

Pediatric Upsies, Downsies and Oopsies – Diarrhea and Constipation

GLENN DUH, M.D.
PEDIATRIC GASTROENTEROLOGY
KP DOWNEY (TRI-CENTRAL)

I have nothing to disclose

Objectives

- ▶ Identify the pertinent history information regarding the symptoms of diarrhea, constipation and rectal bleeding.
- ▶ Identify the "red flags" associated with symptoms of constipation, and diarrhea and rectal bleeding.
- ▶ Describe indicate the workup/treatment/ management of diarrhea, constipation and rectal bleeding.

First things first...what do you mean by "diarrhea"?

- ▶ Stools too soft or loose?
- ▶ Watery stools?
- ▶ Too much coming out?
- ▶ Undigested food in the stools?
- ▶ Soiling accidents with creamy peanut buttery poop in the underwear?
- ▶ Pooping too many times a day?
- ▶ Waking up at night to defecate?

Do not assume that we all use the word the same way!

First things first...what do you mean by "constipation"?

- ▶ Stools too hard?
- ▶ Bleeding?
- ▶ No poop for a week?
- ▶ Sits on toilet all day and nothing comes out?
- ▶ Stomachaches?
- ▶ KUB showing colon overstuffed with stuff?

Do not assume that we all use the word the same way!

It's kind of gross to talk or think about this...



Yummy...

Dr. Duh's poopy paraphrase

Type 1		jawbreakers.....
Type 2		granola clusters
Type 3		cheese log.....
Type 4		ripe banana....
Type 5		scrambled egg
Type 6		oatmeal.....
Type 7		chicken broth.



Diarrrhea

NOW THAT WE'VE LOOSENED THINGS UP A BIT....

What is diarrhea?

- ▶ Definition with numbers
 - ▶ 3 or more loose stools a day
 - ▶ > 10 mL/kg or > 200 grams of stools per day (not sure how one figures this one in the office)
 - ▶ Longer than 14 days – chronic diarrhea
- ▶ The "eyeball" test
 - ▶ If it looks like a duck, quacks like a duck, waddles like a duck...
 - ▶ It doesn't look like something else

Acute vs. chronic diarrhea

- ▶ Acute
 - ▶ Most infections
 - ▶ Food poisoning
 - ▶ Occasional dietary indiscretions
 - ▶ Antibiotics, laxatives
- ▶ Chronic
 - ▶ Unidentified food sensitivities
 - ▶ Irritable bowel syndrome
 - ▶ Maldigestion/malabsorption
 - ▶ Autoimmune/inflammatory disorders (e.g., celiac disease, Crohn's disease)
 - ▶ Malignancies (e.g., ganglioneuroma)



Watery diarrhea - secretory vs. osmotic?

- ▶ Secretory diarrhea
 - ▶ Copious watery diarrhea
 - ▶ Diarrhea does not decrease when the child is made NPO
 - ▶ Low stool osmotic gap* (< 50)
 - ▶ Examples: Cholera, catecholamine-secreting tumors
- ▶ Osmotic diarrhea
 - ▶ Watery diarrhea, temporarily improves/resolves when child is NPO
 - ▶ Malabsorptive disorders (pancreatic insufficiency, osmotic laxative abuse, lactose intolerance)
 - ▶ High stool osmotic gap* (> 100)

*Stool osmotic gap: $290 - [2 * (\text{stool Na} + \text{stool K})]$

Tales of the poop

- ▶ Steatorrhea
 - ▶ Too much fat in the stool
 - ▶ Oil drops floating in the toilet water
 - ▶ Very foul smelling
 - ▶ Difficult to wipe off the skin
 - ▶ Suggests exocrine pancreatic insufficiency
 - ▶ Cystic fibrosis
 - ▶ Schwachman syndrome
 - ▶ Chronic pancreatitis
 - ▶ Celiac disease (rare presentation)

Tales of the poop

- ▶ Watery stools with lots of flatulence
 - ▶ Somewhat reminiscent of a can of whipped cream just before running out (this requires a little imagination)
 - ▶ Floaty stools (if any solids present) that don't flush down easily
 - ▶ Typical of osmotic diarrhea due to maldigestion/malabsorption of sugars and sugar alcohols (lactose intolerance, prune juice)
 - ▶ Floaty poop is not the same as steatorrhea
 - ▶ Gas is due to bacterial fermentation of undigested sugars and sugar alcohols

Tales of the poop

- ▶ Blood
 - ▶ Presence of blood with diarrhea suggests an inflammatory process, where tissue is damaged
 - ▶ Infectious colitis (e.g., Shigella, Campylobacter, Entamoeba histolytica)
 - ▶ Allergic/eosinophilic gastrointestinal disorders
 - ▶ Inflammatory bowel disease
 - ▶ C. difficile infection
 - ▶ Bleeding without diarrhea – think something else
- ▶ Mucus
 - ▶ May be associated with infection/inflammation
 - ▶ Nonspecific

Diarrhea – how does the baby/child look?

- ▶ Healthy, thriving – probably nothing too serious (e.g., too much juice, lactose intolerance)
- ▶ Not growing well/not gaining weight – need to think about specific diseases (e.g., celiac disease, eosinophilic gastrointestinal disorders, chronic small intestinal bacterial overgrowth)
- ▶ Dehydrated/losing weight – much more serious (e.g., exocrine pancreatic insufficiency, malignancy, inflammatory bowel disease)

Diarrhea through the ages - infants

- ▶ Breastfed infants
 - ▶ Bowel movements following every feeding may be normal
 - ▶ Stools are soft/seedy and not watery
 - ▶ The baby looks healthy
 - ▶ Excessive foremilk
 - ▶ Foremilk has higher water content, more lactose, and empties from the stomach more quickly
 - ▶ Switching breasts during a single feeding will cause consumption of mostly foremilk and very little hindmilk
 - ▶ Infants are generally not lactose intolerant; however, some undigested lactose may escape into the colon if a large amount is ingested at one time
 - ▶ Draining one breast per feeding should help restore foremilk/hindmilk balance

Diarrhea through the ages - infants

- ▶ Breastfed infants
 - ▶ Maternal dietary factors
 - ▶ Dairy (most common)
 - ▶ Other food groups in the mother's diet
 - ▶ Caffeine, laxative teas (not a big worry)
- ▶ Formula-fed infants
 - ▶ Cow milk or soy protein sensitivity
 - ▶ Watch for other symptoms (eczema, vomiting, bloody stools)
 - ▶ Protein hydrolysate or amino acid-based formula products may help

Diarrhea through the ages - infants

- ▶ Infectious
 - ▶ Rotavirus
 - ▶ Mostly occurring during the winter months
 - ▶ Fever, vomiting, abdominal pain/fussiness are also common
 - ▶ Vaccines routinely given, but easily missed
 - ▶ Loose stools can occur after rotavirus vaccines (live attenuated virus vaccine)
 - ▶ Disease course is usually about one week, supportive care
 - ▶ Other viruses, bacterial, parasitic
 - ▶ Look for known ill contacts, travel history, health department bulletins, etc.

Diarrhea through the ages - infants

- ▶ Antibiotics
 - ▶ Antibiotic-associated diarrhea
 - ▶ Don't look for *C. difficile* in babies
 - ▶ Asymptomatic colonization is very common under 2 years of age
 - ▶ Usually not pathogenic

Diarrhea through the ages - toddler

- ▶ The "juiceaholic"
 - ▶ Apple juice is cheap, sometimes cheaper than bottled water
 - ▶ Kids love it
 - ▶ High in sorbitol (osmotic laxative)
 - ▶ Most are healthy looking (may be overweight from too much sugar!)
 - ▶ Fruits and juices that are high in sorbitol: apples, pears, peaches, plums, prunes, apricots, nectarines, cherries, watermelon, coconut water, mango
 - ▶ Canned fruit cocktail - major (cheapest) ingredients are peaches and pears

Diarrhea through the ages - toddler

- ▶ Infectious diarrhea
 - ▶ Viral cause is the most common
 - ▶ Diarrhea is often part of the gastroenteritis syndrome, with fever, vomiting, abdominal pain
 - ▶ *C. difficile colitis* is possible beyond 2-3 years of age.
- ▶ Antibiotic-associated diarrhea
- ▶ Celiac disease
 - ▶ Diarrhea, abdominal pain, poor weight gain, bloating, etc.
 - ▶ Symptoms are generally non-specific
 - ▶ Prevalence is about 0.7% in the U.S.

Diarrhea through the ages – older children/teens

- ▶ Same as common causes for toddlers
- ▶ Lactose intolerance
 - ▶ Congenital lactose intolerance is very rare (breastmilk and all animal milk contains lactose as the carbohydrate source, so lactose intolerance is incompatible with survival in mammalian babies)
 - ▶ Lactase gene expression is normally shut off at some point after weaning for all mammals; ability to drink milk through adulthood is due to genetic mutations in the lactase promoter
 - ▶ Most likely to develop around late childhood/teen years
 - ▶ Most common – Asian and African descent
 - ▶ Lactose causes diarrhea, but does not cause damage

Diarrhea through the ages – older children/teens

- ▶ Encopresis
 - ▶ No exactly diarrhea, but the parents (and some providers) think so
 - ▶ Stools are more likely mushy/creamy in the underwear, may cake up like dried mud
- ▶ Irritable bowel syndrome (IBS)
 - ▶ May be constipation-predominant, diarrhea-predominant, or “undecided” (alternating between constipation and diarrhea)
 - ▶ Abdominal pain is the dominant complaint with IBS
- ▶ Bile acid malabsorption
 - ▶ Mimics IBS with diarrhea
 - ▶ More common post-cholecystectomy

Rome IV Diagnostic Criteriaa for Irritable Bowel Syndrome

- Must include all of the following:
- ▶ 1. Abdominal pain at least 4 days per month associated with one or more of the following:
 - ▶ a. Related to defecation
 - ▶ b. A change in frequency of stool
 - ▶ c. A change in form (appearance) of stool
 - ▶ 2. In children with constipation, the pain does not resolve with resolution of the constipation (children in whom the pain resolves have functional constipation, not irritable bowel syndrome)
 - ▶ 3. After appropriate evaluation, the symptoms cannot be fully explained by another medical condition a
- Criteria fulfilled for at least 2 months before diagnosis.

Diagnostic workup for diarrhea

- ▶ Most important – a good history and physical examination
- ▶ Growth chart
- ▶ Laboratory studies (blood tests)
 - ▶ CBC with differentials, ESR, C-reactive protein (markers of inflammation, possible blood loss, iron deficiency)
 - ▶ Electrolytes, albumin, creatinine
 - ▶ Celiac disease panel (more appropriate if chronic and after 2 years of age)
 - ▶ Tests for food allergies (if signs of allergies/atopy are present)

Diagnostic workup for diarrhea

- ▶ Laboratory studies (stool tests – infection/inflammation)
 - ▶ Ova and parasites
 - ▶ Takes about one week
 - ▶ Multiple samples improves diagnostic yield
 - ▶ White blood cells, yeast, Charcot-Leyden crystals sometimes reported
 - ▶ Stool WBC (rapid turnaround)
 - ▶ Stool culture
 - ▶ More useful for acute diarrhea
 - ▶ More useful if there is also fever, bleeding
 - ▶ Occult blood

Diagnostic workup for diarrhea

- ▶ Laboratory studies (stool tests – infection/inflammation)
 - ▶ C. difficile toxin
 - ▶ Only for watery, bloody diarrhea
 - ▶ Only if the patient is > 2 years of age)
 - ▶ Stool alpha-1 antitrypsin (detects protein-losing enteropathy)
 - ▶ Marker of protein-losing enteropathy (Crohn's, intestinal lymphangiectasia)
 - ▶ Stool calprotectin
 - ▶ Marker of neutrophil migration into the intestinal mucosa
 - ▶ Sensitive for detecting colitis
 - ▶ May take several days
 - ▶ Specific tests for Giardia, E. coli O157:H7, Yersinia, Cryptosporidium/Isospora, acid-fast bacilli (depending on clinical situation/suspicion)

Diagnostic workup for diarrhea

- ▶ Laboratory studies (stool tests – malabsorption)
 - ▶ Fat
 - ▶ Qualitative (single specimen)
 - ▶ Quantitative (72 hours – very difficult to obtain, usually not necessary)
 - ▶ Fat malabsorption suggests exocrine pancreatic insufficiency
 - ▶ pH/reducing substances
 - ▶ Detects carbohydrate/sugar malabsorption
 - ▶ Should be watery/liquid stools
 - ▶ Pancreatic proteases
 - ▶ Stool elastase, stool chymotrypsin
 - ▶ Low level suggests exocrine pancreatic insufficiency

Diarrhea - treatment

- ▶ Fluids
 - ▶ Intravenous
 - ▶ Oral rehydration
- ▶ Dietary
 - ▶ Applesauce (in BRAT diet) is a bad idea
 - ▶ Choose low-FODMAP (Fermentable Oligosaccharides, Disaccharides, Monosaccharides And Polyols) foods
 - ▶ Examples: banana, grape, carrot, squash, rice, lean meat, egg
 - ▶ Avoid (examples): apple, pear, peach, cauliflower, peas, milk
 - ▶ Protein is usually OK (exceptions – specific food allergies, gluten in celiac disease)
 - ▶ It's OK to experiment – every child is different

Diarrhea - treatment

- ▶ Probiotics
 - ▶ Specific strains may be beneficial for antibiotic-associated diarrhea and/or infectious diarrhea
 - ▶ L. reuteri DSM 17938, L. rhamnosus GG, Saccharomyces boulardii
 - ▶ Yogurt drink containing L. casei sp. Paracasei CNCM I-1518
- ▶ Antidiarrheals
 - ▶ Loperamide (use the lowest dose whenever possible)
 - ▶ Kaolin + pectin
 - ▶ Fiber products

Diarrhea - treatment

- ▶ Bismuth subsalicylate
 - ▶ Contains salicylate (potential risk for Reye syndrome)
 - ▶ Black stools may be mistaken for melena
 - ▶ No one really knows how this works!!
- ▶ Cholestyramine
 - ▶ Binds bile acids
 - ▶ May work for post-cholecystectomy diarrhea
- ▶ Antimicrobials
 - ▶ Specific infections
 - ▶ Small intestinal bacterial overgrowth

Let's change the subject....

"TOTO, I'VE A FEELING WE'RE NOT IN DIARRHEA ANYMORE..."



What does constipation look like?

- ▶ The poop:
 - ▶ They may be hard (Bristol types 1-3)
 - ▶ There may be blood (anal fissures)
 - ▶ They may be BIG ("mother of all poops")
 - ▶ They may be stuck in indoor plumbing
 - ▶ They may be goeey and loose, like peanut butter, Nutella, or "diarrhea"
 - ▶ They may be smeared over the buttocks an in the underwear
 - ▶ They may stink up the room

What does constipation look like?

- ▶ The child:
 - ▶ They do the "poopy dance"
 - ▶ They hide
 - ▶ They turn red, pale or sweaty, they clench their fists, scream, grunt
 - ▶ They poop standing, leaning against the wall
 - ▶ They refuse to sit or squat when the poop is coming
 - ▶ If they sit, they sit with hips and knees in extension
- ▶ The parents:
 - ▶ "Oh, he/she's trying/struggling so hard to go!"

What does constipation look like?

- ▶ The "Eureka!" moment:
 - ▶ "What do you think your child is trying to do when he/she does all that?"
 - ▶ Defecation works best in a squatting position
 - ▶ Have you ever walked a dog?
- ▶ The proper interpretation:
 - ▶ The child is trying everything possible to keep it from coming out!

Rome IV Diagnostic Criteria for Functional Constipation

Must include 2 or more of the following occurring at least once per week for a minimum of 1 month with insufficient criteria for a diagnosis of irritable bowel syndrome:

- ▶ 1. 2 or fewer defecations in the toilet per week in a child of a developmental age of at least 4 years
- ▶ 2. At least 1 episode of fecal incontinence per week
- ▶ 3. History of retentive posturing or excessive volitional stool retention
- ▶ 4. History of painful or hard bowel movements
- ▶ 5. Presence of a large fecal mass in the rectum
- ▶ 6. History of large diameter stools that can obstruct the toilet

After appropriate evaluation, the symptoms cannot be fully explained by another medical condition.

Functional Constipation Large fecal mass in rectal ampulla



Encopresis – clues that this is due to stool retention

- ▶ The child has both "diarrhea" and "constipation"
 - ▶ Occasional "MOAPs, e.g., every 2-3 weeks"
 - ▶ Soiling temporarily resolves for a few days after a MOAP attack, then recurs shortly afterwards – this goes on a cyclical fashion
 - ▶ Palpable fecal mass on abdominal examination
 - ▶ Rectal examination identifies a sticky jar of peanut butter in the rectal ampulla
 - ▶ This same jar of peanut butter is visible on KUB (usually not needed)
- "MOAP" = "Mother Of All Poops" – a poorly veiled reference to the Mother Of All Bombs that were used by the U.S. military

Encopresis – don't be surprised to hear the parents say:

- ▶ "He smells so bad! I can't understand why it doesn't bother him." (Girls do this too, but for some reason boys heavily outnumber girls when it comes to encopresis)
 - ▶ We generally don't smell ourselves
 - ▶ Ever walked into an elevator with someone who wears WAY too much perfume or cologne?
- ▶ "We kept telling him to go to the bathroom to change because we could smell him, but he kept denying that he had an accident, until we made him, and then he finally saw that he made a mess on himself."
 - ▶ It's sensory habituation.
 - ▶ If the rectum is distended all the time, you stop feeling it being distended.
 - ▶ The rectum is so distended that there is not much difference after a small amount of stool escapes.
- ▶ "When is this going to get better?"
 - ▶ When the child finally starts doing what he's supposed to do

Functional Constipation

Can you see the jar of peanut butter?



"Constipation" and Babies...

- ▶ Infant dyschezia (no need to treat)
 - ▶ They be strugglin'
 - ▶ Stools are normal when they eventually come out
 - ▶ Haven't gotten the hang of doing the right thing yet
 - ▶ This usually happens during the first 2-3 months of life
- ▶ Infrequent bowel movements in breastfed infants (no need to treat)
 - ▶ No stools for 3, 4, 5, 6, 7, 8, 9, 10 days...
 - ▶ Baby looks and feels fine
 - ▶ Soft stools
 - ▶ Things change when formula and/or solids are introduced

"Constipation" and Babies...

- ▶ Hard stools
 - ▶ More likely to happen after solids are introduced
 - ▶ In young infants, possibly related to milk protein sensitivity
 - ▶ May be affected by gut microbiome

"Constipation" and Babies...

When to call a pediatric surgeon...

- ▶ Anal stenosis/stricture
 - ▶ Pencil-thin stools, with abdominal distension
 - ▶ Anus too tight to admit a small pinky finger
- ▶ Imperforate anus
 - ▶ Don't laugh...it has been missed before
 - ▶ Meconium/stools sometimes come out via a perirectal fistula

"Constipation" and Babies...

When to call a pediatric surgeon...

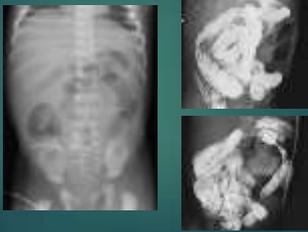
- ▶ Hirschsprung's disease
 - ▶ Early presentation (usually since birth)
 - ▶ Delayed meconium passage is common
 - ▶ No/poor response to stool softeners
 - ▶ Short-segment aganglionosis – potential explosive response to rectal examination or suppositories!!
 - ▶ Aganglionic segment often detectable on unprepped barium enema
 - ▶ Milk protein sensitivity can sometimes mimic this
 - ▶ Late diagnosis is possible

Hirschsprung's disease

8 year old child – barium enema findings



Hirschsprung's disease newborn girl with total colonic aganglionosis



Treatment – stool softeners

- ▶ These facilitate bowel movements by:
 - ▶ Increasing stool bulk and moisture (fiber)
 - ▶ Lubrication/preventing desiccation (mineral oil)
 - ▶ Increasing water content (osmotic laxatives)

Treatment – stool softeners

- ▶ Fiber
 - ▶ Insoluble – bran, most vegetables
 - ▶ Soluble – psyllium, methylcellulose, guar gum, oatmeal, beans, konnyaku, etc.
 - ▶ Indigestible substances = larger stools
 - ▶ Avoid excessive use if the child continues to exhibit stooling aversive behavior. If the child insists on keeping them buttocks tight, the stools will be even bigger and just as hard when they eventually come out!
 - ▶ Best to use when child finally sits on the toilet without a fuss, with appropriate posture.

Treatment – stool softeners

- ▶ Mineral oil
 - ▶ Lubricates
 - ▶ Covers stool surface and prevents drying
 - ▶ No taste
 - ▶ Leaks into the underwear – more user-friendly with diapers!
 - ▶ Interference with fat soluble vitamins not that great a concern
 - ▶ Mineral oil aspiration is not good – avoid use in neurologically/swallowing impaired children!
 - ▶ May use together with other products (e.g., with milk of magnesia)

Treatment – stool softeners

- ▶ Undigestible sugars and sugar alcohols
 - ▶ Sorbitol syrup, lactulose
 - ▶ Dairy products (if lactose intolerant)
 - ▶ Fruits/juices with high sorbitol content (apples, pears, peaches, plums, prunes, apricots, cherries, mango, watermelon, coconut water)
 - ▶ Generally safe
 - ▶ These tend to cause lots of bloating, and may cause abdominal cramps/pain

Treatment – stool softeners

- ▶ Magnesium salts
 - ▶ Magnesium hydroxide (milk of magnesia)
 - ▶ Liquid and chewable forms
 - ▶ Maximum dosage is about 1 mL/kg/day (1 chewable tablet = 5 mL)
 - ▶ Magnesium citrate
 - ▶ Often used as an alternative to PEG-3350/electrolytes for bowel preparation
 - ▶ 3 x 10 ounce bottles = 4 L of PEG-3350/electrolytes = 16 caps of MiraLax
 - ▶ Magnesium oxide
 - ▶ Often used as a supplement, helpful in reducing migraine
 - ▶ Not as much laxative effect compared to MOM

Treatment – stool softeners

- ▶ Magnesium salts
 - ▶ These work because magnesium salts are poorly absorbed, and therefore work as osmotic laxatives
 - ▶ Non-fermentable = less bloating
- ▶ Other saline laxatives
 - ▶ Sodium phosphate (enemas – oral sodium phosphate is no longer available in the U.S., due to risk of renal failure)
 - ▶ Sodium chloride (enemas – available in some countries)
 - ▶ Risk of electrolyte derangements are higher – avoid frequent use
- ▶ Docusate sodium
 - ▶ Relatively mild stool softener
 - ▶ Doubles as a cerumenolytic...

Treatment – stool softeners

- ▶ PEG-3350
 - ▶ Originally marketed by the same company that makes the 4-liter colon cleansing prep
 - ▶ Very little taste, no color, easily dissolved in other fluids
 - ▶ Dosage is easily titrated, but the effective dosage varies a lot between individuals
 - ▶ Standard dosage of 17 grams is about 20 mL (4 teaspoons), dissolved in 8 ounces of fluids
 - ▶ Works best if it is consumed rapidly (don't nurse the bottle like a glass of bourbon)
 - ▶ Safe, though mild rumblings and rumbles exist (study in progress)

Treatment – stimulant laxatives

- ▶ Stimulates the colon/rectum to have contractions
- ▶ May cause cramps/stomachaches
- ▶ Avoid daily use
- ▶ May consider if there seems to be no sign of defecatory urge
- ▶ Oral preparations
 - ▶ Delayed onset of effect, usually by a few hours
 - ▶ It may be possible to give this to kids without them realizing what you are doing to them
- ▶ Rectal preparations
 - ▶ Immediate or rapid onset of effect
 - ▶ Kids know what they are getting, and hate it

Treatment – stimulant laxatives

- ▶ Glycerin
 - ▶ Suppositories
 - ▶ Enemas (e.g., Baby-Lax)
- ▶ Bisacodyl
 - ▶ Tablets
 - ▶ Suppositories
 - ▶ Dosage more appropriate for older kids and adults
 - ▶ Often used as part of colonoscopy prep with PEG-3350/electrolytes
- ▶ Coffee
 - ▶ Personal experience, anyone?
 - ▶ Yes, some parents do give this to their little constipated ones

Treatment – stimulant laxatives

- ▶ Senna
 - ▶ "Chocolate"
 - ▶ Pills
 - ▶ Syrup
 - ▶ Quick-dissolve strips
- ▶ Teas
 - ▶ "Slimming"
 - ▶ "Colon detox"
 - ▶ "Dieter's"
 - ▶ "May cause abdominal cramps and diarrhea"



Do you know what you're drinking?



Treatment – prebiotics, probiotics, synbiotics

- ▶ Mildly beneficial, sometimes
 - ▶ Prebiotic-containing infant formulas – polydextrose, galactooligosaccharides
 - ▶ Fermented stuff – specific yogurt products, probiotic drinks
 - ▶ Lactobacillus reuteri DSM17938

Treating constipated infants

- ▶ Make sure you check the bottom
- ▶ Look out for infant botulism, neuromuscular disorders
- ▶ Consider trying alternate formula or eliminating dairy from mother's diet if there are signs that suggest possible cow milk protein sensitivity
- ▶ Consider using a probiotic that contains L. reuteri DSM17938 (\$\$)
- ▶ If stools are soft, treatment may not be necessary
- ▶ Make sure posture is conducive to defecation
- ▶ If stools are hard, try milk of magnesia or MiraLax
 - ▶ MOM hides well in the bottle
 - ▶ Also has antacid effect, so double benefit if there also is some GER
- ▶ Rectal stuff only if stools are rock hard

Treating constipated toddlers

- ▶ Watch for aversive behaviors and posturing (i.e., "the dance", "the plank")
- ▶ Encourage regular potty use, using appropriate adaptations to ensure good posture
- ▶ Balanced diet (don't push too much fiber if the kid won't let it out...it will only make the poop bigger and harder!)
- ▶ Stool softeners, stool softener, stool softeners.
- ▶ May add a stimulant laxative occasionally if the child does not seem to have defecatory sensations (e.g., on weekends)
- ▶ Consistent effort – otherwise aversive response will become hard-wired and make treatment much more difficult

Treating constipated children/teens

- ▶ Watch for aversive behaviors and posturing (i.e., "the dance", "the plank")
- ▶ Use the toilet after meals to take advantage of the gastrocolic reflex
- ▶ Balanced diet, again
- ▶ Request restroom privilege at school, no holding until school's over
- ▶ Stool softeners, stool softener, stool softeners.
- ▶ May add a stimulant laxative occasionally if there is no defecatory sensations (e.g., on weekends)
- ▶ Patience – the longer the kid's constipated, the longer it will take to get better (who buys most of the laxatives in this country, anyway?)

Treating encopretic children/teens

- ▶ Same as for constipation
- ▶ Do not stop treatment when stools get looser and leakage increases – this usually happens early on, before the rectal MOAP comes out
- ▶ If leaking at school is too big a problem, consider cyclical treatment, with maintenance treatment daily on weekdays, and intensified treatment on weekends/holidays
 - ▶ Double/triple stool softeners on weekends
 - ▶ Consider adding a stimulant laxative on weekends
 - ▶ Intensify treatment on holidays/vacations when not traveling
- ▶ Patience – this almost always resolve...eventually

Encopresis – they usually resolve by this age...





Rectal bleeding

BLOOD IN THE WATER!

Where did the blood come from?

- ▶ Upper digestive tract
 - ▶ Mild bleeding – blood usually not visible
 - ▶ Heavy bleeding – melena
 - ▶ Esophagitis, gastric/duodenal ulcers, esophageal varices
 - ▶ Hematemesis or coffee-ground emesis may help localize bleeding to upper digestive tract.
- ▶ Small intestine (jejunum/ileum)
 - ▶ Blood and stool completely mixed (the whole thing looks red)
 - ▶ Bleeding Meckel's diverticulum, intestinal vascular malformation



Where did the blood come from?

- ▶ Proximal colon
 - ▶ Blood and stools are still pretty mixed
 - ▶ Tends to be very foul smelling in the case of colitis
- ▶ Distal colon
 - ▶ Blood and stools are more separated/distinct
 - ▶ Juvenile polyps are more common in the sigmoid colon and rectum
- ▶ Anorectal
 - ▶ Much more separation between blood and stool (e.g., blood in the toilet water, but the stools don't look that bloody)
 - ▶ Blood mostly on toilet paper – bleeding around the anal region



Rectal bleeding - infants

- ▶ Anal fissure
 - ▶ Most common
 - ▶ Usually heals spontaneously
 - ▶ Use stool softeners if constipated (stools may not necessarily be hard)
- ▶ Cow milk protein intolerance
 - ▶ Usually presents within the first 2-3 months of life
 - ▶ Spots of blood with mucus in the diaper
 - ▶ Eliminate dairy from the mother's diet (if nursing), try protein hydrolysate or amino acid-based formula
 - ▶ L. rhamnosus GG may help
 - ▶ Usually resolves over time

Rectal bleeding - infants

- ▶ Intussusception
 - ▶ Ileocolic, ileocolic, and colocolic all possible
 - ▶ An anatomical lead point (Meckel's diverticulum, lymphoid hyperplasia) may be present
 - ▶ Mostly in infants and under 2 years of age
 - ▶ Fussy infant, acute abdominal distension
 - ▶ "Currant jelly stools" is a late finding
 - ▶ Retrograde enemas (Gastrografin, saline, air) may successfully reduce intussusception
 - ▶ Emergent surgery necessary if incarcerated/non-reducible

Rectal bleeding – young children

- ▶ Anal fissure
- ▶ Juvenile polyp
 - ▶ Bleeding persists until polyp is removed
 - ▶ Self-amputation is possible (copious bleeding immediately after polyp loss)
- ▶ Inflammatory disease
 - ▶ Much more likely to be infectious
 - ▶ Bleeding from colonic vasculitis may occur with Henoch-Schönlein purpura rash
 - ▶ Inflammatory bowel disease – uncommon (suspect immune deficiency)

Rectal bleeding – older children and teens

- ▶ Anal fissure
- ▶ Internal hemorrhoids (not common in the pediatric population)
- ▶ Juvenile polyp
- ▶ Infectious colitis
 - ▶ Usually acute/subacute course
- ▶ Inflammatory bowel disease
 - ▶ Chronic
 - ▶ Bloody diarrhea
 - ▶ Very frequent defecation (can be > 20 times a day)
 - ▶ Tenesmus

Bloody poop look-alikes and fake-outs

- ▶ Fake blood
 - ▶ Red dye (fruit punch, candy), beets, red peppers
 - ▶ Blueberries, blackberries, mulberries (dark stools)
 - ▶ Iron supplements (dark stools looking like rotten spinach)
 - ▶ Cefdinir
 - ▶ Oxidative chemical reaction with iron supplements or iron-containing formula
 - ▶ Blood-red stools, but doesn't smell like blood
 - ▶ Babies/kids look and feel fine, don't act like they're bleeding
- ▶ Bleeding...not rectal
 - ▶ Pilonidal disease (hairy behinds in teens)
 - ▶ Vaginal (e.g., foreign bodies in young girls)

Rectal bleeding – physical examination

- ▶ Looking/feeling OK?
- ▶ Anemic?
- ▶ Vital signs?
- ▶ Photographs/samples of the bloody stuff?
- ▶ Abdominal distension? Tenderness? Mass?
- ▶ Anal/rectal examination?
- ▶ Dietary history (including mother's if breastfeeding baby)

Rectal bleeding – labs

- ▶ Stool test for occult blood (may skip this if you're pretty sure that it's blood!)
- ▶ CBC with differentials, ESR, CRP, stool O&P, stool culture, stool calprotectin (depending on what is being suspected)
- ▶ Be prepared to transfuse blood products if active, rapid bleeding (type & crossmatch)

Rectal bleeding – studies

- ▶ KUB, CT abdomen/pelvis
- ▶ Meckel scan
- ▶ Contrast enema (if intussusception is suspected)
- ▶ Tagged RBC bleeding scan
- ▶ Angiogram
- ▶ Endoscopies
 - ▶ EGD, colonoscopy
 - ▶ Push enteroscopy, intraoperative enteroscopy, single-balloon enteroscopy, double-balloon enteroscopy
 - ▶ Video capsule enteroscopy
- ▶ Exploratory laparoscopy

Rectal bleeding – treatment

- ▶ Stool softening measures
 - ▶ Dietary
 - ▶ Stool softeners
- ▶ Apply petroleum jelly to toilet paper when wiping
- ▶ Iron replacement
- ▶ IV fluid bolus, blood transfusion if brisk bleeding, symptomatic anemia, and/or Hgb < 7
- ▶ Disease specific treatment (may be endoscopic or surgical)