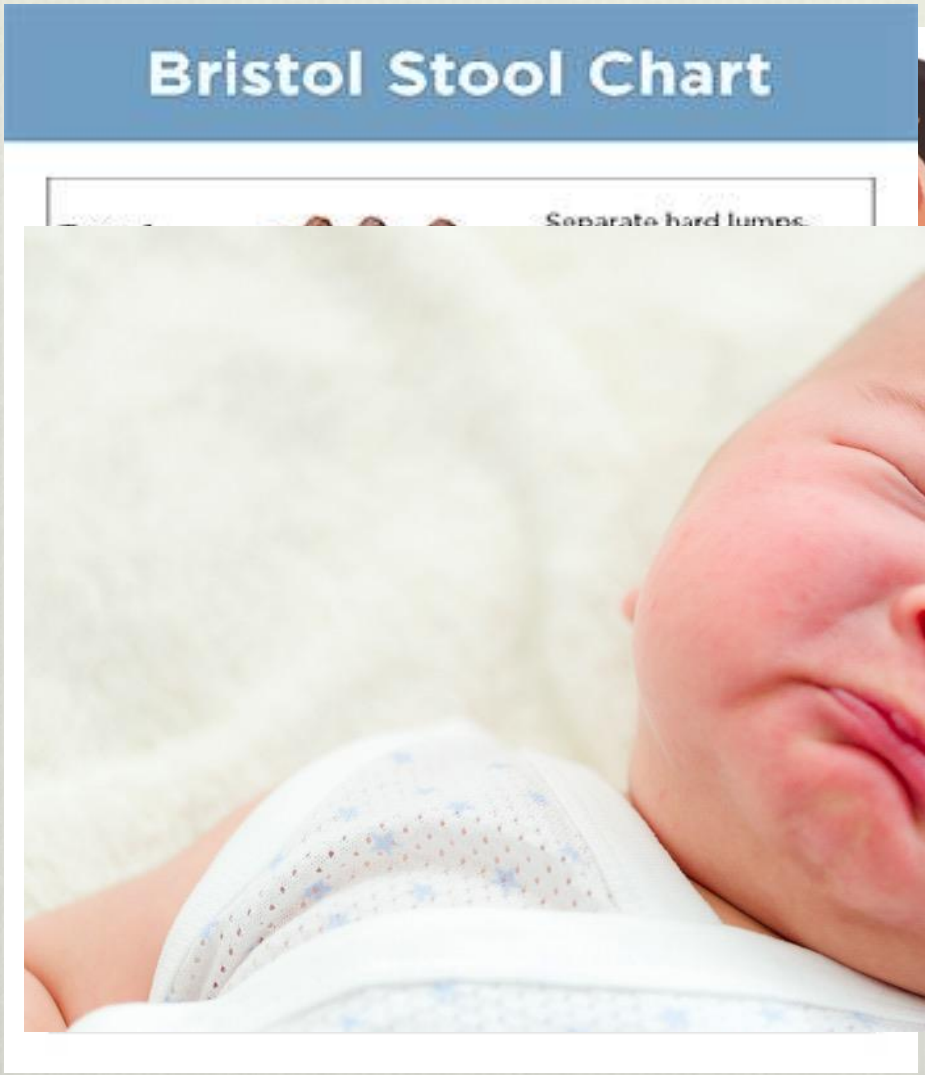
Educational Day 9/9/2020

Constipation



What's the normal amount of go?

Normal Frequency of Bowel Movements in Infants and Children

AGE	*MEAN NUMBER OF BOWEL MOVEMENTS PER WEEK*	*MEAN NUMBER OF BOWEL MOVEMENTS PER DAY*
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

Definitions

- Constipation

Rome IV criteria for the diagnosis of functional constipation in children

Infants and toddlers up to 4 years old
At least 2 of the following present for at least 1 month:
2 or fewer defecations per week
History of excessive stool retention
History of painful or hard bowel movements
History of large-diameter stools
Presence of a large fecal mass in the rectum
In toilet-trained children, the following additional criteria may be used:
At least 1 episode/week of incontinence after the acquisition of toileting skills
History of large-diameter stools that may obstruct the toilet

Children and adolescents (developmental age ≥4 years)
At least 2 of the following present at least once per week for at least 1 month:*
2 or fewer defecations in the toilet per week
At least 1 episode of fecal incontinence per week
History of retentive posturing or excessive volitional stool retention
History of painful or hard bowel movements
Presence of a large fecal mass in the rectum
History of large-diameter stools that may obstruct the toilet
The symptoms cannot be fully explained by another medical condition

Organic Constipation

Hirschprung's, anorectal anomalies, CF, cow's milk intolerance, hypothyroidism, celiac, intestinal obstruction

<5% of causes

Definitions Cont.

Recent Onset

- Symptoms present for *8 weeks or less*
- Typically respond to short course of laxatives and behavioral modifications

Chronic

- Symptoms present for *3 mo or more*
- Typically require longer treatment with laxatives and more intensive interventions behavioral modifications

History and Exam

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

Be sure to perform rectal exam to assess for anal wink and evaluate for anal fissures

Evaluating for Red Flag Sxs

TABLE 2
Warning Signs for Organic Causes of Constipation in Infants and Children

WARNING SIGNS OR SYMPTOMS	*SUGGESTED DIAGNOSIS*
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.

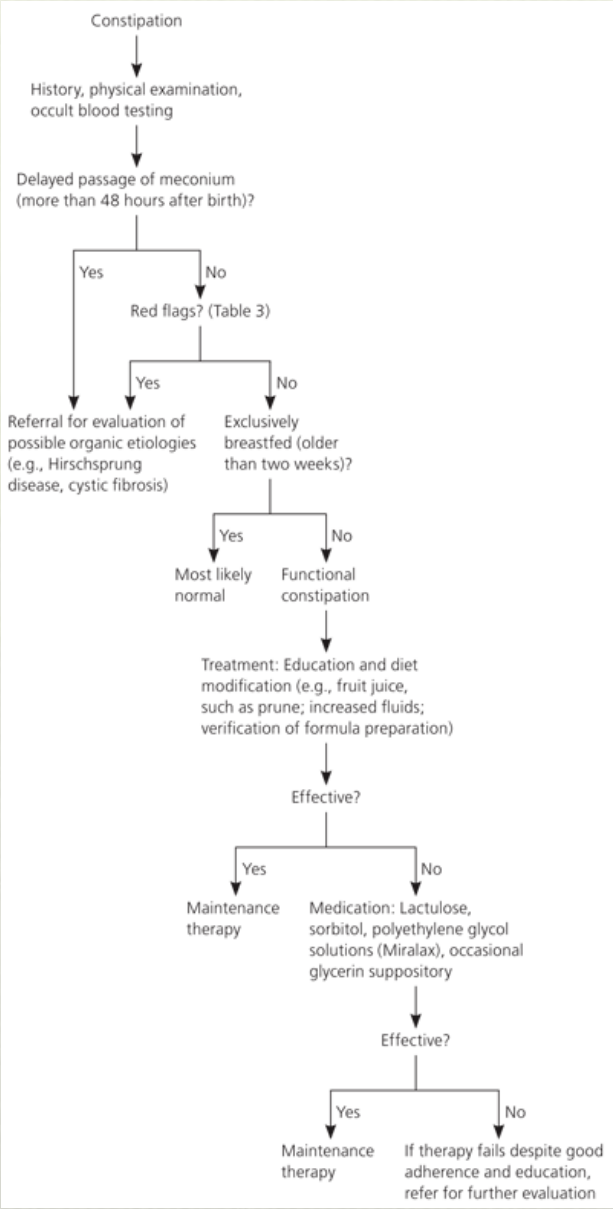
Differential Diagnosis

- Functional
  - Infantile dyschezia
  - Dietary changes
- Organic
  - Hirschsprung disease
  - Slow transit constipation
  - Cow's milk intolerance
  - Anorectal anomalies
  - Cystic fibrosis
  - Celiac disease
- Other causes
  - Dyssynergic defecation
  - Lead poisoning
  - Botulism
  - Internal anal sphincter achalasia
  - Chronic intestinal psuedo-obstruction

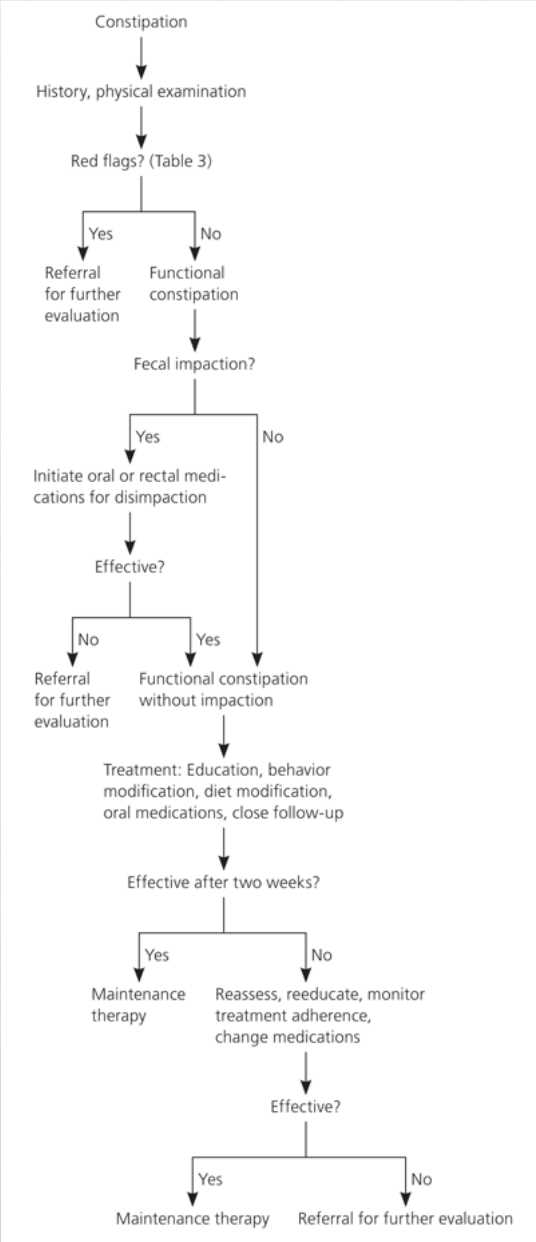
Imaging

- No imaging needed if fecal impaction noted on exam
- Can consider abdominal radiography is rectal exam not possible or too traumatic for child
- CT not indicated
- If Hirschprung's is suspected, anal manometry is useful

Management of infants <6 mo



Management of infants >6 mo



Boston Children's Hospital | Pediatric Physicians' Organization at Children's

Constipation

Constipation ≤2 stools/week, hard stools, painful stooling, soiling or stool retention

History and Physical Exam

Red Flags[a]

Yes → Call BCH GI Rapid Response Line (617) 355-6058 press 1 when prompted

No

< 6 months of age

Prune juice 2 oz per day, mixed in bottle, occasional glycerin suppository

Improved

Yes → Continue for 1-2 months, then wean as tolerated**

No → Call BCH GI Rapid Response Line (617) 355-6058 Press 1 when prompted

6-12 months of age

Family Education: diet, verify formula preparation

Improvement

Yes → Continue for 1-2 months, then wean as tolerated**

No → Prune juice 2-6 oz per day, mixed in 2-4 oz formula or water, occasional glycerin suppository

Improvement or <1 suppository/wk

Yes → Continue for 1-2 months, then wean as tolerated**

No → *Miralax 0.4-1.0g/kg/daily or QOD for 2 months. Titrate to effect May use lactulose 1ml/kg/day

Improvement

Yes → Continue for 1-2 months, then wean as tolerated**

No → Re-evaluation Education adherence

Improvement

Yes → Continue for 1-2 months, then wean as tolerated**

No → Contact the BCH GI Rapid Response Line electronically using P2P

>1 year of age

Impacted[b]

Yes → **Disimpaction at Home**
Goal: substantial stool output

ORAL
- *Miralax 1.5g/kg/day ÷TID x 2-4 days

Plus
- Ex-lax chocolate square (senna) ½ to 1 square daily x 2-4 days

OR
- Bisacodyl tab 0.25mg/kg/day up to 10mg daily x 2-4 days

RECTAL (faster, but PO equally effective)
- >2yo: Fleets enema 10ml/kg x1-2

OR
- Bisacodyl suppository 0.25mg/kg/day up to 10mg daily x 2-4 days

→ Improved[c]

Yes → Continue for 1-2 months, then wean as tolerated**

No → Repeat disimpaction PRN, educate, ensure adherence

Improvement

Yes → Relapse → Continue for 1-2 months, then wean as tolerated**

No → Contact the BCH GI Rapid Response Line electronically using P2P

No → **Maintenance Regimen**
Goal: >2 stool/week, no pain, no soiling

Dietary Changes
- adequate fiber
- hydration

Behavioral Tools if Toilet Trained
- tracking calendar, toileting schedule

Stool Softener
- *Miralax 0.4-1.0g/kg/day QOD, daily or BID for 2 months

Rescue Plan
- Ex-lax chocolate square (senna) ½ to 1 square OR
- Bisacodyl 0.25mg/kg/day QOD PRN no stool for 48 hours

→ Improved[c]

Yes → Continue for 1-2 months, then wean as tolerated**

No → Repeat disimpaction PRN, educate, ensure adherence

Improvement

Yes → Relapse → Continue for 1-2 months, then wean as tolerated**

No → Contact the BCH GI Rapid Response Line electronically using P2P

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[a]Red Flags
- Failure to thrive
- Distention or blood in stool in infant <3 mos
- No passage of meconium in 1st 48 hours
- Physical exam evidence of organic disease:
  - Lumbosacral tufts, dimples, asymmetry
  - Displaced or patulous anus, no anal wink
  - Absent cremasteric reflex
  - Abnormal tone or reflexes
- Breastfed with hard stool and associated symptoms

[b]Impacted
<2 stools/week, or palpable mass on abdominal exam +/- overflow incontinence

[c]Improved
>2 stools/week, comfortable

***Miralax Concentration**
17gm per 8oz or 2.13gm per oz

****Avoid weaning at times of initiating solids, cow's milk, during toilet training or stressful transitions**

Effective

Yes → Continue for 1-2 months, then wean as tolerated**

No → No Improvement or Severe pain at any time or considering admission → Call BCH GI Rapid Response Line (617) 355-6058 Press 1 when prompted

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Produced as a collaboration between primary care providers in the PPOC and Gastroenterology/Neurology sub-specialists at Boston Children's Hospital. May 2012, v.1.0

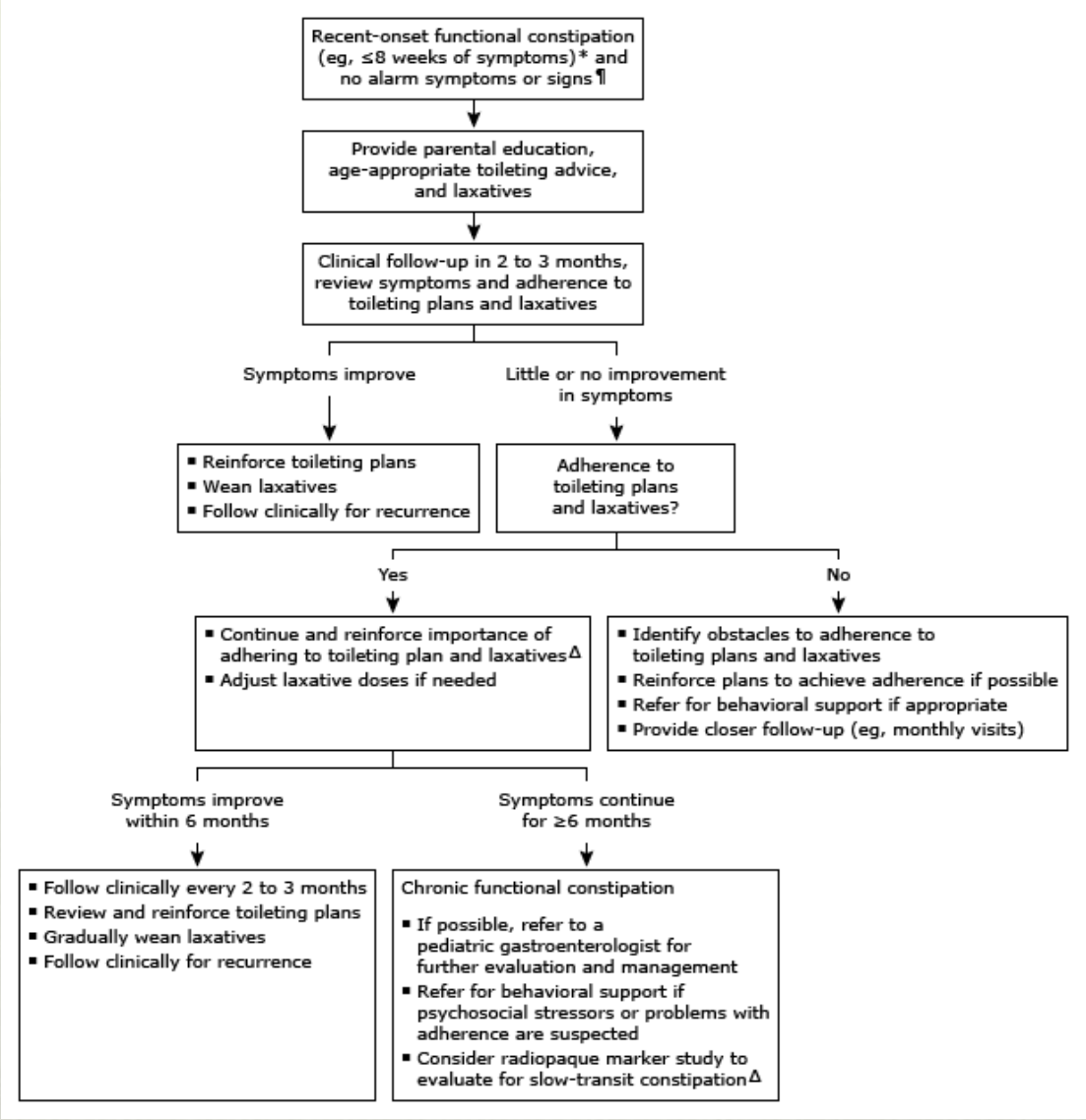
Management of Recent-onset constipation for infants <1 year

- Infants who have not begun solid foods: indigestible, osmotically active carbs to the formula
  - Sorbitol containing juices (apple, pear, prune)
- Infants >4 mo: 2-4 oz of 100% fruit juice
- Infants <4 mo: 1-2 oz diluted prune juice
- Alternative: lactulose (1 mL/kg qday) added to formula
- Follow up Counseling: avoid excessive juice intake after episode ceases
- Infants who have begun solid foods: sorbitol containing fruit purees, substitution of rice cereal for multigrain or barley cereal, substitution of other pureed veggies or fruits for pureed peas or prunes
- Glycerin suppositories

Management of recent onset constipation in children >1 year

- Provide parental education, age-appropriate toileting advice, and possibly laxative therapy depending on severity of symptoms
- +hard stool, +straining, -pain, -withholding: dietary changes
- +withholding, +pain, +rectal bleeding, +anal fissure: miralax (dose: 0.4 g/kg/day) w/ or w/o electrolytes
  - +fecal impaction, can uptitrate to 1-1.5 g/kg/day for maximum of 6 consecutive days
  - Safe alternatives: milk of magnesia or lactulose
  - Treat anal fissures with petroleum jelly

Next Steps


Recent-onset functional constipation (eg, ≤8 weeks of symptoms)* and no alarm symptoms or signs¶
Provide parental education, age-appropriate toileting advice, and laxatives
Clinical follow-up in 2 to 3 months, review symptoms and adherence to toileting plans and laxatives
Symptoms improve
Little or no improvement in symptoms
Reinforce toileting plans
Wean laxatives
Follow clinically for recurrence
Adherence to toileting plans and laxatives?
Yes
No
Continue and reinforce importance of adhering to toileting plan and laxatives△
Adjust laxative doses if needed
Identify obstacles to adherence to toileting plans and laxatives
Reinforce plans to achieve adherence if possible
Refer for behavioral support if appropriate
Provide closer follow-up (eg, monthly visits)
Symptoms improve within 6 months
Symptoms continue for ≥6 months
Follow clinically every 2 to 3 months
Review and reinforce toileting plans
Gradually wean laxatives
Follow clinically for recurrence
Chronic functional constipation
If possible, refer to a pediatric gastroenterologist for further evaluation and management
Refer for behavioral support if psychosocial stressors or problems with adherence are suspected
Consider radiopaque marker study to evaluate for slow-transit constipation△

Counseling

- Understanding contributing factors
  - Introduction of cow's milk
  - Introduction of solid foods
  - Painful Defecation
  - Toilet Training
  - Predisposing conditions: ASD, ADHD
  - School Entry

Non response or relapse in infants <1 year old

- Repeat same dietary interventions
- No response → consider fecal impaction
  - Glycerin suppositories or rectal stimulation
    - Not to be used as mainstay; possible to become behaviorally conditioned
- Enemas not recommended for infants
- Infants >6 mo: can use miralax, lactulose, or sorbitol given daily titrated to at least one soft stool per day

No ers

- I nts
  - ate or meals
- M
  - 32-64
  - a

Vegetables	Serving size	Total fiber (grams)*
Fruits	**Serving size**	**Total fiber (grams)***
Raspberries	1 cup	8.0
Pear	1 medium	5.5
Apple, with skin	1 medium	4.5
Banana	1 medium	3.0
Orange	1 medium	3.0
Strawberries	1 cup	3.0
Carrot, raw	1 medium	1.5

Case #1

5 week old ex-FT M presenting to same day clinic for constipation. Last BM 2d ago, soft and dark green in color. Feeding q2h w/ 3oz breastmilk topped off with formula (Similac Pro). Denies emesis. Endorses passing of gas but that he looks uncomfortable attempting to pass it, often with grimacing and crying and lasting >10 min. Denies h/o bloody bowel movements. Activity level otherwise normal. Denies f/c, diarrhea, sick contacts. UTD vaccines. No fam hx of CF, Hirschsprung. Passed meconium within 24 HOL.

PMH: Denies, though per chart review pelviectasis noted on prenatal US

PSh: Denies

Allergies: Denies

Med: Denies

Physical Exam

Temperature Skin	36.5 DegC
Heart Rate	**184 bpm HI**
Respiratory Rate	28 br/min
Blood Pressure Time	17:55

HR 144 on repeat check

General: Alert, appropriate for age, no acute distress, looking around, cries intermittently but consolable.
Skin: Warm, dry, pink.
Head: Normocephalic, atraumatic, anterior fontanelle soft and flat.
Neck: Trachea midline.
Eye: Extraocular movements are intact, normal conjunctiva.
Ears, nose, mouth and throat: Oral mucosa moist.
Cardiovascular: Regular rate and rhythm, No murmur, Normal peripheral perfusion, No edema.
Respiratory: Lungs are clear to auscultation, respirations are non-labored, breath sounds are equal.
Chest wall: No deformity.
Back: No step-offs, no sacral dimples .
Musculoskeletal: No deformity, tone appropriate .
Gastrointestinal: Soft, Nontender, Non distended, Normal bowel sounds, no palpable mass .
Genitourinary: Normal genitalia for age, patent anus, +anal wink, no anal fissures noted .
Neurological: No focal neurological deficit observed.

Assessment and Plan

Infantile Dyschezia w/ possible component of recent dietary changes leading to changes in bowel regularity.

- Counseled and provided reassurance
- Encouraged leg bicycling and tummy massage
- Can consider dropper feeding small amount of prune juice vs glycerin chip should symptoms persist

Infantile Dyschezia

- Ineffective defecation
- Failure of the pelvic floor to relax +/- inadequate abdominal muscle tone
- At least 10 min of straining before successful defecation in an otherwise healthy infant <9 mo
- Important to distinguish from painful defecation
  - Ask about hard stools!

Case #2

6 yo M w/ h/o severe constipation, followed by GI, presenting with worsening constipation and abdominal pain. Previously admitted for bowel clean out 8/31/2019-9/1/2019 and 2/20/20-2/21/20. Barium enema study 10/1/19 with tortuous, redundant sigmoid colon. Scheduled for anal manometry to eval for Hirschsprung's. Per mom, patient w/ worsening abdominal pain x2 weeks. Worse with meals. Last stool was this AM but was small, green and hard. Compliant with daily bowel regimen including miralax, chocolate sennas, fiber cookie. Mom had tried home clean out with 7 caps miralax and two large bottles blue gatorade without success. Endorses patient eats high fiber diet, mostly fruits and veggies, and drinks ginger ale. No juice. No emesis, RLQ pain, fevers, testicular pain. Endorses umbilical pain that does not radiate, 3/10.

Physical Exam

Vitals & Measurements

Temp 36.2 DegC, HR 79 bpm, RR 24 br/min, SBP 109 mmHg, DBP 64 mmHg, MAP 79 mmHg

BMI Percentile: 49.69 (10/04/19 13:58:00)
Constitutional: Awake, alert, interactive, no apparent distress, walking around the room, talkative
HEENT: Head is atraumatic / normocephalic, no rhinorrhea, moist mucous membranes, posterior oropharynx clear without erythema or exudate.
Neck: Supple.
Cardiovascular: RRR, S1 S2, no murmurs / rubs / gallops. Brisk capillary refill. Pulses strong and symmetric.
Pulmonary: Lungs CTAB, no respiratory distress / wheezing. No cough.
Abdomen: Bowel sounds present. Soft, nontender, nondistended, no organomegaly or masses by palpation.
Genitourinary: Tanner 1 male genitalia, b/l descended testes, b/l cremasteric reflex intact, no testicular swelling/erythema/TTP
Skin: No apparent rashes or lesions.
Musculoskeletal: No peripheral edema.
Neurologic: Awake, alert, interactive. Moving extremities equally. No apparent focal deficits.
Lymph: No apparent lymphadenopathy.

Assessment and Plan

The initial plan

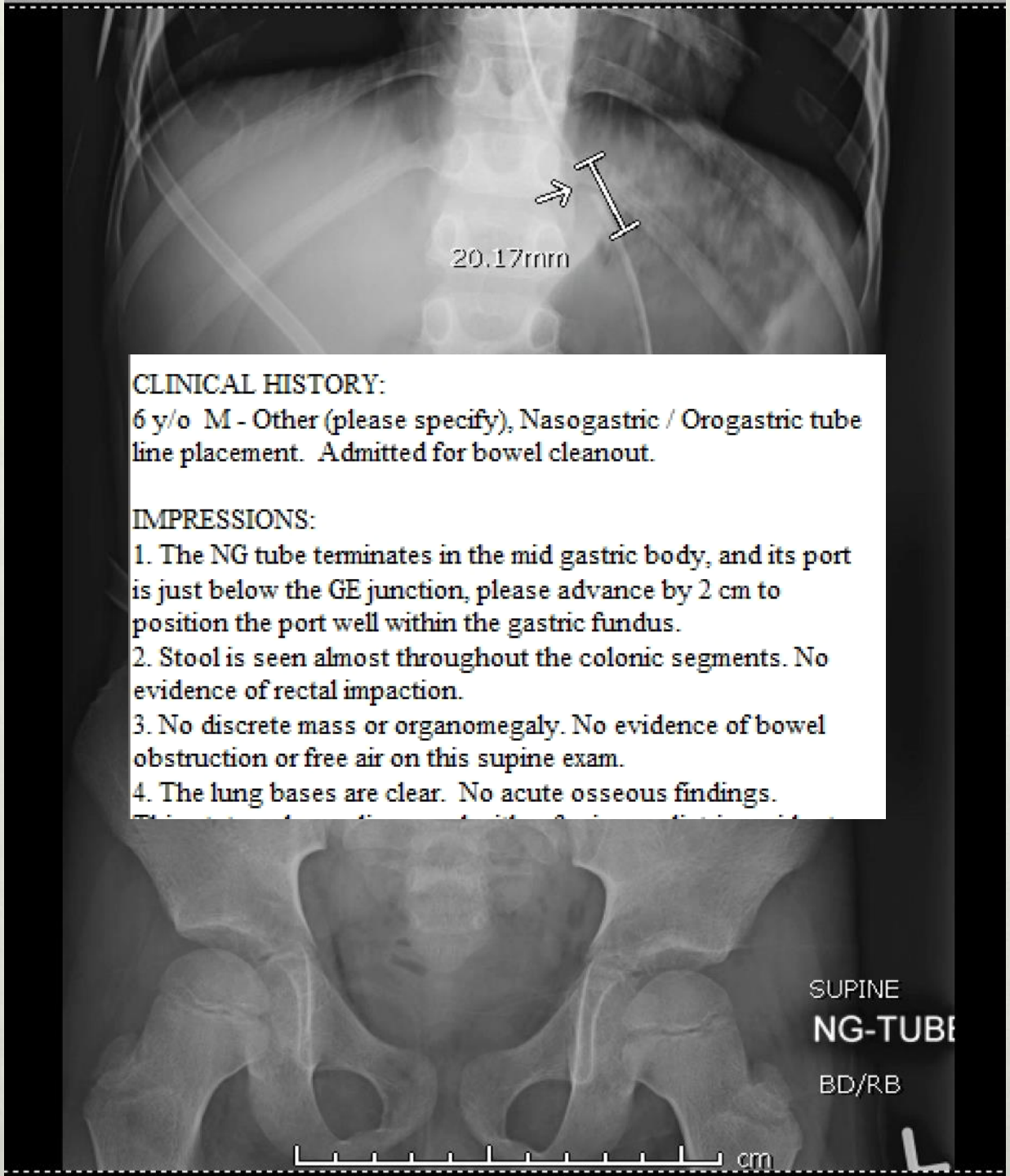
- Obtain KUB
- Consider admission for bowel clean out

What actually happened

- Plan to trial daily clean out with 7 caps miralax, senna BID, lactulose, fiber cookie
- Liquid diet as tolerated with chicken broth and orange jello (no red or green foods)
- F/u phone visit Monday

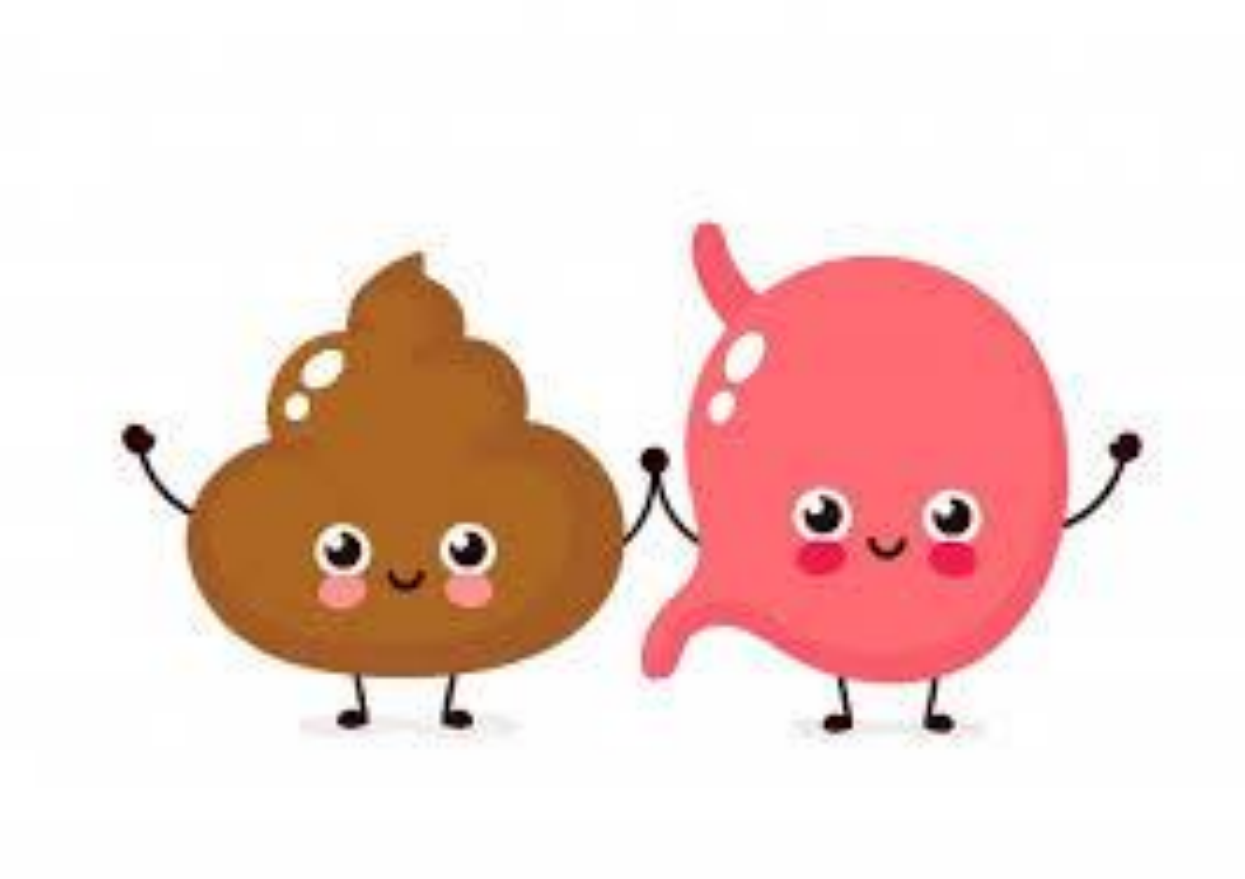
Per chart review….

- Phone visit follow up 8/18 with improved abdominal pain and distention though no BM yet; upon further discussion weren't following home clean out regimen as prescribed given difficulty
- Patient represented to the ED with worsening symptoms 8/20 and…



CLINICAL HISTORY:
6 y/o M - Other (please specify), Nasogastric / Orogastric tube line placement. Admitted for bowel cleanout.

IMPRESSIONS:
1. The NG tube terminates in the mid gastric body, and its port is just below the GE junction, please advance by 2 cm to position the port well within the gastric fundus.
2. Stool is seen almost throughout the colonic segments. No evidence of rectal impaction.
3. No discrete mass or organomegaly. No evidence of bowel obstruction or free air on this supine exam.
4. The lung bases are clear. No acute osseous findings.



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