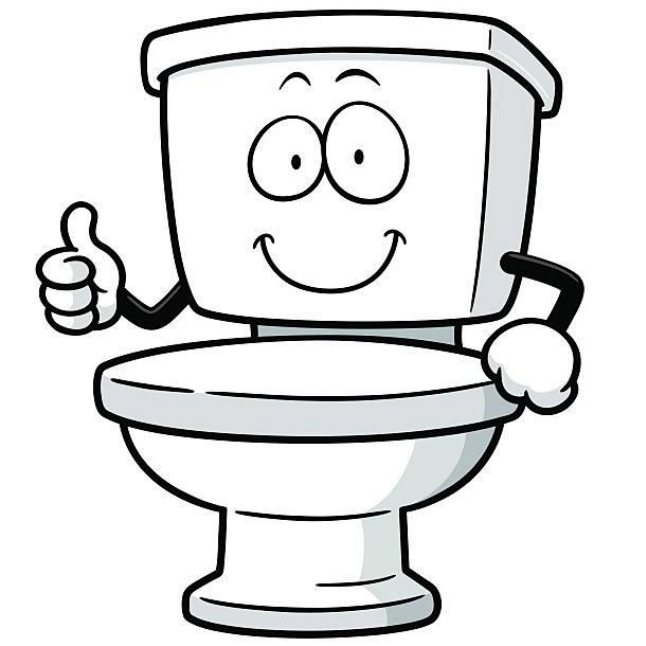
Constipation Implications & actions



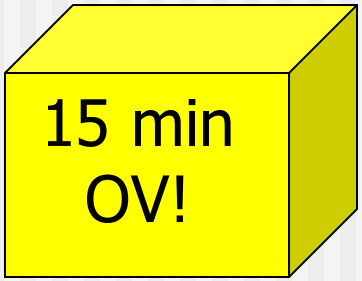
American Academy of PHYSICIAN ASSISTANTS
Connecting PAs, Transforming Care

”When it comes to managing constipation, 1+1 does not always equal 2.” -*Simons*

AASPA
American Association of Surgical Physician Assistants

- **Gerald T. Simons, DFAAPA, PA-C**
- Surgical PA & private practice
- Stony Brook PA Program, Asst Professor
- BOD & Suture/Wound Care Instructor/Coordinator AASPA
- **Nothing to disclose.**
- **No financial interest in any companies or products mentioned.**

Classic Case



- 46 year old female
- Constipation “on and off” since college
  - Bowel movement every 5 days
- No abdominal pain
- No alarm signs/symptoms
- +Straining
- Occasional need for manual methods
- Felt “AMAZING” last year after a colonscopy prep.

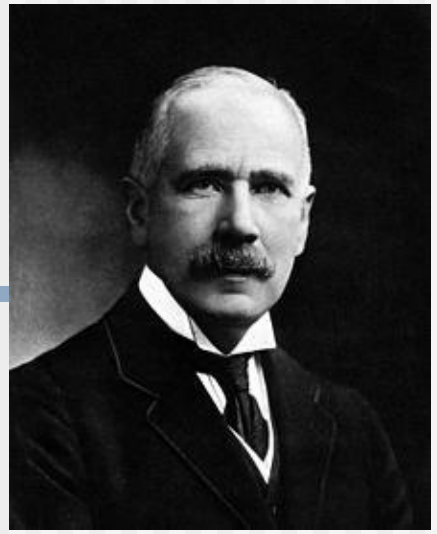
Question 1

- Which of the following foods can help constipation?
  A. White rice
  B. Green bananas
  C. Ripe bananas
  D. Iron rich foods
  E. Beer

Question 2

- Which of the following off the shelf medications has been shown to be essentially ineffective in the management of constipation?
  A. Fiber/bulking agents
  B. Probiotics
  C. Docusate (Colace)
  D. Polyethylene glycol (MiraLAX)

Constipation in history "Lane's Disease"



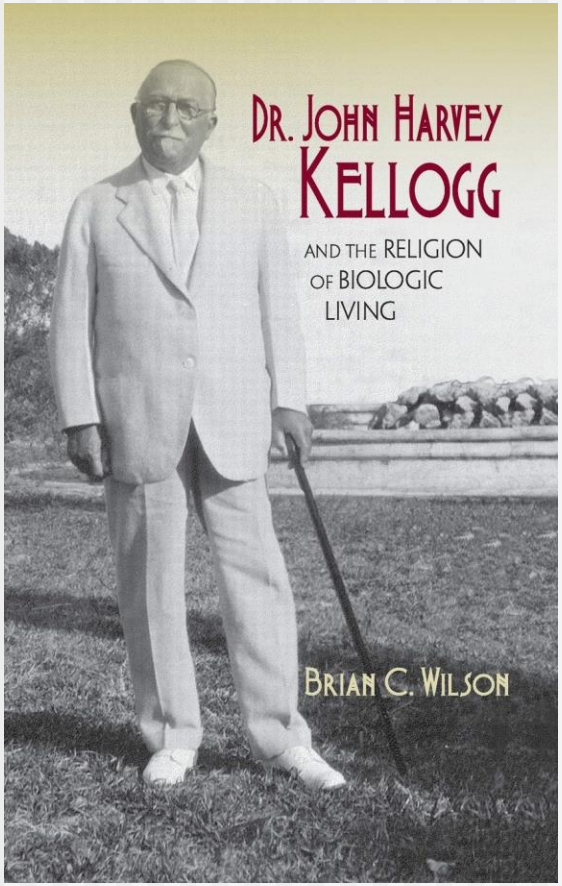
- Dr. William A Lane (d 1943)
- "Colon is the root of all illness"
- Constipation caused 'autointoxication'
- Colonic 'cleansing'
- Performed surgery to remove and or straighten colon

John Harvey Kellogg MD (d. 1943)

- Founder and director of Battle Creek Sanatorium
- Abnormal colonic bacteria built up from a heavy meat diet and caused **autointoxication**
- Special diets, laxatives and fiber improved the intestinal flora
  - Pioneer in the field of Fiber

John Harvey Kellogg MD

- Prescribed enemas for sanatorium patients
- Enema included yogurt
- After enema, oral yogurt



- 2020's RCT-DB show probiotics are excellent for mood and constipation

Gut-brain connections
George Porter Phillips

- Early 1900's Bethlem Royal Hospital (London)
- Patients with melancholia had constipation and

  "general clogging of the metabolic processes"
  - brittle nails, thin hair and pallor.
- It was thought these symptoms were caused by depression
- He removed all meat (except fish) and gave them fermented milk (keifer) which contains lactobacillus
- N=18 patients
  - 11 were cured completely
  - 2 others showing significant improvement.
  - Birth of PSYCHOBIOTICS!

Incidence & prevalence

- Children:
  - Common: 5-30%
  - Affects all age groups
  - Can be under diagnosed
  - Can be related to behavioral difficulties
- General population up to 34%
  - F and Elderly most common
  - Garrigues, et al.
- Intellectual disability as high as 50%
  - (Robertson, et al. 2017).

Remember to ask! Many patients will not disclose!

Elderly: high risk population

- Muscular weakness with aging
- Chewing
- Prevalence of constipation in the older adult ranges from 24 to 50%.
- Laxatives are used daily by 10 and 18 percent of community dwelling older adults and 74 percent of nursing home residents

Vocabulary

Constipation: basic definition

- Infrequent BMs (3x a week or less)
- Difficulty with BMs
  - Straining
  - Hard or dry stool
  - Extended periods of time on the toilet trying to pass stool
- Incomplete defecation

Vocabulary

- Normal bowel habits- everyone's bowel habits are unique. Some may eliminate 1-2x a day, others may only have a bowel movement 3 times a week. Many factors contribute to such as hydration, exercise, and mobility.
- Organic "Secondary" Constipation- when there is an identifiable condition, disorder or diagnosis causing constipation.

  Pashankar, 2005
- Severe Constipation- <1 BM a week
- Chronic Constipation- is defined as painful bowel movements that are hard/lumpy, with less than 3 movements a week, and may have feeling of incomplete defecation of stool

  Talley, 2004

Vocabulary

Primary Constipation

- Normal transit constipation
  - Normal frequency
  - Difficult evacuation
- Slow transit constipation
  - Primary colorectal dysfunction
  - Decreased frequency
  - Decreased urgency
  - Straining
- Pelvic floor dysfunction
  - Incomplete evacuation
  - Difficult BMs
  - Manual evacuation

Rome IV Criteria

- Must include 2 or more:
  - Straining/difficult BMs
  - Lumpy or hard stools
  - Feeling of incomplete emptying
  - Sensation of anorectal blockage/obstruction
  - Manual maneuvers to facilitate passage
  - Fewer than 3 spontaneous BMs/week
- Symptoms at least 6 mo & should be present during the last 3 mo
- About 14% of people meet this criteria
  - Suares Am J Gastro 2011 & Lacy Gasteroent 2016

Vocabulary

- Dyssynergic defecation
  - difficulty with BM or inability to expel stool from the anorectum. Many have prolonged colonic transit time
- Defecatory disorders
  - Pelvic floor disfunction
  - Megarectum
  - Rectocele
  - Perineal descent

Rao, Gastoen Clin 2003

Etiology-Lifestyle

- Diet
  - Poor fiber intake, high processed foods
  - America: EPIDEMIC of poor fiber intake!
- Poor fluid intake/dehydration
- Lack of exercise
- Immobility
- “Too busy”
- Uncomfortable at school or work
- Stress
- “Off schedule” from travel

Etiology: Children

- Fear of the bathroom or toilets (public bathrooms).
- Toilet training problems in young children.
- Older children ignoring the urge to pass stool.
- Reduced stool from eating a low-fiber diet, not eating often enough or not drinking enough fluids.
- Intolerance to cow's milk.
- Lack of physical activity.
- Pain from hemorrhoids.
- Hirschsprung's disease
- Thyroid conditions
- Cerebral palsy
- Malformations of the anus and rectum.

Etiology
Constipating foods

- Bananas
  - Unripe/green (excess starch)
  - Swallowing gum
- Caffeine (if pt. is dehydrated)
- Gluten
- White rice
- Red meat
- Alcohol
- Excess iron intake

Ripe bananas help with constipation

Brown rice can help w constipation

Etiology
Secondary causes

- Endocrine
  - Diabetes
  - Hypothyroid (TSH >2.5)
  - Hyper parathyroid/Hypercalcemia
  - Uremia
  - Hypokalemia- esp. post-op!
  - Addison's
- Aging/deconditioning

Etiology

- Sensory disorder
- Pain causes
  - Anal fissure
  - Hemorrhoids
- Celiac
- Muscular causes
  - Muscular dystrophy

Etiology: Medications

- Chemo (especially with abdominal radiation)
- Opiates
- Diuretics
- Anti-depressants
- Calcium channel blockers
- Anti-spasmodics
- Iron supplements
- H1 Histamine blockers
- Oral Immunoglobulins (enteragam)

Etiology

- Sodium, Chloride, or GC-Channel abnormalities
  - Frequent target of meds
  - Reduced receptor density
- Neuro & psych diseases
  - Serotonin deficiency *critical for gastroparesis*
  - Parkinson's
  - Ogilvie's Syndrome
  - Multiple Sclerosis

Etiology
Secondary causes

- GI
  - Mesenteric ischemia
  - Volvulus
  - Diverticular disease
  - Colorectal cancer
  - Rectal prolapse
  - Rectocele
  - Post-infectious (SIBO, dysbiosis)
  - Abnormal gut microbiome

Etiology
Secondary causes

- Eating disorders
- Gut- brain under study (cause vs effect)
  - Low serotonin
  - Alzheimer's
  - Depression

npj | Parkinson's Disease

www.nature.com/npjparkd

ARTICLE OPEN

Check for updates

Early constipation predicts faster dementia onset in Parkinson's disease

M. Camacho[1✉], A. D. Macleod[2], J. Maple-Grødem[3,4], J. R. Evans[5], D. P. Breen[6,7,8], G. Cummins[1], R. S. Wijeyekoon[1], J. C. Greenland[1], G. Alves[3,4], O. B. Tysnes[9], R. A. Lawson[10], R. A. Barker[1,11] and C. H. Williams-Gray[1]

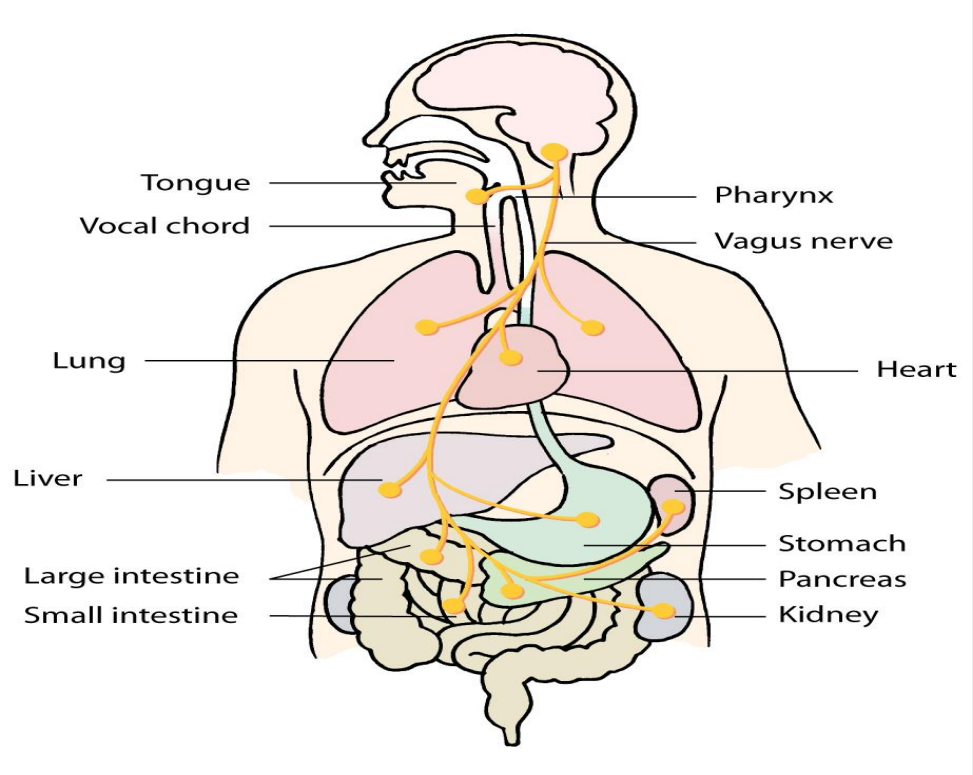
Constipation is a common but not a universal feature in early PD, suggesting that gut involvement is heterogeneous and may be part of a distinct PD subtype with prognostic implications. We analysed data from the Parkinson's Incidence Cohorts Collaboration, composed of incident community-based cohorts of PD patients assessed longitudinally over 8 years. Constipation was assessed with the MDS-UPDRS constipation item or a comparable categorical scale. Primary PD outcomes of interest were dementia, postural instability and death. PD patients were stratified according to constipation severity at diagnosis: none ($n = 313$, 67.3%), minor ($n = 97$, 20.9%) and major ($n = 55$, 11.8%). Clinical progression to all three outcomes was more rapid in those with more severe constipation at baseline (Kaplan–Meier survival analysis). Cox regression analysis, adjusting for relevant confounders, confirmed a significant relationship between constipation severity and progression to dementia, but not postural instability or death. Early constipation may predict an accelerated progression of neurodegenerative pathology.

npj Parkinson's Disease (2021)7:45 ; https://doi.org/10.1038/s41531-021-00191-w

Constipation is a significant marker in neuro and psych diseases! Always ask!

Strong correlation

- Psychiatric disease and constipation
- Gut brain connection



100 Million Neurons

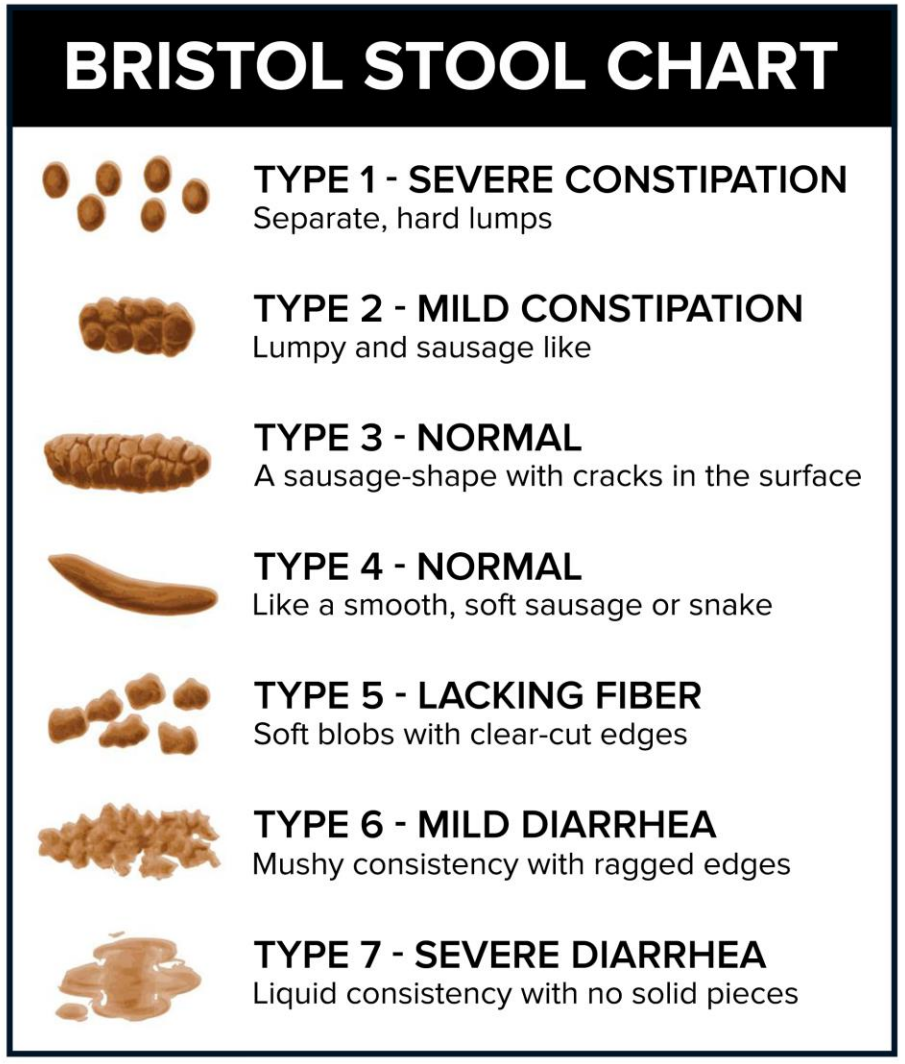
As many as the spinal cord.

History
Get a full history!

- What does the patient consider constipation?
  - Frequency and consistency of stool
- Painful defecation
- Diet and fluid intake
- Behaviour including toileting
- Social history
- Bristol stool scale
  - Expect photos!

History

- Bloating
- Heartburn
- Use of any remedies?



- What is the patient's normal bowel habits?
- How long has the patient had difficulty with bowel movements?
- When was the last BM?
- Passing gas?
- Pain with BM (abdominal or rectal)
- If > 45y/o colorectal screening needed?
- Caregiver question:
  - Does the patient grimace or appear to be in pain when they are defecating/having a bowel movement?

Ask about abdominal pain

*
organic

- Pain description
  - Pain that wakes patient up*
- Pain relation to meals
- Diet habits or triggers
- Weight loss*
- Pain AWAY from umbilicus*
- Referred pain to back/flank*

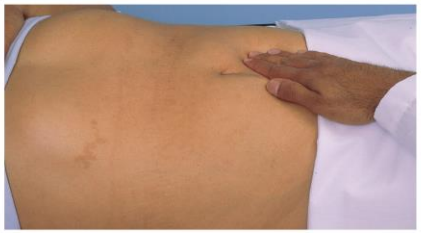
Constipation & pain?

Think IBS-C

Other symptoms to consider

- Fever
- Chest Pain
- Back Pain
- Groin/scrotal pain
  - In MEN do a groin/hernia exam!
- Cardio and pulmonary
- GU
- Menstrual cycle

WORK-UP Physical Exam



- ENT
  - Mucosa moist?
  - Tongue coated? Fissured?
- Posture (kids/intellectual disability, dementia)
  - Postures that indicate the person is withholding stool (standing on tiptoes then rocking back on the heels of the feet, clenching buttocks, etc).
- Skin
  - Turgor/moisture

Work-up: Physical Exam

POCUS HELPS!

- Abdomen
  - RLQ: Ileocecal valve
  - Palpable stool (Infants, elderly)
- Rectal
  - Hemorrhoids
  - Hemoccult
  - Impaction
  - Ask patient to bear down
  - Feel sphincter relaxing & pelvic floor comes down
  - Helps confirm neurologic function

Red Flags- Adults

- Suspicion of organic disease
  - Hematochezia
  - weight loss of ≥10 pounds,
  - family history of colon cancer or inflammatory bowel disease
  - Anemia
  - positive fecal occult blood tests
- Recent onset of constipation without an obvious explanation
- If YES- need more aggressive work-up
  - Have a low threshold for endoscopy

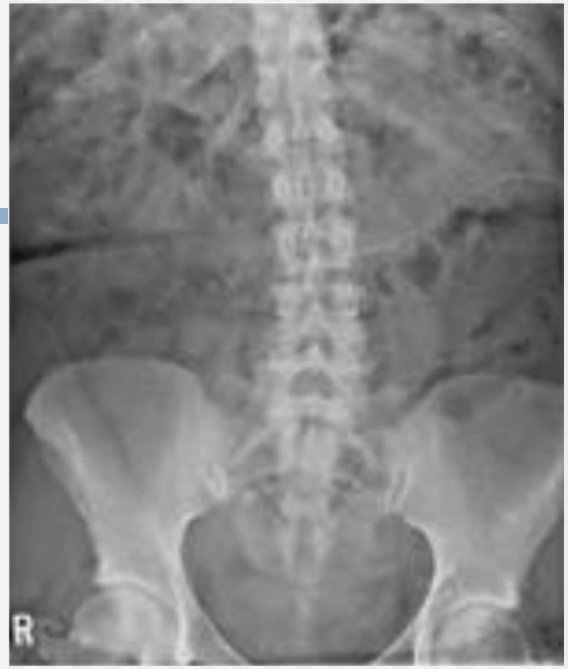
Red Flags- Children

- Constipation from birth or first few weeks of life
- Failure/delay in passing meconium > 48hrs
- Ribbon stools
- Weakness in legs/motor delay
- Abdominal distension + /-vomiting
- Abnormal appearance of anus
- Abnormal examination of spine
- Abnormal neuromuscular signs or reflexes

Diagnosis

- History
- Physical
  - May be enough for a therapeutic trial
- Labs- if needed
  - IgA & CRP
  - Anemia/CBC
  - LFT/CMP
  - TFTs

Imaging



- For acute problems
- Found secondarily
- POCUS
- Plain film
- CT
- MRI
  - Degree of stool
  - Rectal descent below pubococcygeal line
  - Zhongshao Kuang, et. al 2021

Constipation workup

- If history and PE support the diagnosis
- No alarm symptoms
- Try and initial intervention of 2-4 weeks
  - Some studies say 6-8 if any early positive change without resolution
- If no improvement:
  - POCUS
  - Anal manometry
  - MR (or barium) motility study

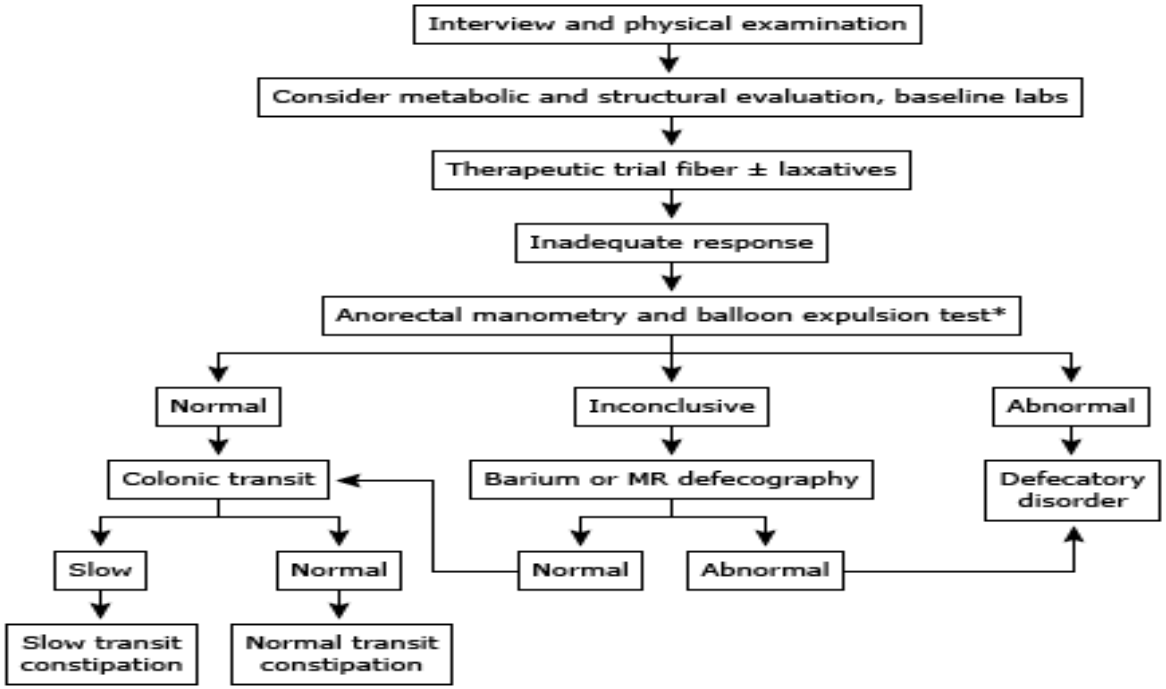
Anorectal manometry

- Evaluates dyssynergic defecation, rectal sensory problems, and response to biofeedback therapy
- Anal sphincter function at rest, during defecatory maneuvers, and pelvic floor parameters.
  - Rectal sensation and compliance
  - Reflexive relaxation of the internal anal sphincter,
  - Pseudodefecation

Colonic manometry

- Intraluminal pressure activity of the colon and rectum and provides
- Pattern of motor activity and quantitative aspects of colonic motility.
- Can be combined with a barostat apparatus to assess colonic tone, compliance, and sensation
- Patients can be identified to have normal, myopathic, or neuropathic colon as well as sensory dysfunction.
- No evidence that this data changes clinical practice
- Clinical research
  - Rao J Clin Gastro 2010: 44 (9)

Evaluation algorithm for chronic constipation



MR: magnetic resonance.

* Because anorectal manometry, rectal balloon expulsion test may not be available in all practice settings, it is acceptable in such circumstances to proceed to assessing colonic transit with the understanding that delayed colonic transit does not exclude a defecatory disorder.

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So…

What can be done to help these challenging patients?

…In a typical 15 minute visit

…Multiple visits are often required

Constipation management first steps

- Patient education
- Hydration
  - Most everyone I see with constipation is dehydrated
  - Aloe juice especially in moderation
    - Juice with aloe latex — which contains anthraquinones *(personal observation)*
- Lifestyle management
  - Adequate toilet time

Robertson, Baines, Emerson, & Hatton, 2017

First steps

- Positioning
- The problem with the American toilet
  - Its too high!
- Toilet stools
- **4-5 minute rule**

Therapeutic trials

- Avoidance or milk +/- gluten
  - Need at least 5-10 days to see results
- Trial oral nystatin (bloating)
  - Personal observation
- Trial melatonin (prokinetic)—best in DM

First steps

- Bulk forming laxatives
  - Psyllium up to 3.5gm 3x a day
  - Methylcellulose up to 2 gm 3x a day
  - Polycarbophil to to 2 gm a day
  - Wheat dextrin (benefiber)
  - Tip: Start low and increase slow!
- Stool softeners
  - Colace Docusate 100mg twice a day
  - Not very effective!
  - Many patients still insist!

First steps

- Probiotics
  - Probiotics and stool consistency, a RCT-DB-Placebo control
    - Probiotics improved stool consistency in chronic constipation. “The beneficial effect of *L. plantarum* on stool consistency remained after the probiotic supplementation was discontinued.”
    - Yoon, Digestive Disease & Sciences 63 June 2018
  - Parkinson’s and constipation
    - Multistrain probiotics RCT-DB
    - BM’s increased by 1.0 ± 1.2 per week after treatment and decreased by 0.3 ± 1.0 per week in placebo group
    - **Probiotics for Constipation in PD** Ai Huey Tan, et.al . Neurology Feb 2021
  - Functional constipation, non IBS-S
    - “Consumption of multispecies probiotics, increase the stool frequency, and stool consistency. probiotics can be regarded as safe and natural agents for alleviation of functional constipation in adults.”
    - **Meta-analysis of RCTs** Zhang etal. Clinical Nutrition Oct 2020

Probiotics

- Consider home stool studies
  - Many commercial kits available
- Many different varieties
- Be sure to treat entire GI tract
  - Oral coverage
  - Delay release
- Especially important for those on PPIs, recent antibiotics, diarrhea, etc

L-Glutamine

- Essential for gut microbiome support
- Monitor IgA levels
- Most abundant amino acid

  in the body and is necessary for the maintenance of many metabolic functions. Under situations of stress, physiological demands increase, triggering a need for glutamine supplementation.

Glutamine
*All chronic patients should be on!

- Vital amino acid
- Produces GABA
  - Vital for LES tone
- Vital for muscle function
- Intestines have highest demand
  - Especially when ill or under stress
  - More glutamine=more healthy gut mucosa

Look for increased use in Surgical stress/ICU

Ginger

- Used for years for nausea
  - Chemo
  - Pregnancy
- Accelerates gastric emptying
- Stimulates antral contractions
- Dose: 1,200mg/d
  - Wu, 2008 *J Euro Gastroenter*

Surfactants: Docusate

- Ineffective
- Removed from many hospital formularies
- Lower the surface tension of stool, thereby allowing water to more easily enter the stool.
- Psyllium is better!
- few side effects

Osmotic agents

UpToDate®

Polyethylene glycol (macrogol)	8.5 to 34 grams in 240 mL (8 ounces) liquids	1 to 4 days	Nausea, bloating, cramping
Lactulose	10 to 20 grams (15 to 30 mL) every other day. May increase up to 2 times per day.	24 to 48 hours	Abdominal bloating, flatulence
Sorbitol	30 grams (120 mL of 25% solution) 1 time per day	24 to 48 hours	Abdominal bloating, flatulence
Glycerin (glycerol)	One suppository (2 or 3 grams) per rectum for 15 minutes 1 time per day	15 to 60 minutes	Rectal irritation
Magnesium sulfate EPSOM SALTS	2 to 4 level teaspoons (approximately 10 to 20 grams) of granules dissolved in 8 ounces (240 mL) of water; may repeat in 4 hours. Do not exceed 2 doses per day.	0.5 to 3 hours	Watery stools and urgency; caution in renal insufficiency (magnesium toxicity)
Magnesium citrate	200 mL (11.6 grams) 1 time per day	0.5 to 3 hours	

Excessive use may result in electrolyte and volume overload in patients with renal and cardiac dysfunction

Osmotic agents
Polyethylene glycol

- = better stool frequency
  - poorly absorbed/nonabsorbable sugars,
  - cause intestinal water secretions= increase stool frequency
- PEG electrolyte solutions: GoLYTELY
- Powdered preparations (MiraLAX)- no electrolytes
- Start low and slow
- Combine w other methods, esp stimulants

Osmotic agents Lactulose

RCTs PEG better!

- Synthetic disaccharides
  - not metabolized by intestines
  - water and electrolytes remain within in intestine =osmotic effect of the undigested sugar.

    24-48 hr to work
  - Sorbitol cheaper alternative
  - Both lactulose and sorbitol may cause abdominal bloating and flatulence.

Stimulant laxatives

- Increase intestinal peristalsis
- Alter electrolyte transport
- Dulcolax- bisacodyl, sodium picosulfate
  - 10mg a day x 30d effective RCT trial (Muller-Lissner et.al. Am J Gastro 105 (4)
- Senna (senokot)

Other agents

- Mineral oil
  - Enema or oral – best after disimpaction procedure
  - Many still use as OTC remedy
- **Guanylate cyclate C agonists**
- Linaclotide
- Plecanatide
  - Used third line *(my opinion)*
  - Use in combination with primary therapy
  - Diarrhea common side effect
  - Nausea, bloating possible

Other agents

- Lubiprostone
  - Laxative
  - prostaglandin derivative
  - By activating chloride channels in the small intestine, it increases intestinal fluid secretion & accelerate small intestine and colonic transit time
  - Also improves stool consistency
  - Rule out SIBO/dysbiosis first
  - Used third line *(my opinion)*
  - Diarrhea common side effect
  - Nausea in 33%
  - bloating possible

Consider for
Opiate induced constipation
IBS-C (Women)
Primary constipation

motegrity®
(prucalopride) tablets 1mg, 2mg

Other agents

- Prucalopride
  - Selective high affinity $5HT_4$ receptor agonist
  - Chronic idiopathic constipation >6 mo
  - Pro-peristaltic for colon
  - Failed two other treatment trials *(my opinion)*
  - First rule out colon cancer, obstructive process, SIBO, Crohn's disease, ulcerative colitis.
  - Great with melatonin (My opinion)
    - Diarrhea common side effect
    - Nausea, bloating possible

Approach to opiate induced constipation

- First focus on lifestyle
  - Reduce or change opiate?
- Second increase fiber
- Third: Naledemedine (Symproic)
  - Great data from AGA
  - Glocks receptors at gut level
  - PAMORA (peripherally acting mu-opioid receptor antagonist)
  - Great combo with other agents
- Fourth:
  - Lubiprostone (Amitiza)
  - Methlynaltrexone (Relistor)
  - Naloxegol (Movantik)

Also consider

- Reinforce good behaviors
- Biofeedback
  - Helps with appropriate contraction of pelvic muscles
- Visceral therapy
  - “Abdominal PT”
  - Osteopathic manipulation
  - Ileocecal valve massage
  - *Archambault-Ezenwa, L., A comprehensive PT approach including visceral manipulation after failed biofeedback therapy for constipation. Tech Coloproctol **20,** 603–607 (2016).*

Dealing with disimpaction

- DO THAT RECTAL EXAM
- Glycerin or mineral oil suppository prep or tap water enema *(personal observation)*
- Manual disimpaction
- Post disimpaction mineral oil enema

Surgical intervention

- Severe, intractable, slow transit constipation is rare and may be treated with surgery

Tricky patients to remember

- Young
- Old
- Diabetic
- Immunocompromised
  - Chemotherapy
  - Steroids
- Pregnant
- Psychiatric
- Defacatory dysfunction (start with suppositories first)

Complications

- Hemorrhoids
- Rectal bleeding
- Anal fissures
- Rectal prolapse
- Fecal impaction
  - Fecal impaction may be caused by using laxatives too often, pain meds, little physical activity over a long period, diet changes, or constipation that is not treated
- Colon cancer
- Diverticulitis

Take home points

- Joint the army to battle the fiber deficiency in America!
- Strong correlation with psych and neuro disease
- Start with hydration and fiber
- Consider two agents at once
- Consider therapeutic trials
  - Diet, meds, restructure gut microbiome

Top Tips for kids

- **Engage and support parents**
- **Don't undertreat kids**
- **Are there non-medical factors involved?**
  - Check about toileting issues and toilet behaviour. Use reward systems such as star charts to encourage good toileting behaviour
  - Are they withholding because school toilets not clean etc?
  - Are there other emotional issues/difficulties at home?
- **Do they understand the condition?**
  - Educate about constipation
  - Advice about diet and fluids
  - Let the family know that it is a chronic condition, there is no quick fix, and treatment may be needed for months.
- **Do they know how to make up and take the medication?**
- **Review and follow-up regularly**

Quiz

- In addition to dietary changes and toilet habits , which of the following is an appropriate FIRST line approach to constipation
  A. Slow introduction of fiber, goal over 25 grams PLUS Aloe juice
  B. Slow introduction of fiber, goal over 10 grams PLUS Lubiprostone
  C. Magnesium (Epsom salt) and probiotics
  D. Docusate and tap water enema
  E. Glycerin suppositories and Wheat dextrin (Benefiber)

Thank you!

- Remember with constipation 1+1 does not always equal 2.
- Any questions or comments?
- Gerald.Simons@stonybrook.edu

2:15 today!
Human Microbiome.

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