Hypermobility 106: GI issues in EDS, POTS and MCAD

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Slide handouts and videos are available at:
https://webspace.clarkson.edu/~lrussek/hsd.html

Who Am I?

- Professor Emeritus, Physical Therapy Department, Clarkson University
- Retired PT, St. Lawrence Health System, Potsdam NY
  - Clinical specialties: hypermobility, fibromyalgia, headaches, temporomandibular disorders
- Member: Ehlers-Danlos Society Medical and Scientific Board
- Chair: The Allied Health Working Group of the International Consortium of Ehlers-Danlos Syndromes and Hypermobility Spectrum Disorders
- Frequent presenter to professional and patient groups at national and international conferences
- Author of multiple review and research articles on hypermobility
- Author: “Pain Mechanisms in HSD” in Di Bon, *The Integral Movement Method for Hypermobility Management*
- Author: “Chronic Pain” chapter in *Physical Rehabilitation* textbook for PT students
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I do not have any conflicts of interest to report

Hypermobility Lecture Series

- HSD 101: Basics of HSD/hEDS and self-care
- HSD 102: POTS and POTS self-care, basics of MCAS
- HSD 103: Pain management in HSD/hEDS
- HSD 104: Safe exercise selection and progression with HSD/hEDS
- HSD104 part 2: Exercise modification for HSD and POTS
- HSD 105: Posture and joint protection
- **HSD 106: Gut issues in HSD/hEDS, POTS, MCAS**
- HSD 107: Fatigue in HSD/hEDS and POTS
- HSD 108: Headaches, migraines, and TMJ pain in HSD, POTS and MCAS
- HSD 109: Breathing dysfunctions in HSD
- HSD 110: Lumbar instability
- HSD 111: Cervical instability (Part 1: anatomy available on-line, & Part 2 live)
- HSD 112: The vagus nerve
- HSD 113: The importance of fascia
- HSD 114: Hospitalization and surgery with HSD/POTS/MCAS
- HSD 115: Functional Neurological Disorder

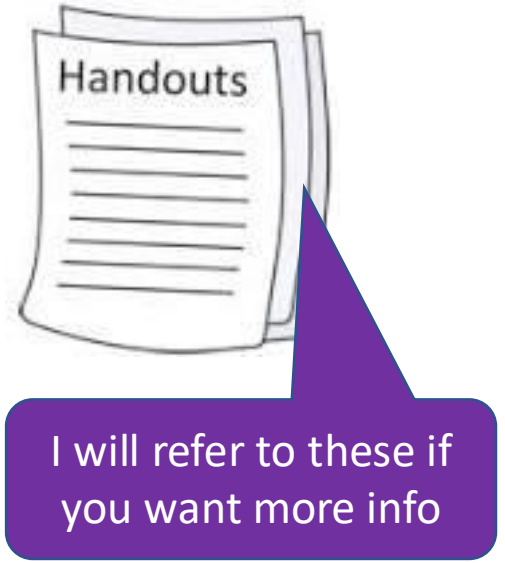
I will refer to these if you want more info

Objectives

At the end of this lecture, participants will be able to:

1. Describe some of the GI problems common in the “terrible trifecta” – EDS, POTS, MCAS.
2. Propose self-care strategies for managing some GI issues.
3. Use appropriate terminology for discussing GI issues with your MD.
4. Be aware of relevant resources available for learning more.

Relevant Handouts Available



On my website: https://webspace.clarkson.edu/~lrussek/research.html

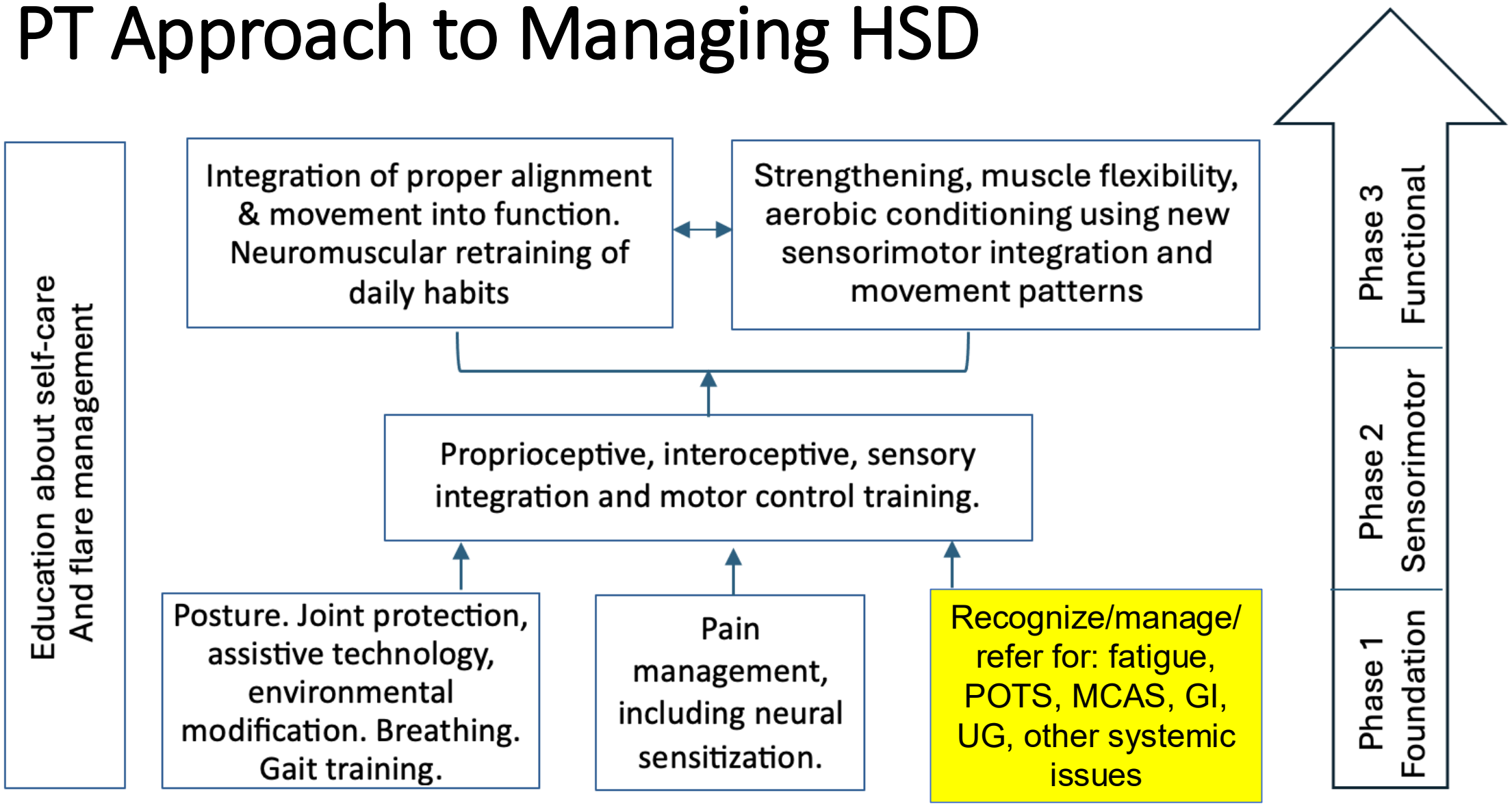
- **POTS**
  - Overview of POTS symptoms and causes.
  - Checklist for POTS self-care management.
- **MCAS self-care**
  - Introduction to MCAS.
  - Suggestions for managing MCAS.
- **General Self-Care Strategies**
  - Check your medications. Medications can irritate your gut. This handout shows you how to check.
  - Breathing. Breathing incorrectly can increase pain sensitivity, especially in the GI tract.
- **Links to other resources**
  - https://tmsforacure.org **The Mast Cell Disease Society.**
  - https://www.mastzellaktivierung.info/en/introduction.html has a lot of diet/recipe info at https://www.mastzellaktivierung.info/en/therapy.html
  - Bonnie Nasar is a dietician who specializes in EDS, MCAS. She provides individual telehealth, and also has an EDS Nutrition Course: https://nasarnutrition.com
  - YouTube on Nutrition in EDS from Mayo Clinic: https://youtu.be/WZ2sePIZcq0

Disclaimer

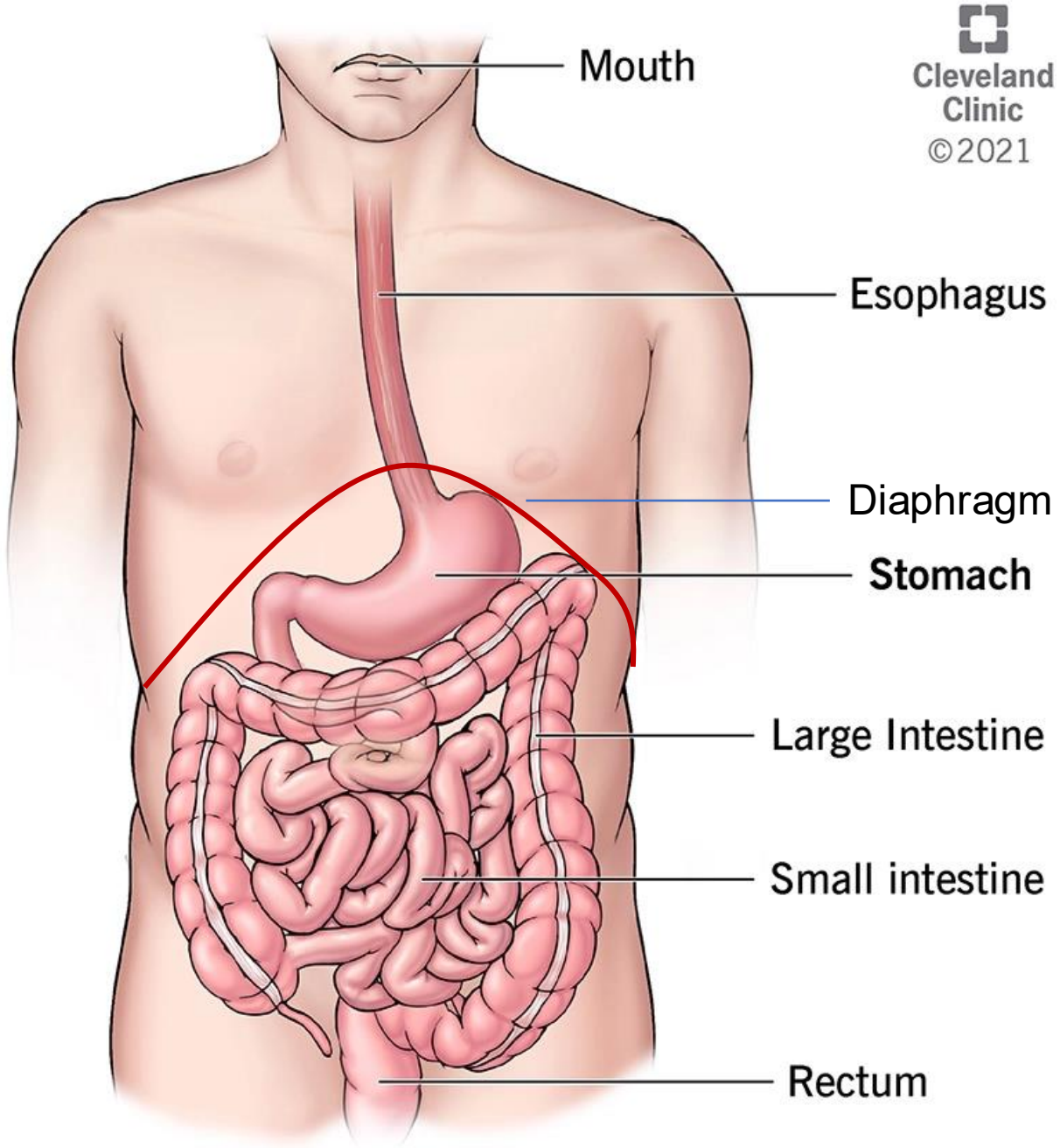
- I am neither a physician nor a nutritionist/dietician.
- I have based this lecture on published medical literature as much as possible.
- This lecture includes information that my physical therapy patients sometimes find helpful to understand their conditions and/or begin a conversation with appropriate specialists.
- Discuss your personal situation with your health care provider
- I cannot provide individual medical advice regarding diagnosis or treatment.

- Bonnie Nasar is a dietician who specializes in EDS, MCAS. She provides individual telehealth, and also has an EDS Nutrition Course: https://nasarnutrition.com
- She has a lecture on nutrition to address brain fog, fatigue and pain in EDS: https://www.chronicpainpartners.com/webinar/webinar-optimizing-nutrition-to-decrease-brain-fog-fatigue-pain/

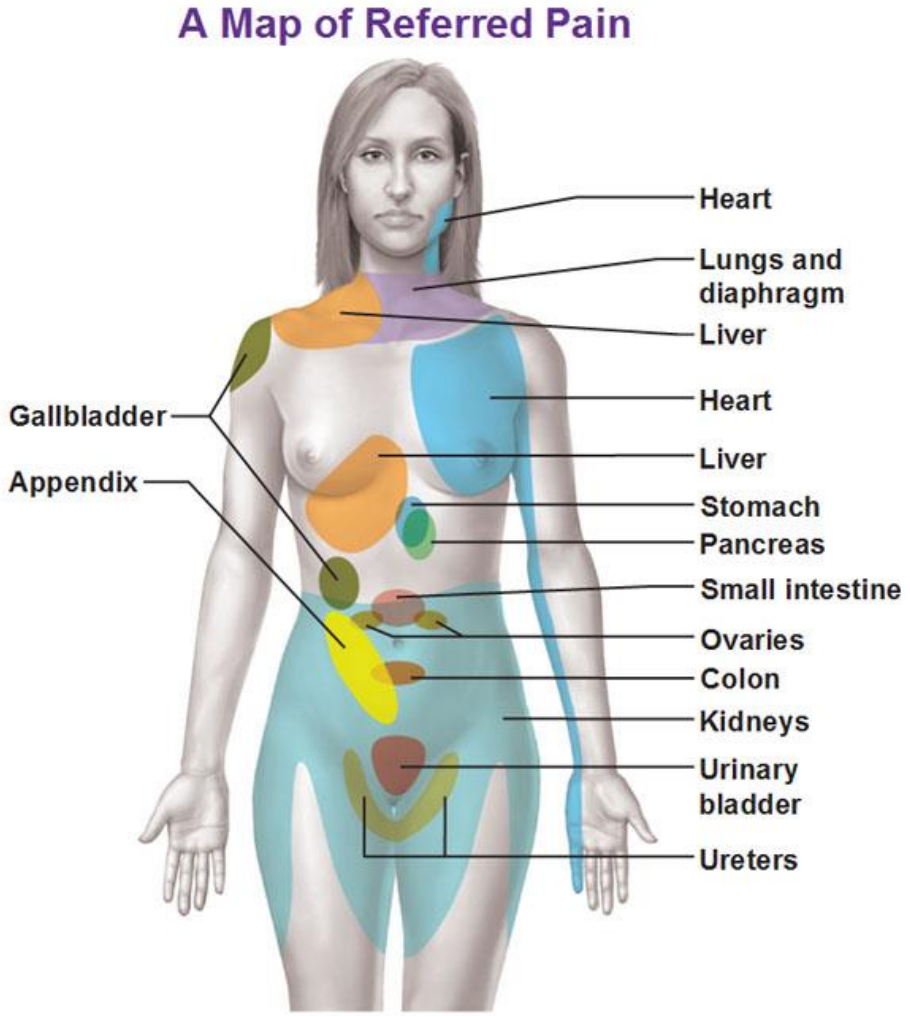
PT Approach to Managing HSD



The Gut, Simplified

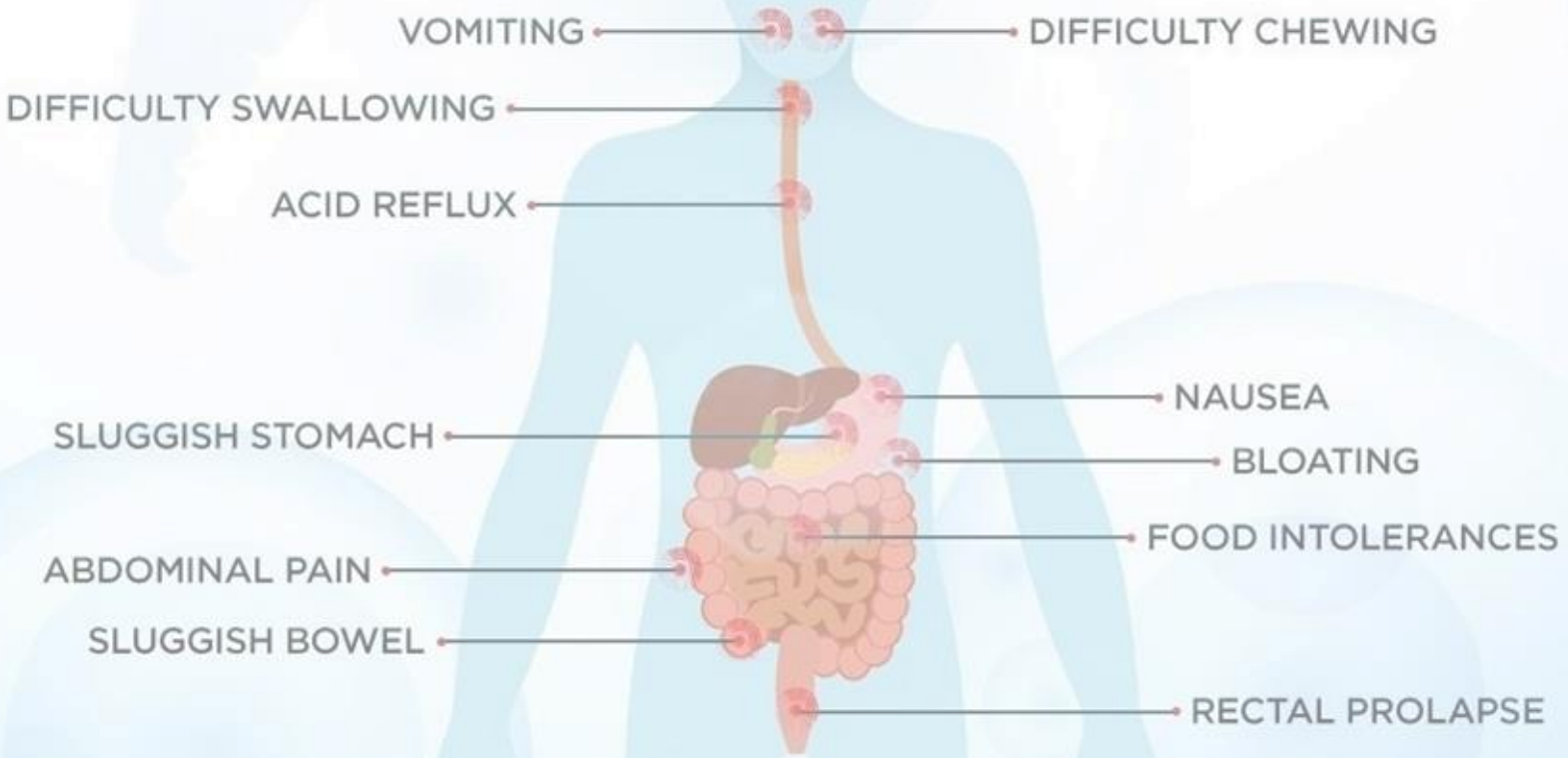


Visceral Referred Pain



- Visceral tissues (internal organs) can refer pain
- Pain referral can irritate tissues at the referral site
  - Example: intestinal problems can cause trigger points in abdominal muscles, which then hurt and provoke trigger points..
    - Gebhart, 2016

COMMON GASTROINTESTINAL (GI) SYMPTOMS IN EDS & HSD



The Ehlers Danlos Society

Common Gastrointestinal Problems

HSD 102: POTS & MCAS

HSD/hEDS

- Indigestion/reflux/GERD
- Feeling overly full (satiety)
- Abdominal pain/bloating
- Gastroparesis (slow digestion)
- Constipation/Diarrhea/IBS
- Nausea/Vomiting
- Hernias
- Celiac
- Abdominal trigger points
- Superior mesenteric artery syndrome
- Median Arcuate Ligaments Syndrome
- Small Intestinal Bacterial Overgrowth

POTS

- Nausea
- Reflux/GERD
- Bloating
- Constipation/Diarrhea
- Abdominal pain
- Median arcuate ligament syndrome (MALS)
- Eating aggravates POTS

MCAS

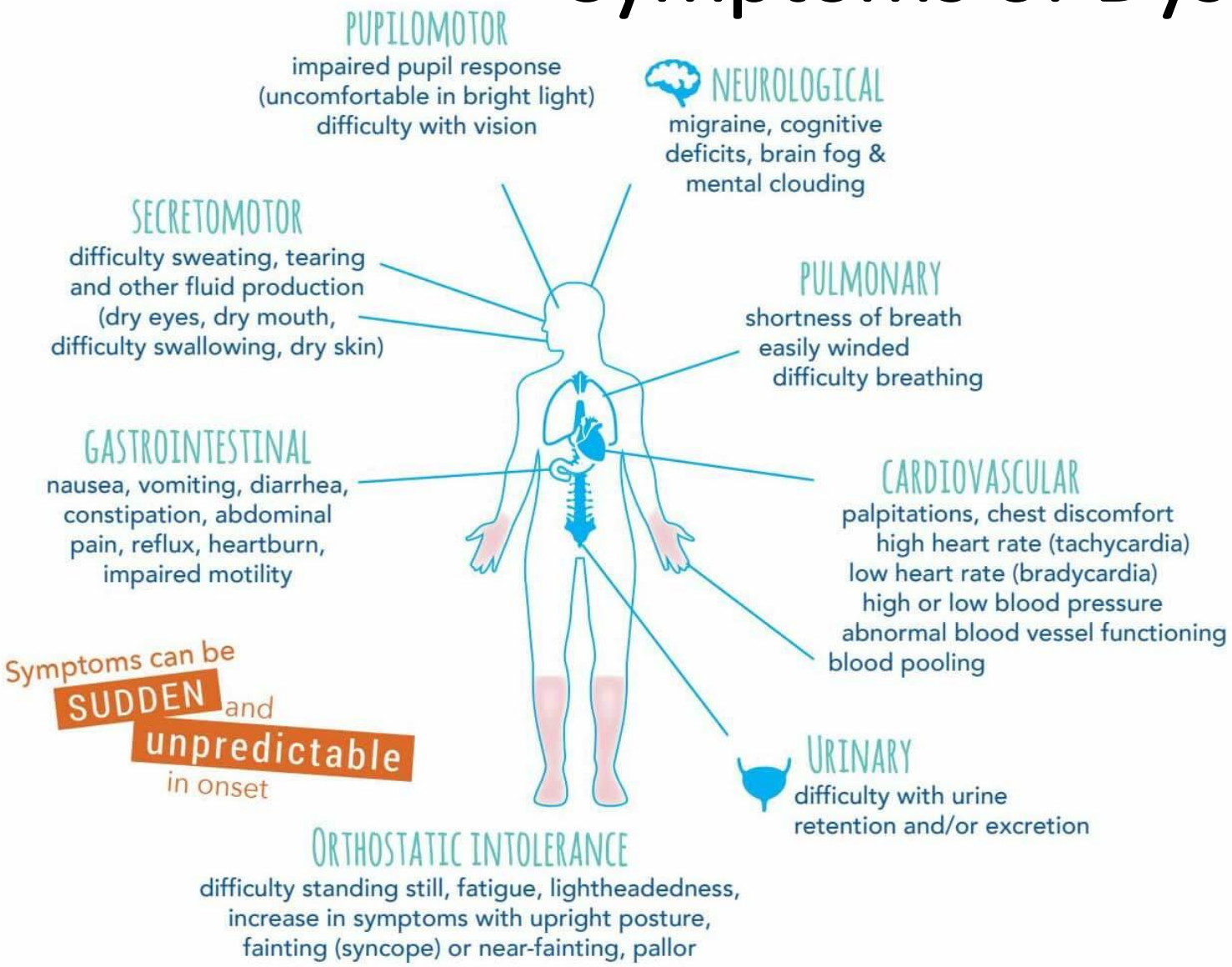
- Bloating/gas
- Diarrhea/Constipation
- Abdominal cramping
- Reflux/GERD
- Food sensitivities
- Small Intestinal Bacterial Overgrowth?

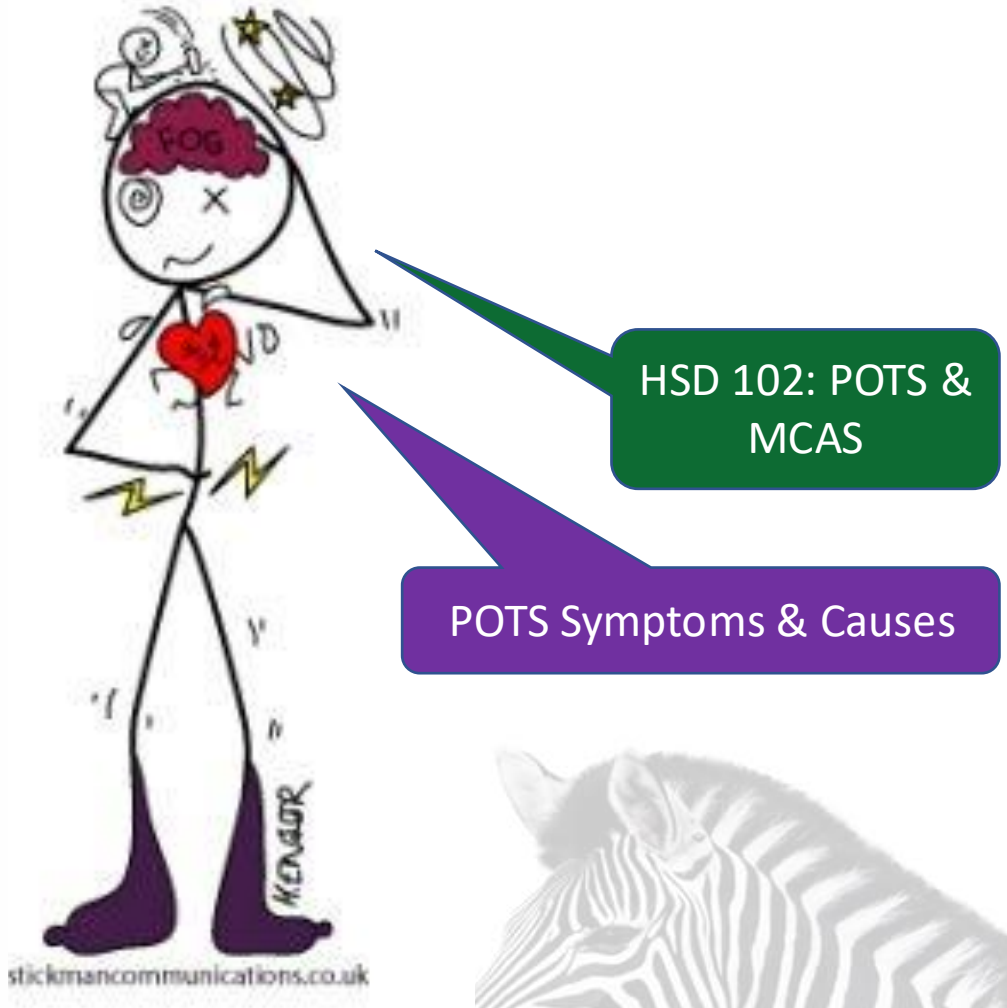
Wirz, 2019

Fikree, 2017, DiBaise, 2018; Weinstock, 2021; Lam, 2023; Sood, 2024;

POTS: Postural Orthostatic Tachycardia Syndrome
MCAS: Mast Cell Activation Syndrome

Symptoms of Dysautonomia/POTS





HSD 102: POTS & MCAS

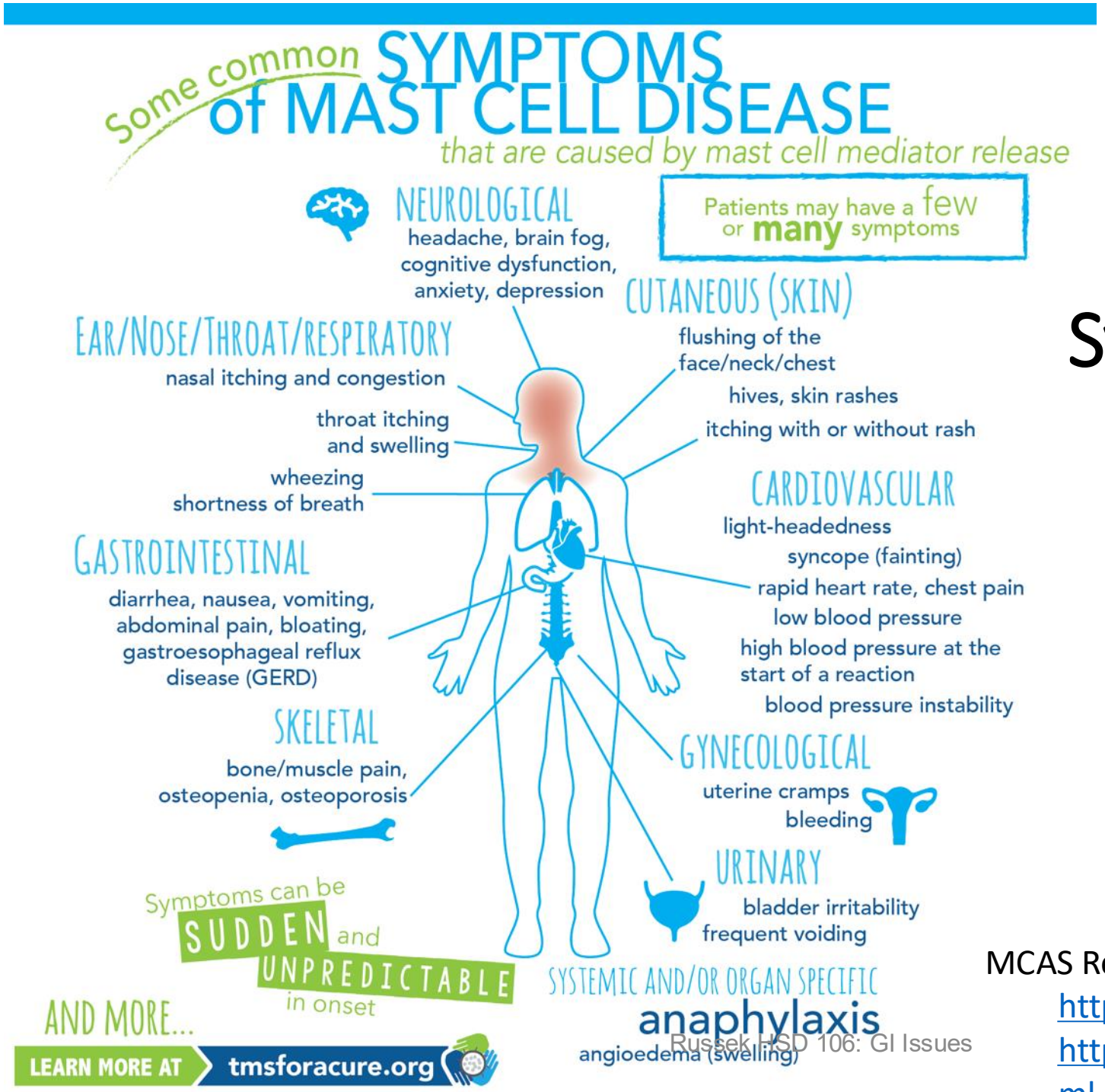
POTS Symptoms & Causes

Great POTS info at: www.potsuk.org and http://www.dysautonomiainternational.org

HSD 102: POTS & MCAS

Symptoms of MCAS

Intro to MCAS



MCAS Resources:

https://www.tmsforacure.org

https://www.mastzellaktivierung.info/en/introduc

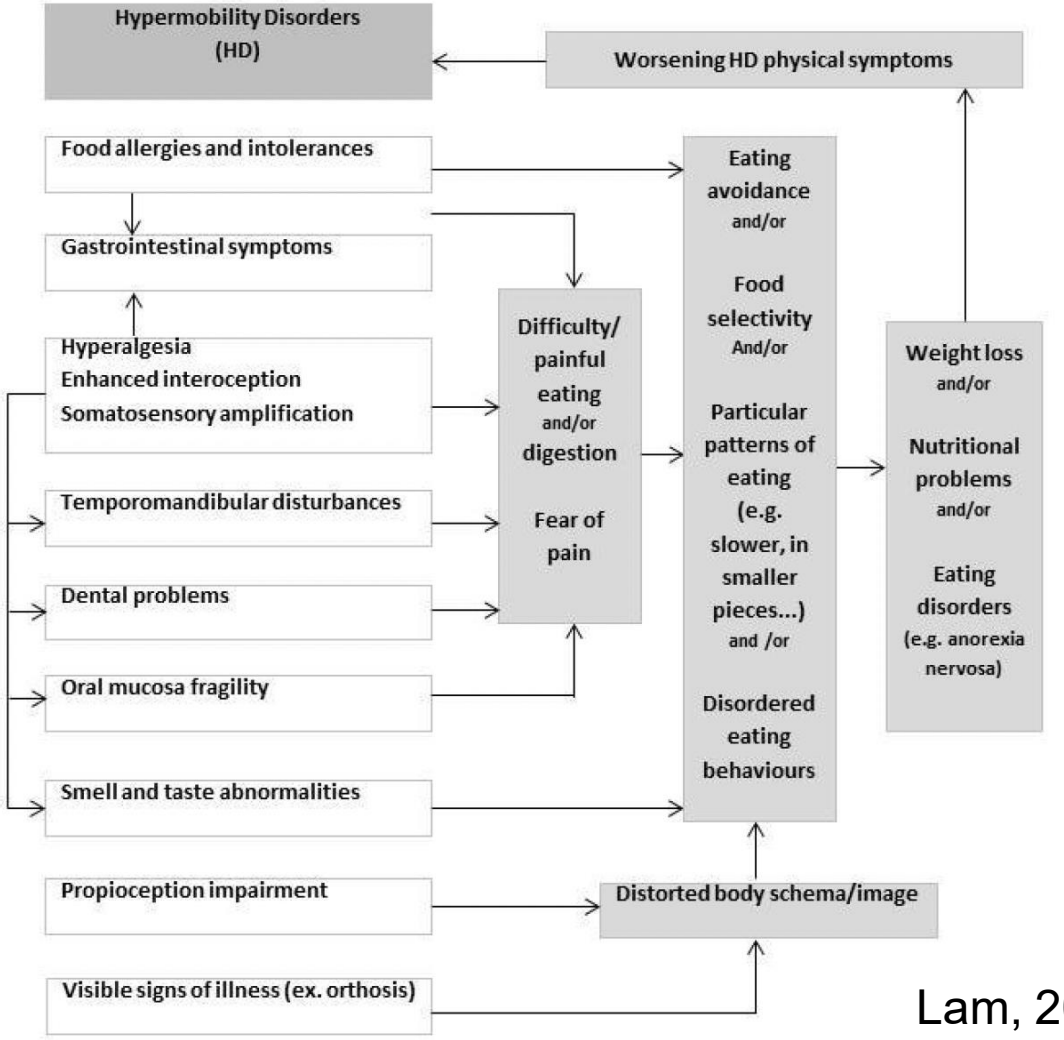

Why?

Why So Many GI Problems?

We don't really know, but some hypotheses:

- Abnormal gut wall connective tissue in HSD is too stretchy
- Sensory receptors in the gut may respond too fast or slow to being stretched by food in the gut.
  - The gut has more nerves than the brain, and they may become irritated
- The gut is controlled by the autonomic nervous system, which is not functioning properly in this population with dysautonomia/POTS
- Irritated gut becomes leaky, inappropriate absorption challenges the immune system which protects us from 'invaders' and other bad things
- Overactive immune function in MCAS affects the gut, which has an important immune function to protect the gut..

Contributing Factors



Lam, 2023

- Physical stresses on GI tract
  - TMJ
  - Teeth
  - Digestive tract connective tissue
- Sensory factors
  - Exteroception: smell
  - Interoception: appetite/fullness
  - Proprioception: TMJ
- Chemical/food sensitivities

Figure 1. Potential contributors to developing and maintaining disturbed eating behaviours and significant weight loss seen in HD, adapted from Bulbena *et al.*[41]

EDS/POTS/MCAS Meds With GI Side Effects

Table 3 Gastrointestinal side effects caused by medications used in patients with hypermobility

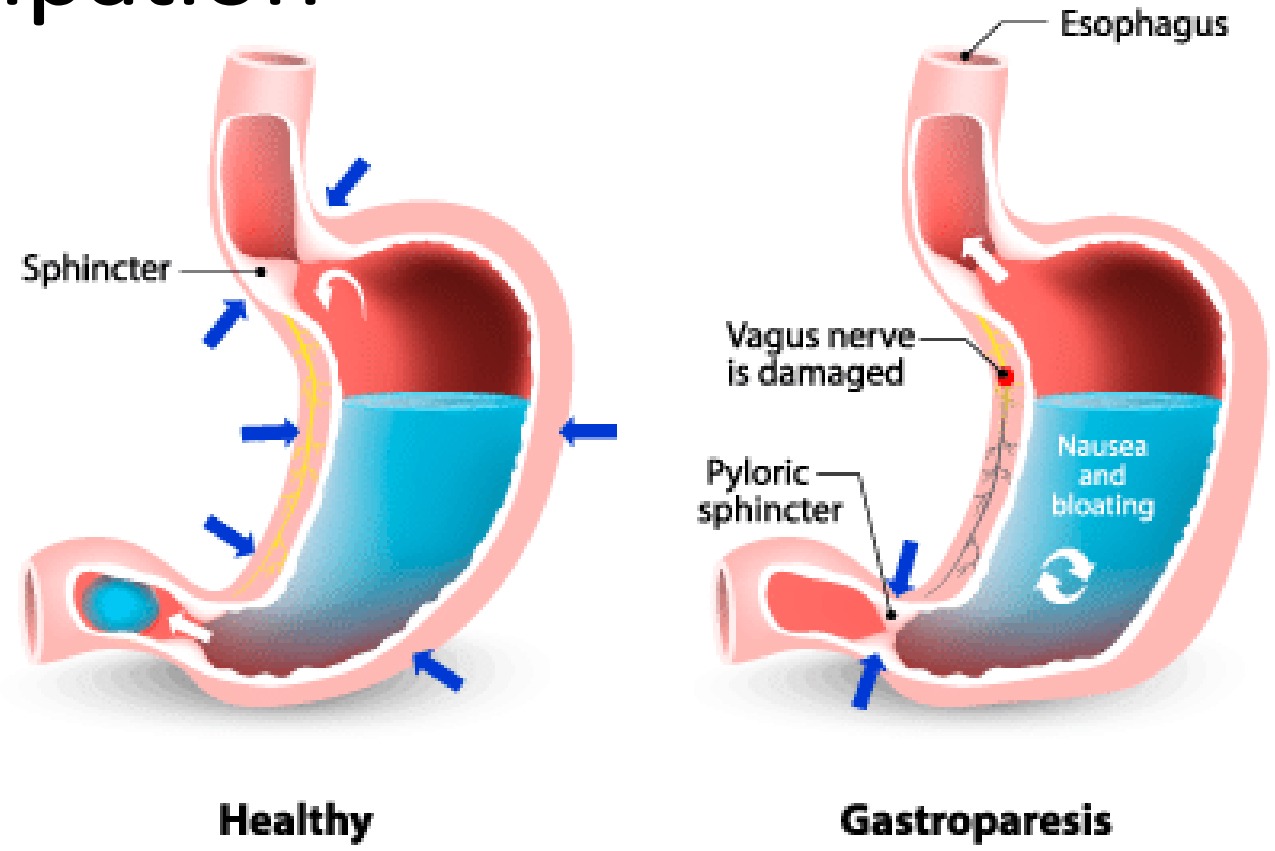
	Medication	GI side effects
Treatment for PoTS	Fludrocortisone	Nausea, GI discomfort, peptic ulcer
	Midodrine	Nausea, GI discomfort, diarrhoea
	Ivabradine	Abdominal pain, constipation, diarrhoea
	Clonidine	Constipation, nausea, vomiting
	Pyridostigmine	Abdominal pain, diarrhoea, nausea, vomiting
	Octreotide	Cholelithiasis and cholecystitis, constipation, diarrhoea, abdominal pain, vomiting
Common medications used for gastrointestinal symptoms	Opioids	Nausea, vomiting, constipation, adrenal insufficiency
	Cyclizine	Anorexia, palpitations, postural hypotension, urinary retention, agitation/euphoria
	Ondansetron	Constipation, headache, abnormal sensation
	Tricyclic antidepressants	Dry mouth, nausea and constipation
Treatments for MCAS	Antihistamines	Sedation, constipation, anticholinergic effects
	Sodium cromoglycate	Nausea

GI, gastrointestinal; MCAS, mast cell activation syndrome; PoTS, postural tachycardia syndrome.

Lam, 2023

Gastroparesis & Constipation

- Gastroparesis = no gastric emptying
- Delayed gastric emptying = slow emptying of the stomach or intestines
  - Sx: early satiety, bloating, nausea, indigestion, vomiting, pain
- 65% of people with gastroparesis also have constipation
- How to test for this:
  - Gastric emptying test
  - ”Smart Pill” measures delayed movement throughout GI system



Zikos, 2019

https://badgut.org/information-centre/a-z-digestive-topics/gastroparesis/

Consequences of Constipation

- Straining can cause hernias and prolapse
- Straining can cause incontinence (urinary and fecal) or hemorrhoids because rectal tissues are overstressed
- Constipation increases risk of bacterial overgrowth (which can lead to SIBO) and malnutrition
- Straining increases abdominal and thoracic pressures, which interferes with blood return to the heart

https://www.evidentlycochrane.net/feet-up-constipation/

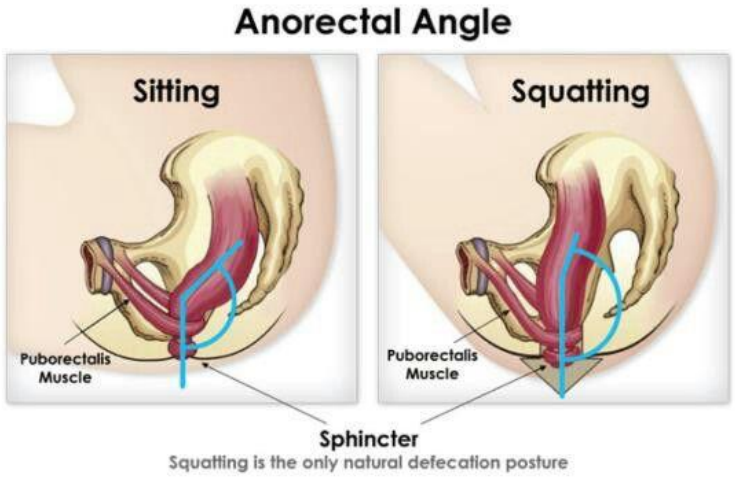
- Constipation may lead to GERD or chronic vomiting

Tips for Managing Constipation

1. Drink plenty of water
2. Avoid caffeine
3. Eat fiber
4. Exercise
5. Go when you feel the first urge
6. After breakfast, sit on the toilet for 15-20 minutes and wait for the ejection reflex- which does exactly what it says
7. Take your time on the toilet
8. Raise feet on a stool, lean forwards (see next slide)
9. Don't hold breath, ssss, grrrr, or moo
10. Do a pelvic floor contraction when the bowel movement is done to encourage complete closing

https://www.evidentlycochrane.net/feet-up-constipation/

Toileting for Constipation

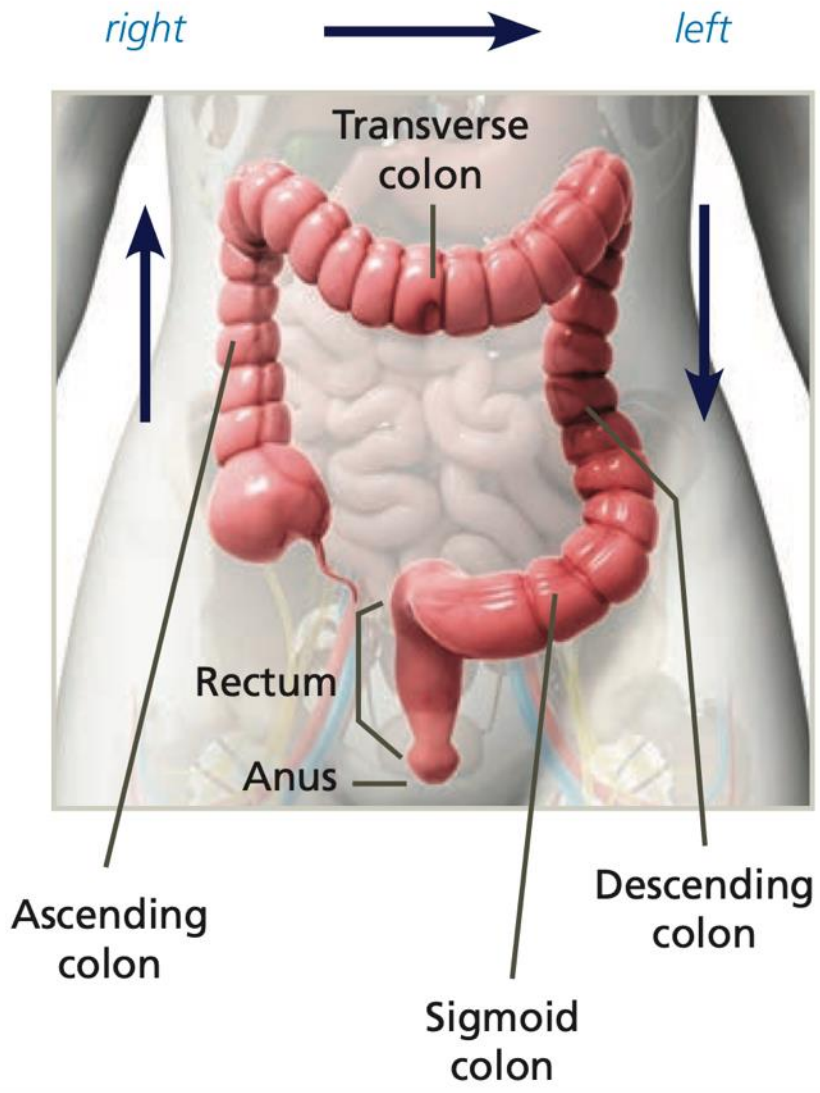


- Posture on the pot: 35º hip flexion
- Relax the tummy
- Deep, diaphragmatic breathing

https://www.evidentlycochrane.net/feet-up-constipation/

https://www.pinterest.ca/pin/191684527862553378/

Abdominal Self-Massage for Constipation



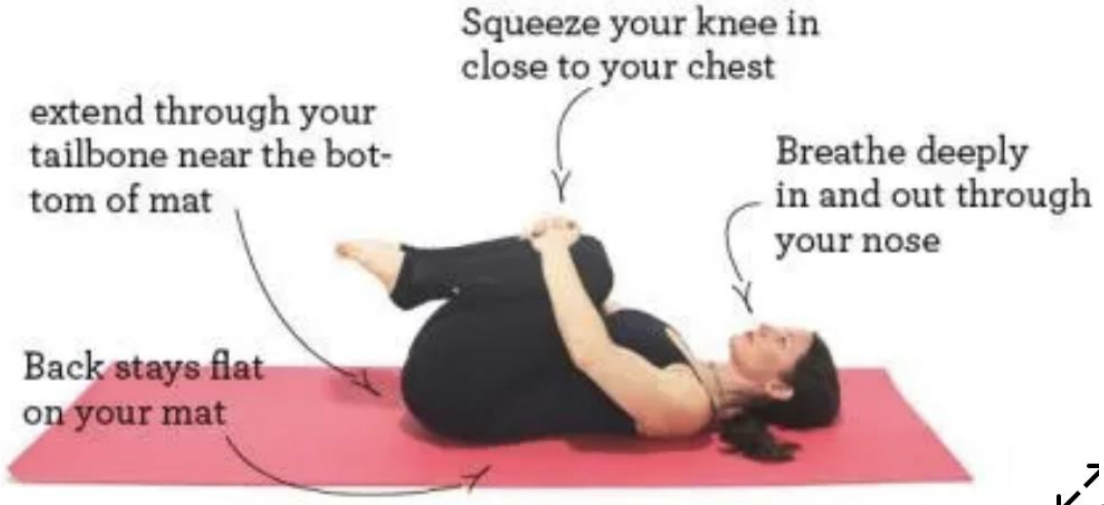
- Abdominal propulsive massage for constipation
- Research has shown that self-massage 10-15 min, 5x/week can be helpful in managing constipation

Gu, 2023; Ohran, 2020 Harrington, 2006, Lamas, 2010

Instructions at:

- https://youtu.be/Hp-bXOTuQck
- https://www.bidmc.org/-/media/files/beth-israel-org/centers-and-departments/rehabilitation-services/otpt-pelvic-floor-abdominal-massage.pdf

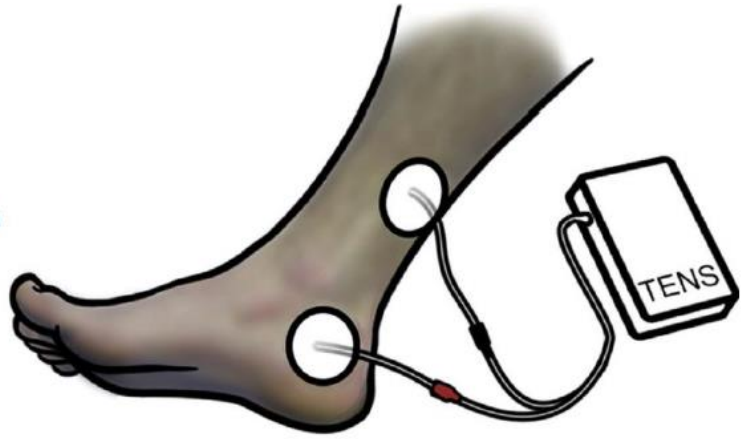
Yoga or Exercise for Constipation



- Exercise and breathing can benefit people with constipation (Gao, 2019)
- There are yoga positions to ease gas and constipation
- Be careful!
  - Twisting the spine too much can be bad for your back
  - Avoid poses that are not appropriate for you
- Very gentle YouTube:
  - https://youtu.be/RVv7sxDGnpg
  - https://youtu.be/Hp-bXOTuQck

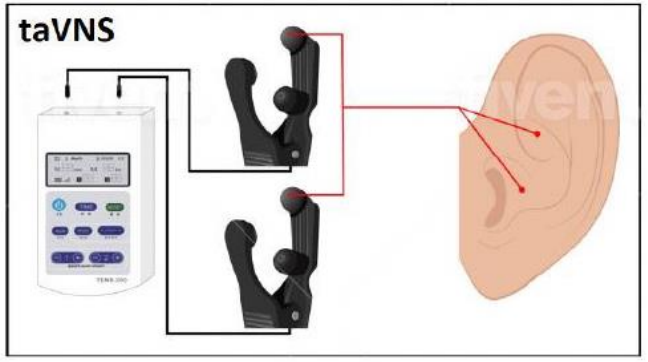
Electrical Stimulation for Constipation

Tibial nerve stimulation



Position of electrodes for transcutaneous posterior tibial nerve stimulation (TPTNS). Stimulation can be delivered using a conventional transcutaneous electrical nerve stimulation (TENS) machine.

Vagus nerve (A)



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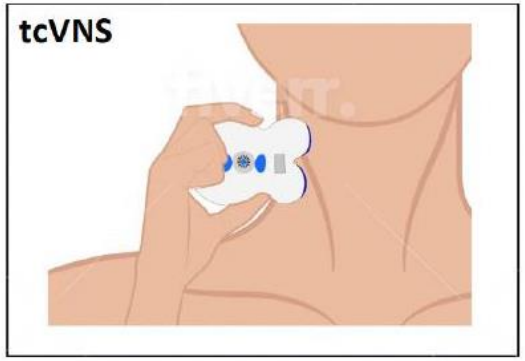


- Electrical modalities (e.g., vagus nerve stimulation, tibial nerve stimulation)
- Evidence shows benefit for GERD, indigestion, gastroparesis, constipation, and irritable bowel syndrome
- 60 minutes, 1-2x/day

(Yin, 2023; Song, 2023)

Breathing handout

Diaphragmatic Breathing for Gut Care

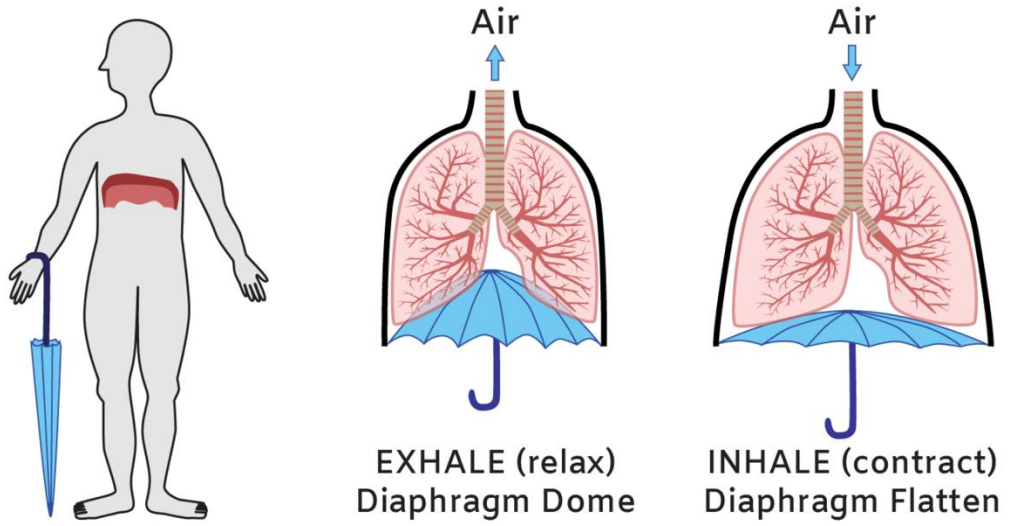
HSD 109: Breathing Dysfunctions in HSD

For Constipation

- Helps with bowel movement
- Massages stomach and intestines to reduce urgency, bloating, constipation
- Deep breathing (deep inhale followed by forceful exhale) may also help stimulate bowel movement
- Slow, deep breathing 30 min/day relieves constipation (Gao, 2019; Liu, 2022)
- https://www.uofmhealth.org/conditions-treatments/diaphragmatic-breathing-gi-patients

For Diarrhea

- Activates the 'rest & digest' system
- Calms the digestive tract in moments of urgency
- May improve function of the vagus nerve

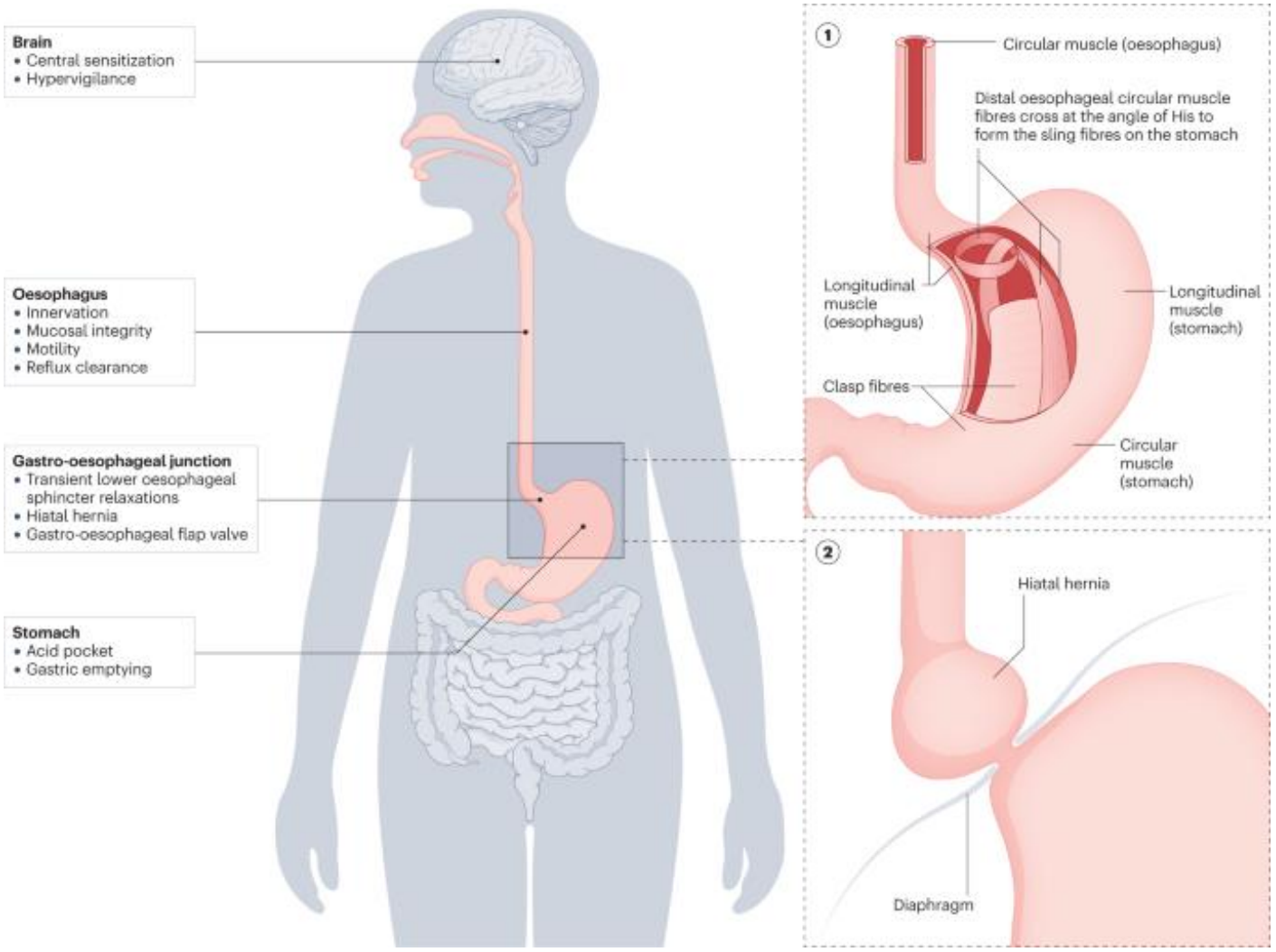


Diaphragm and Gut Function

HSD 109: Breathing Dysfunctions in HSD

- Lack of coordination between diaphragm and abdominal muscles is associated with irritable bowel syndrome (IBS)
  - This may explain the prevalence of low back pain, pelvic pain, and spinal instability in people with IBS
- Dysfunction in the diaphragm increases gastroesophageal reflux
- Decreased diaphragm function increases pain sensitivity in the gut
- Diaphragmatic motion “massages” the vagus nerve, decreasing inflammation and gut-related pain
- (Bordoni, 2018)

Gastroesophageal Reflux Disease (GERD)



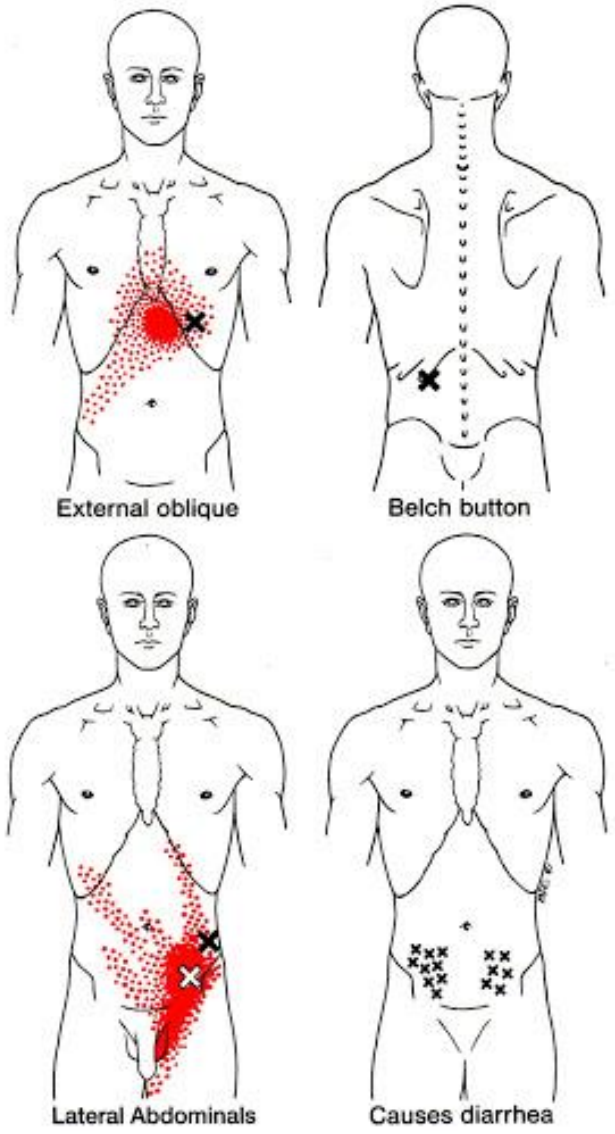
- GERD is common in HSD
- Weak gastroesophageal sphincter or sphincter that relaxes too often for too long
- Gastroparesis increases back pressure
- Hiatal hernia (common in HSD) increases GERD

(Arguero, 2024)

Gastroesophageal Reflux Disease (GERD)

- Proton Pump Inhibitors (PPI) are not safe for long-term use
  - Omeprazole (Prilosec), esomeprazole (Nexium), lansoprazole (Prevacid), pantoprazole (Protonix), rabeprazole (AcipHex), and dexlansoprazole (Dexilant).
- Non-pharmacological options:
  - Elevating the head of bed (Albarqouni, 2021)
  - Eating only 2 meals/day, no food in between (Randhawa, 2015)
  - Diaphragmatic breathing training using ‘umbrella breathing’ (Zdrhova, 2023)
    - 6-8 breaths/minute, inhale 4 sec, exhale 6 sec, 20-30 min/day (Niu, 2024; Zdrhova, 2023)
  - Manage delayed gastric emptying so food doesn’t remain in stomach (Arguero, 2024)
  - Ginger and artichoke leaf, psyllium (Martin, 2024)
  - Low carbohydrate diet, plant-based protein diet (Martin, 2024)
- FYI: GERD can lead to chronic cough, voice changes, and sleep disturbance (Niu, 2024)

Abdominal Muscle Trigger Points



- Symptoms: diarrhea, bloating, cramps, vomiting, nausea, anorexia, indigestion, reflux, belching
- Caused by: overuse of abs to maintain lumbar stability, excessive exercise, paradoxical respiration, IBS, abs stretched by bloating, stress, ulcers, hernias
- Limited research evidence about TrP
- http://www.triggerpoints.net/muscle/abdominal-obliques

Anterior Abdominal Wall Issues

- Can look like IBS
- Called “anterior wall syndrome” or “anterior cutaneous nerve entrapment syndrome”
- How to test for this:
  - Carnett’s sign
  - (-) is decreased pain
- Treatment:
  - Manual therapy
  - Injections

Shian, 2018

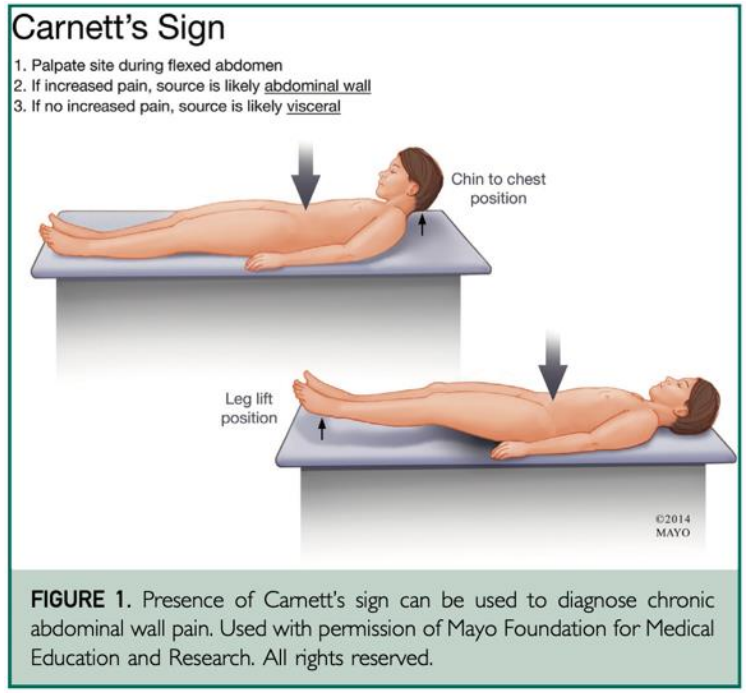
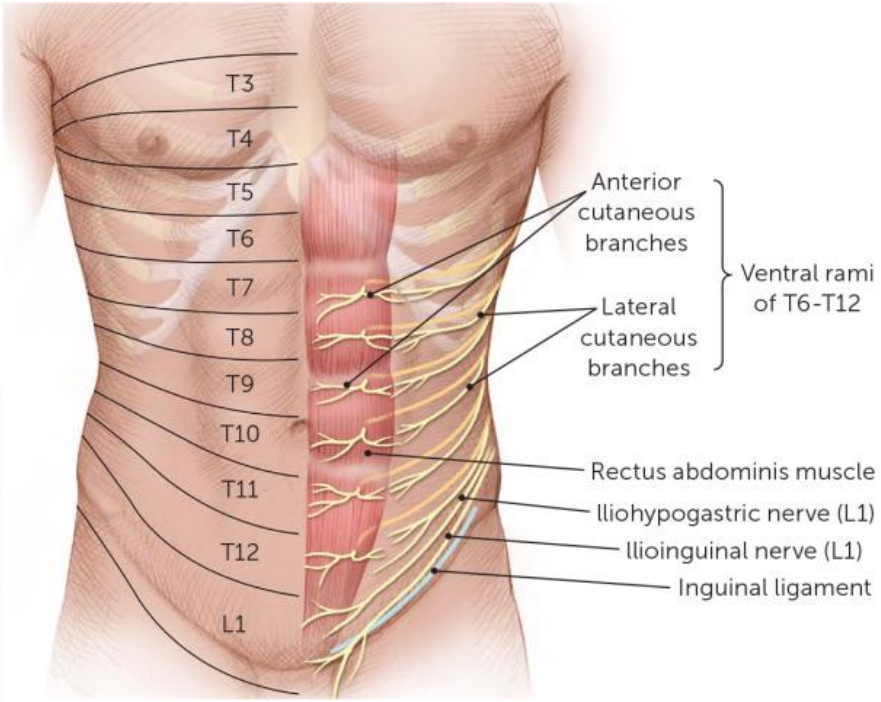
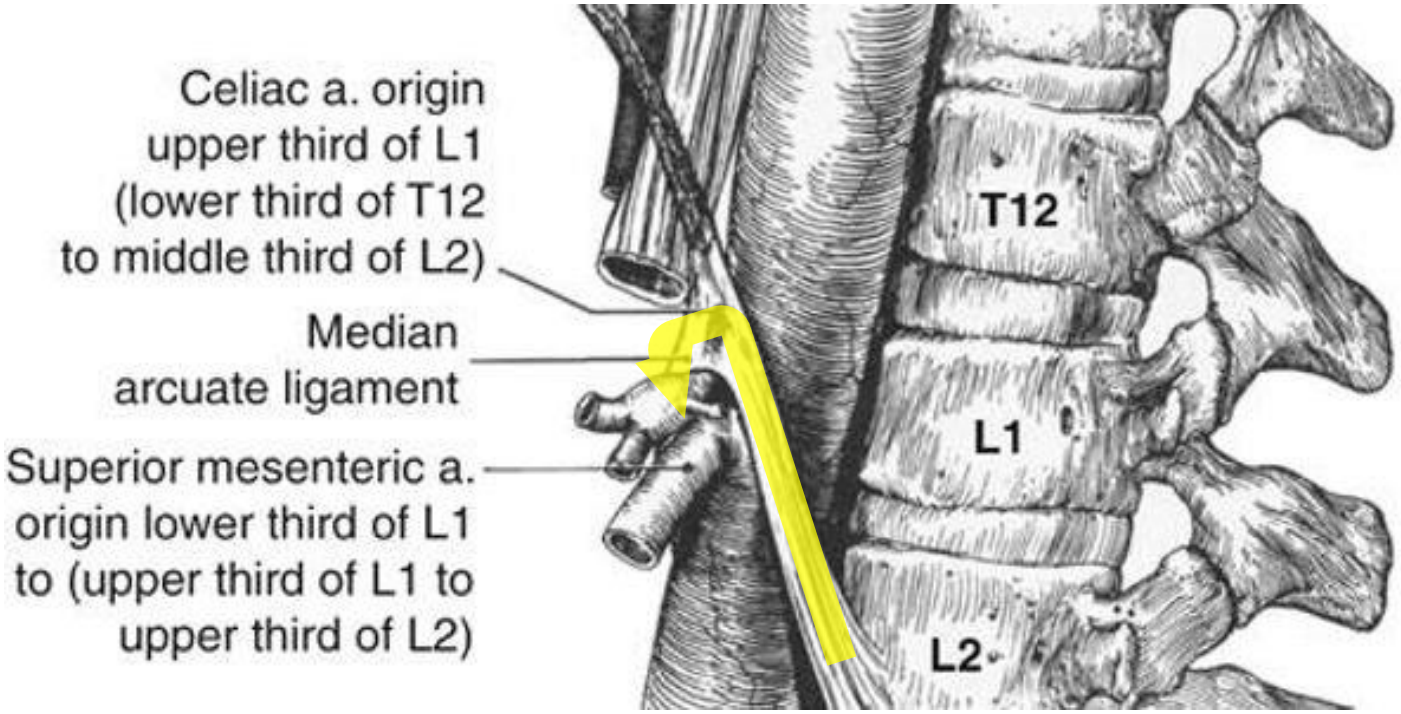


FIGURE 1. Presence of Carnett's sign can be used to diagnose chronic abdominal wall pain. Used with permission of Mayo Foundation for Medical Education and Research. All rights reserved.



Median Arcuate Ligament Syndrome (MALS)



- The median arcuate ligament (MAL) presses on the celiac artery and nerve plexus.
- Symptoms: upper abdominal pain after eating, fatigue after eating, nausea, vomiting, constipation or diarrhea, exercise intolerance, weight loss.
- Often presents in adolescence, especially in young women..

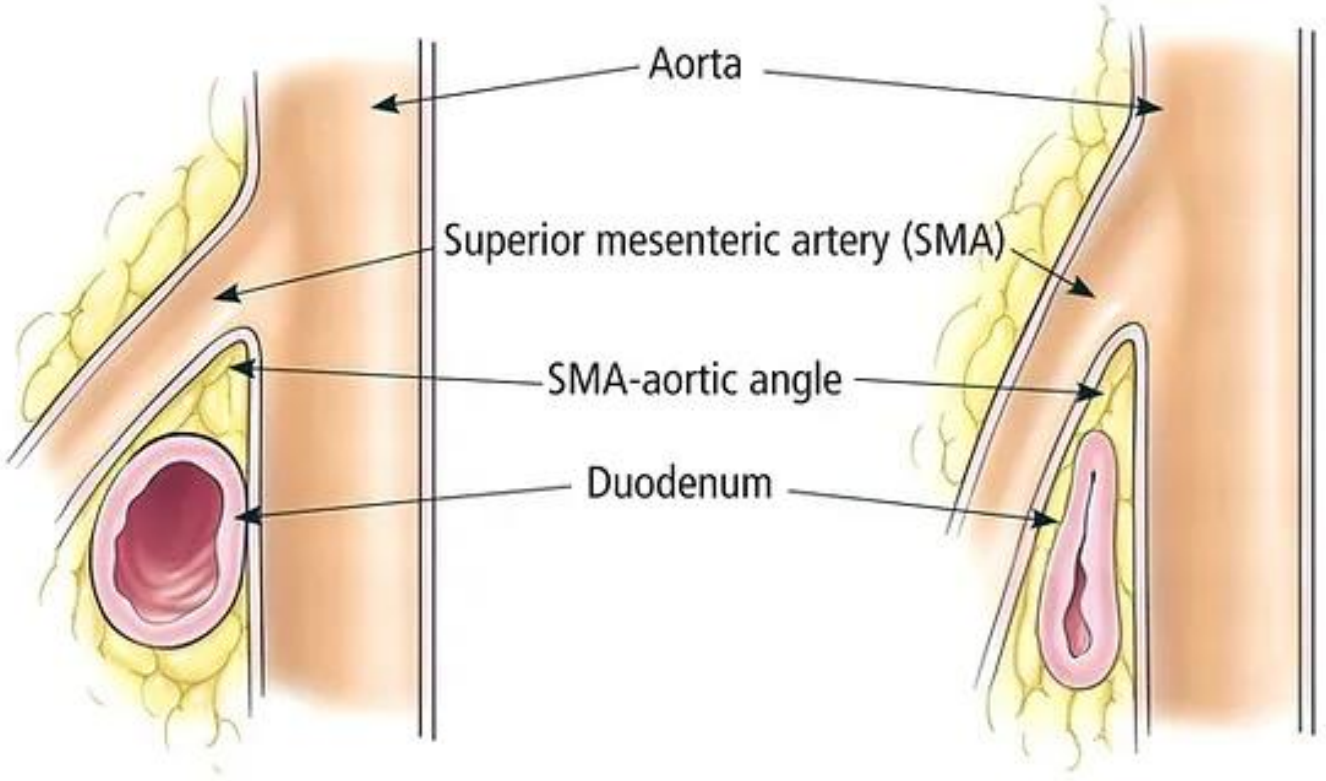
  https://malsawareness.com/what-is-mals%3F
- More common in EDS & POTS.
- Treatment: Surgical

Huynh, 2019

Tests for MALS:

- Catheter angiography
- Doppler ultrasound
- CT

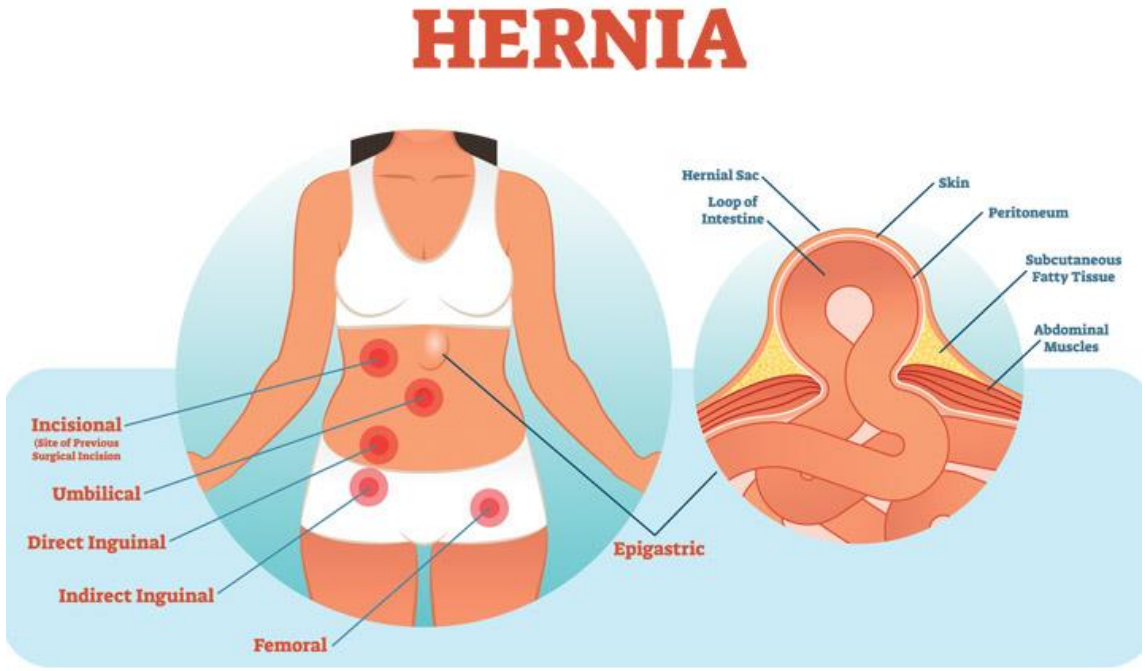
Superior Mesenteric Artery Syndrome



- Symptoms:
  - Abdominal pain
  - Fullness after minimal food or drink
  - Inability to eat
  - Nausea
  - Vomiting
  - Weight loss
- It is NOT an eating disorder such as anorexia or bulimia!
- How to test for this:
  - CT or x-ray
- Treatment: Surgical

YouTube explanation:
https://youtu.be/Vlk1PCGQ_Xo

Hernias



- Hernias are 2-3x more common in HSD/EDS
- Typically feels like a lump in your abdomen or groin
- Aggravated by coughing or straining (e.g. toileting, lifting)
- May be triggered by surgery, pregnancy, constipation, coughing, heavy lifting, being overweight
- Often asymptomatic, but may be painful
  - Epigastric hernia may cause vomiting
  - Hiatal hernia may cause indigestion, GERD
- Treatment:
  - See your MD to monitor it, or if symptoms severe
  - You can relocate some hernias yourself with gentle pressure
  - Abdominal binders or hernia belts may help hold tissues in
    - Reviewed: https://bestreviews.com/health-wellness/braces/best-hernia-belts
  - Might not need surgical repair: watchful waiting often okay
  - Surgery if severe

Testing

- Physical exam for all except hiatal
- Hiatal: x-ray with contrast shake, endoscopy, manometry

Questions?

POTS and GI Problems

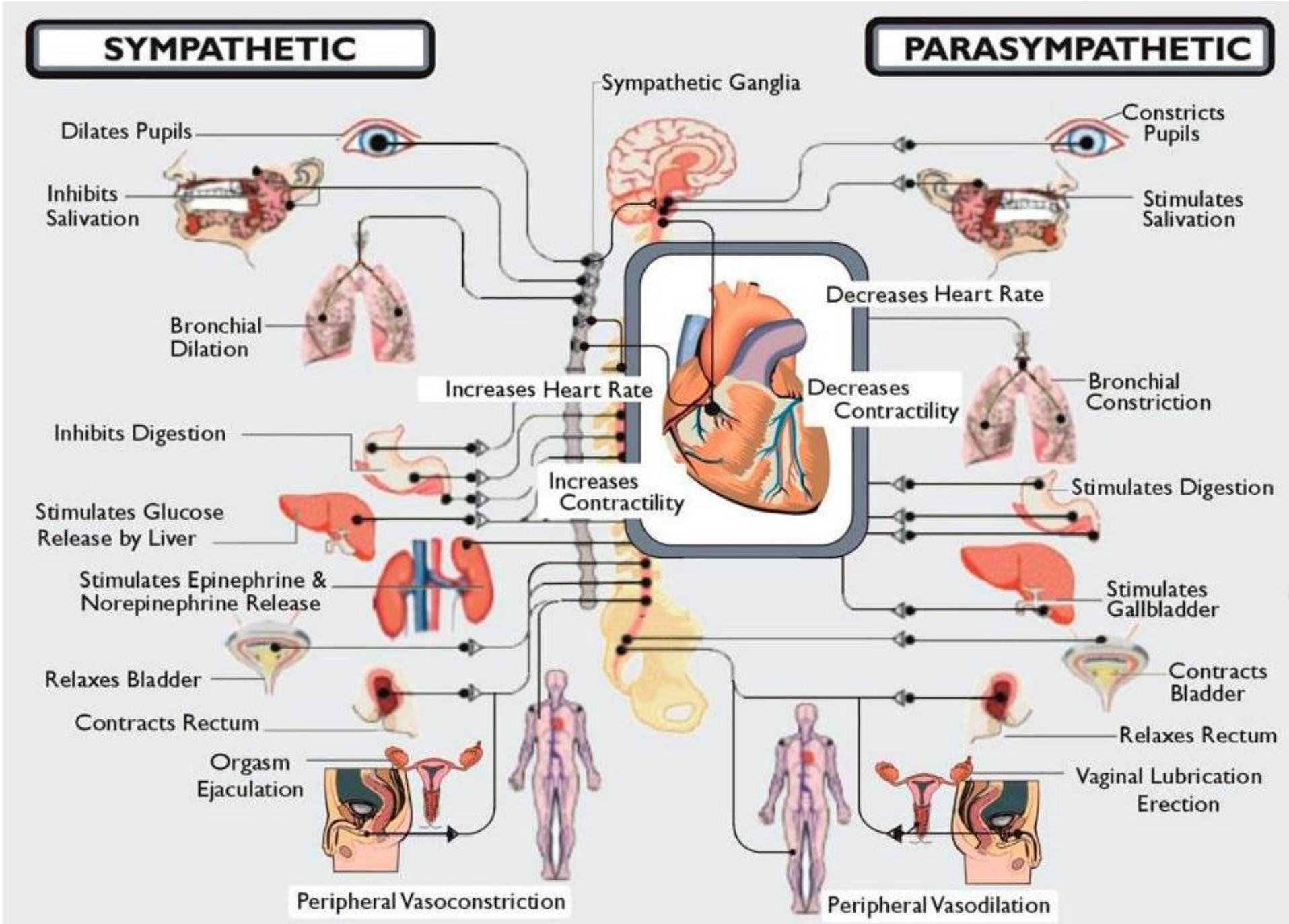
- GI function is regulated by the autonomic system
  - "Dysautonomia" implies improper regulation
- In one study, gastric emptying in people with POTS was:
  - Rapid in 48%
  - Slowed or delayed in 18%
  - Normal in 34%

Chelimsky, 2018

- Other common GI problems in POTS:
  - Nausea, abdominal pain, early satiety, vomiting

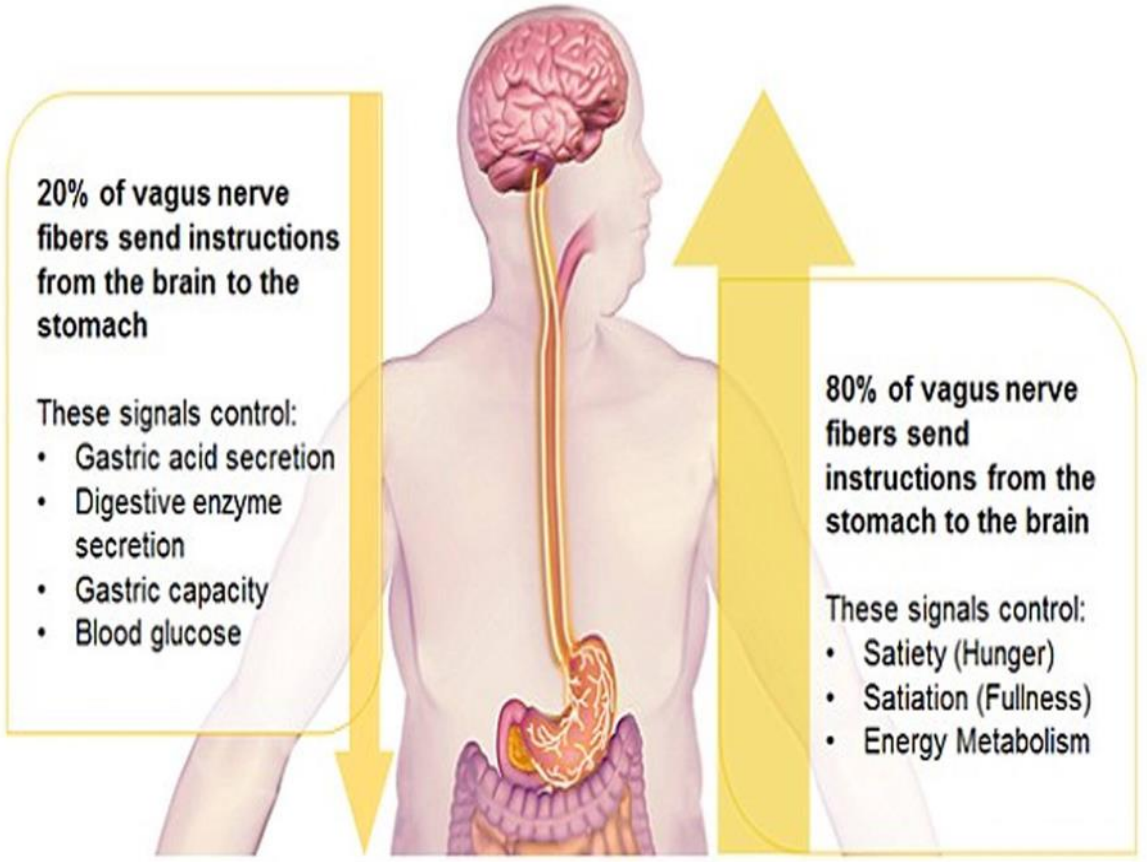
Mehr, 2019

The Autonomic Nervous System



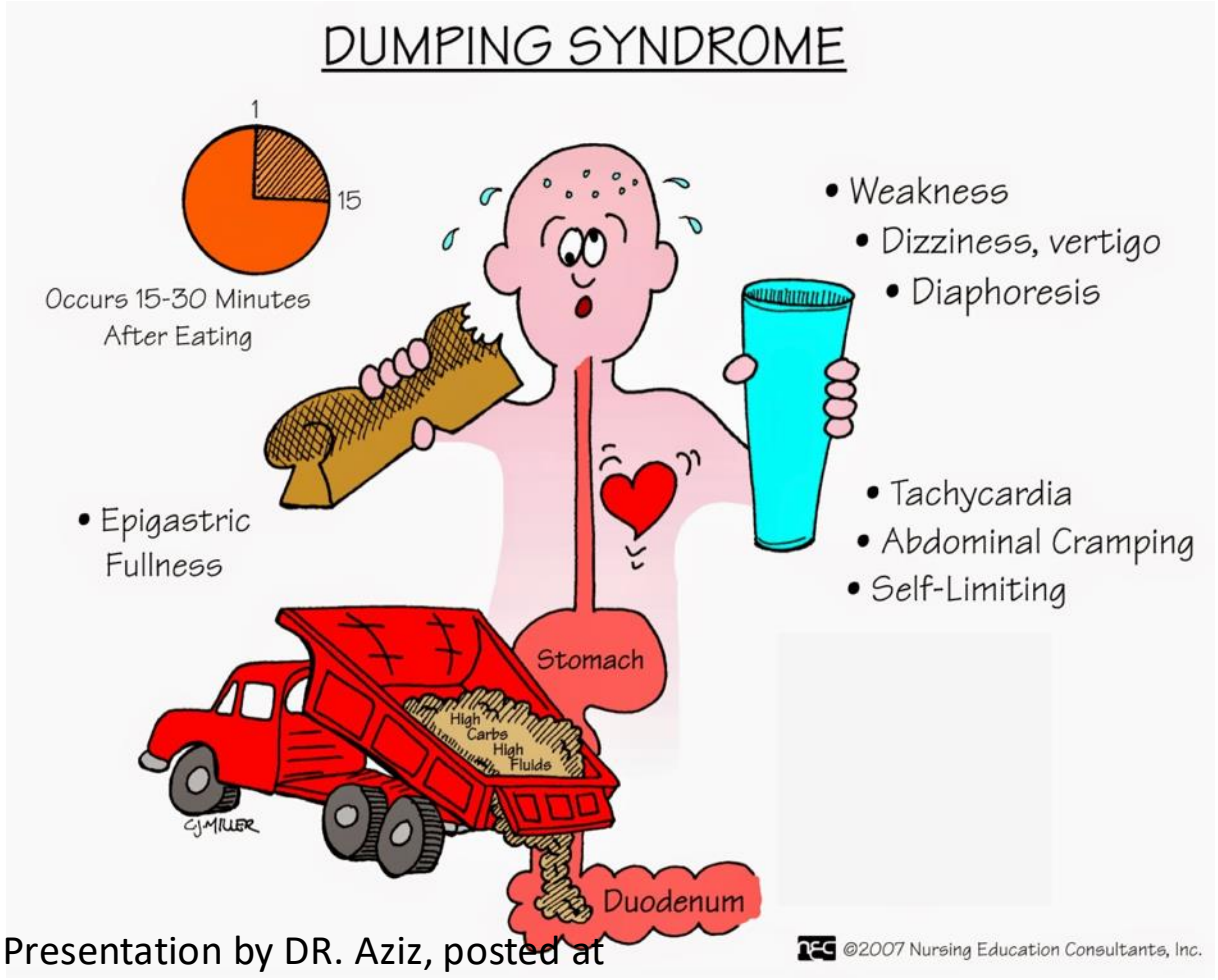
http://www.dysautonomiainternational.org/page.php?ID=12

Vagus Nerve and GI Regulation



- Vagus nerve controls parasympathetic function
- Sympathetic and parasympathetic activity are inversely related
- Vagus nerve function is disrupted in POTS (Anjum, 2018)
- Stress can aggravate the gut, and the gut can cause distress (Konturek, 2011)

Dumping Syndrome



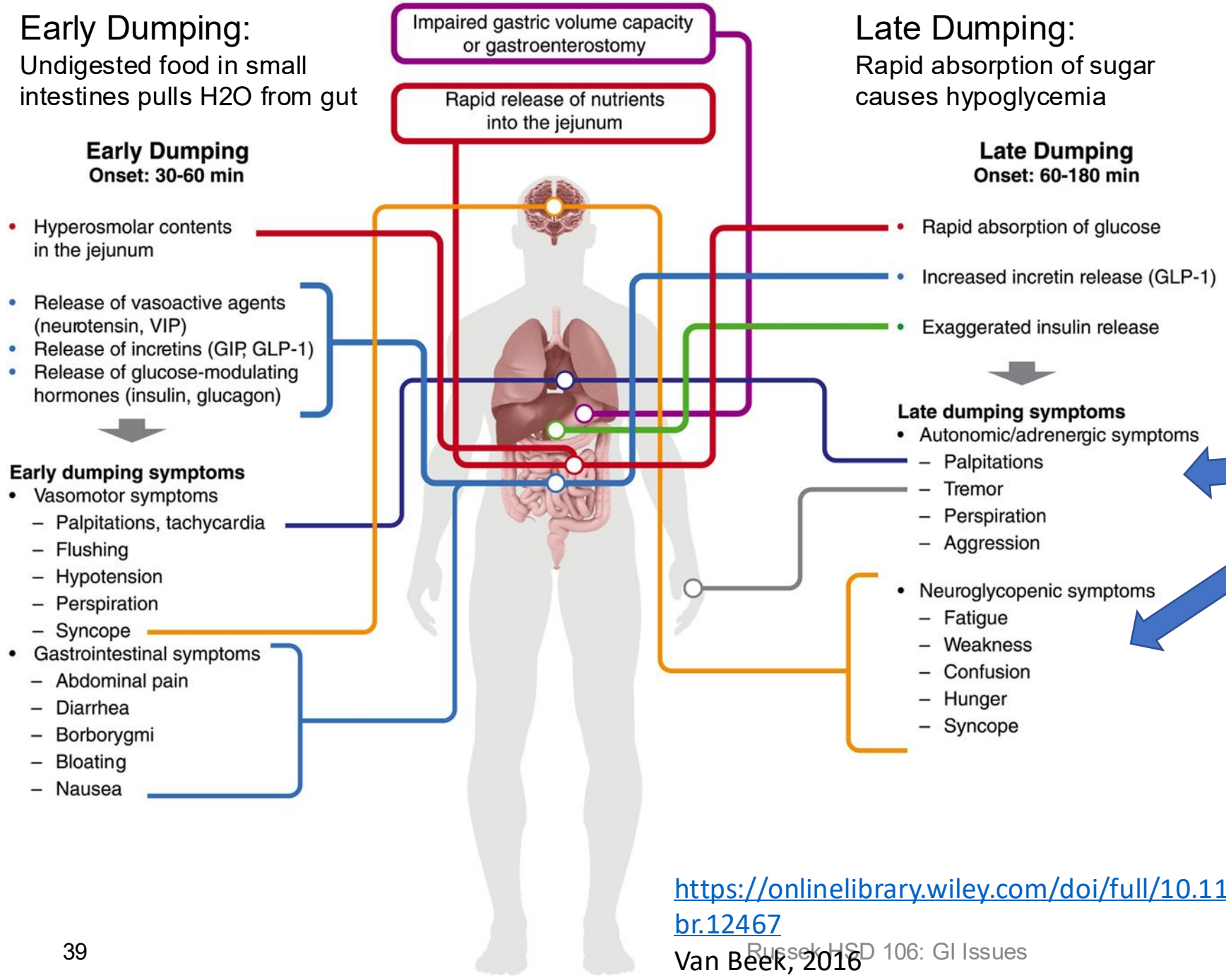
Presentation by DR. Aziz, posted at www.potsuk.org https://www.potsuk.org/UserFiles/File///Qasim_Aziz_Gut_complication

- Also called rapid gastric emptying, dumping syndrome occurs when food, especially sugar, moves from your stomach into your small bowel too quickly.
- Late dumping syndrome starts 1-3 hours after a high-sugar meal. Low blood sugar aggravates POTS
- How to test:
  - Gastric emptying test or Smart Pill
- https://www.mayoclinic.org/diseases-conditions/dumping-syndrome/symptoms-causes/syc-20371915

Early vs. Late Dumping

Early Dumping:
Undigested food in small intestines pulls H2O from gut

Late Dumping:
Rapid absorption of sugar causes hypoglycemia



- Dumping syndrome aggravates POTS symptoms.
- Rx: Avoid high sugar & carbohydrate meals

https://onlinelibrary.wiley.com/doi/full/10.1111/obr.12467
Van Beek, 2016

Managing Dumping Syndrome

- Diet
  - Eat more frequent, smaller meals, such as 6-8 small meals; this decreases the amount of food entering the intestines.
  - Eat foods with complex carbohydrates and fiber (whole grains, veggies) and high-protein foods (meat, fish, eggs, nuts, tofu, cheese, unsweetened yogurt). These slow gastric emptying.
  - Avoid foods with sugar and simple carbohydrates (e.g., white bread, juice, fluid milk, honey, sweetened drinks, and anything with added sugar).
  - Avoid drinking large quantities of liquids with meals, but stay hydrated with plenty of fluids between meals.
  - Eat slowly and chew your food well.
  - Added fiber supplements may help.

Canadian Society of Intestinal Research:
https://badgut.org/information-centre/a-z-digestive-topics/dumping-syndrome/

SIBO: Small Intestinal Bacterial Overgrowth

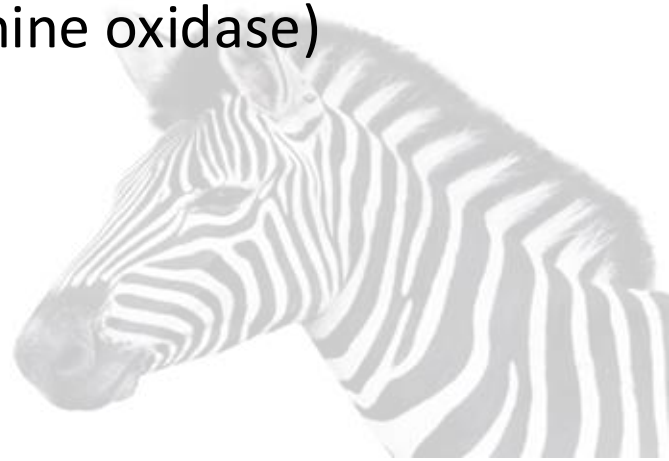
- Symptoms: bloating, gas, flatulence, belching, diarrhea or constipation, abdominal pain, indigestion, nausea, fatigue, 'brain-fog'
- Possibly more prevalent in EDS, due to dysmotility
  - 39% prevalence in EDS
  - 31% prevalence in MCAS
  - Use of proton pump inhibitors to manage MCAS?
- Diagnosed using a hydrogen/methane breath test
- Treated with dietary changes and/or antibiotics
  - Antibiotics address the bacteria, but not the underlying cause
  - Diet suggestions: https://www.verywellhealth.com/the-elemental-diet-for-sibo-and-ibs-1945000

Uy, 2021; Rao, 2019; Weinstock, 2018

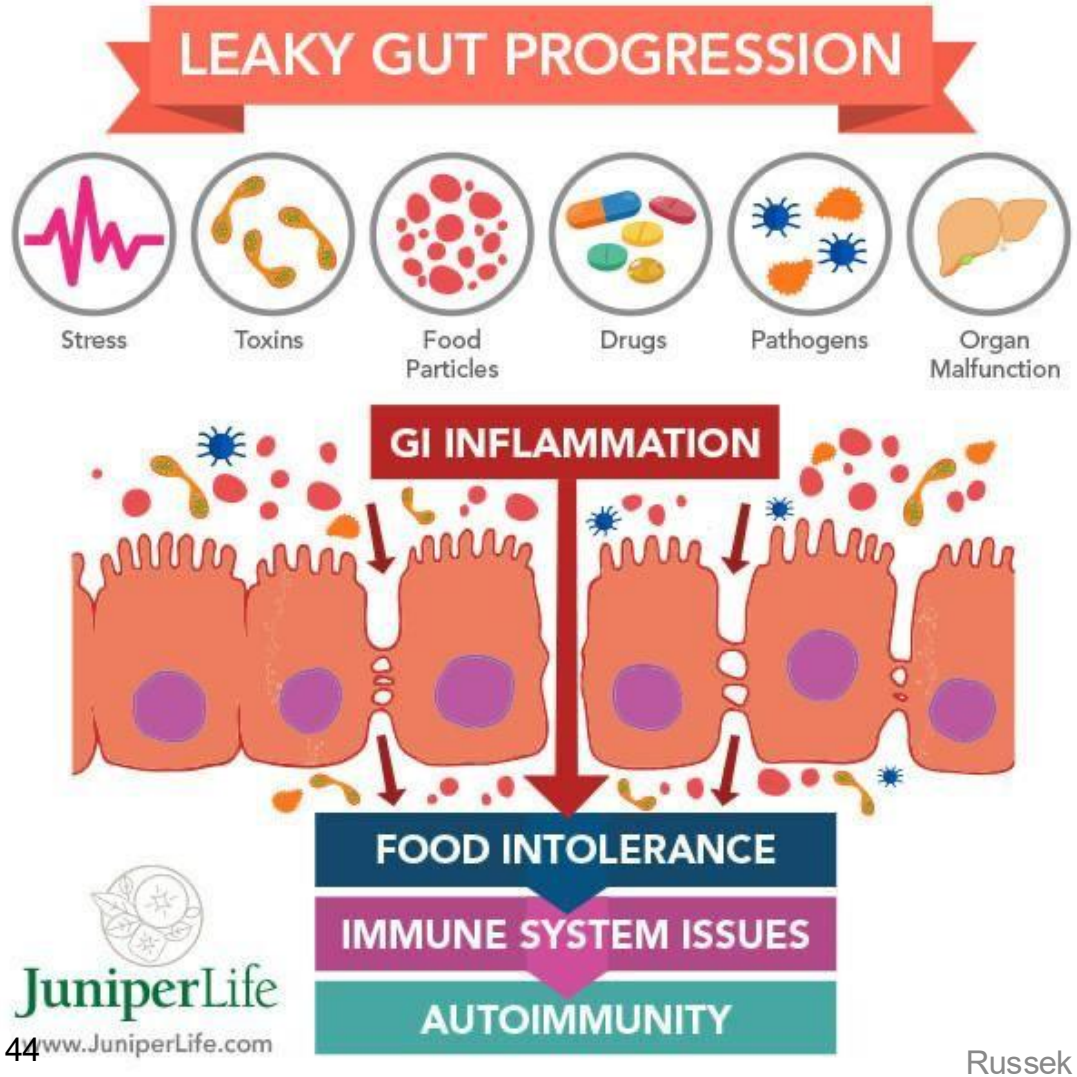
Mast Cell Activation and Gut Issues

HSD 102: POTS & MCAS

- Mast cells serve an important protective function in the gut
- Activated mast cells can irritate all portions of the GI tract
- They can alter gut permeability, which changes what can get through
  - ”Leaky Gut Syndrome”
- Histamine increases gut motility (activity) making food pass through the gut more quickly
  - Normally, histamine in the gut is broken down by DAO (diamine oxidase)



Leaky Gut Syndrome



- The gut lining becomes leaky and more things, including chemicals and bacteria, can get through
- This activates the immune system, which is designed to protect us from invaders
- This can trigger MCAS and food sensitivities
- Symptoms develop 30-60 minutes from eating

Diamine Oxidase Deficiency (DAO)

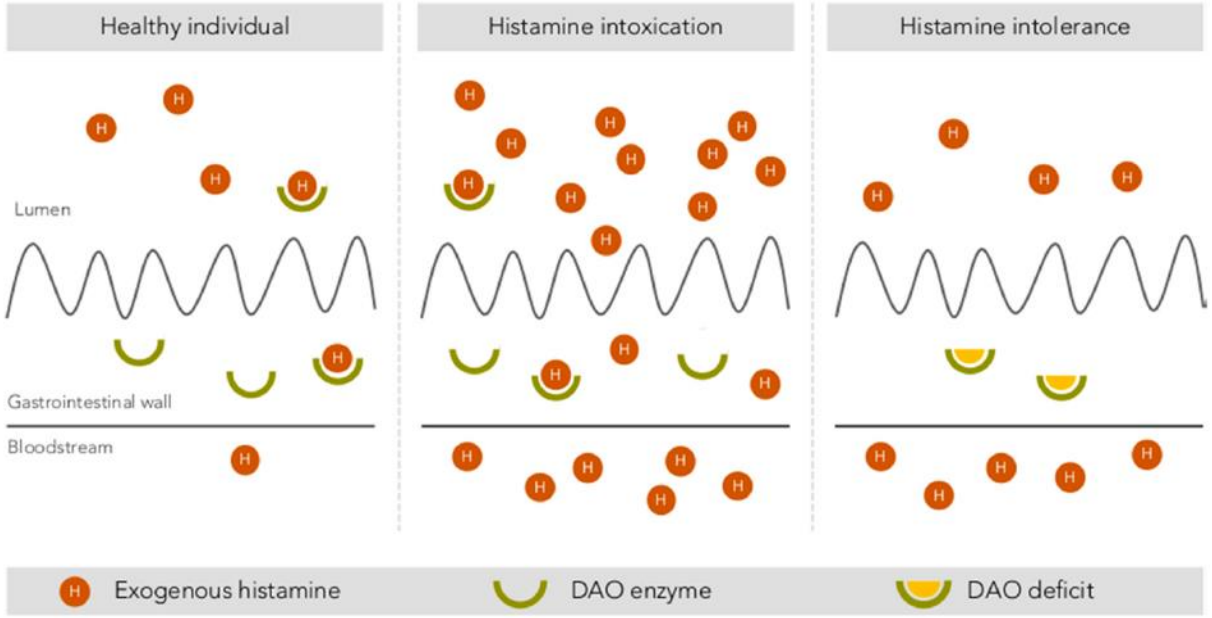


Figure 3. Intestinal degradation of histamine by the DAO enzyme in three different situations: in a healthy individual, with histamine intoxication and with histamine intolerance. Adapted from [13].

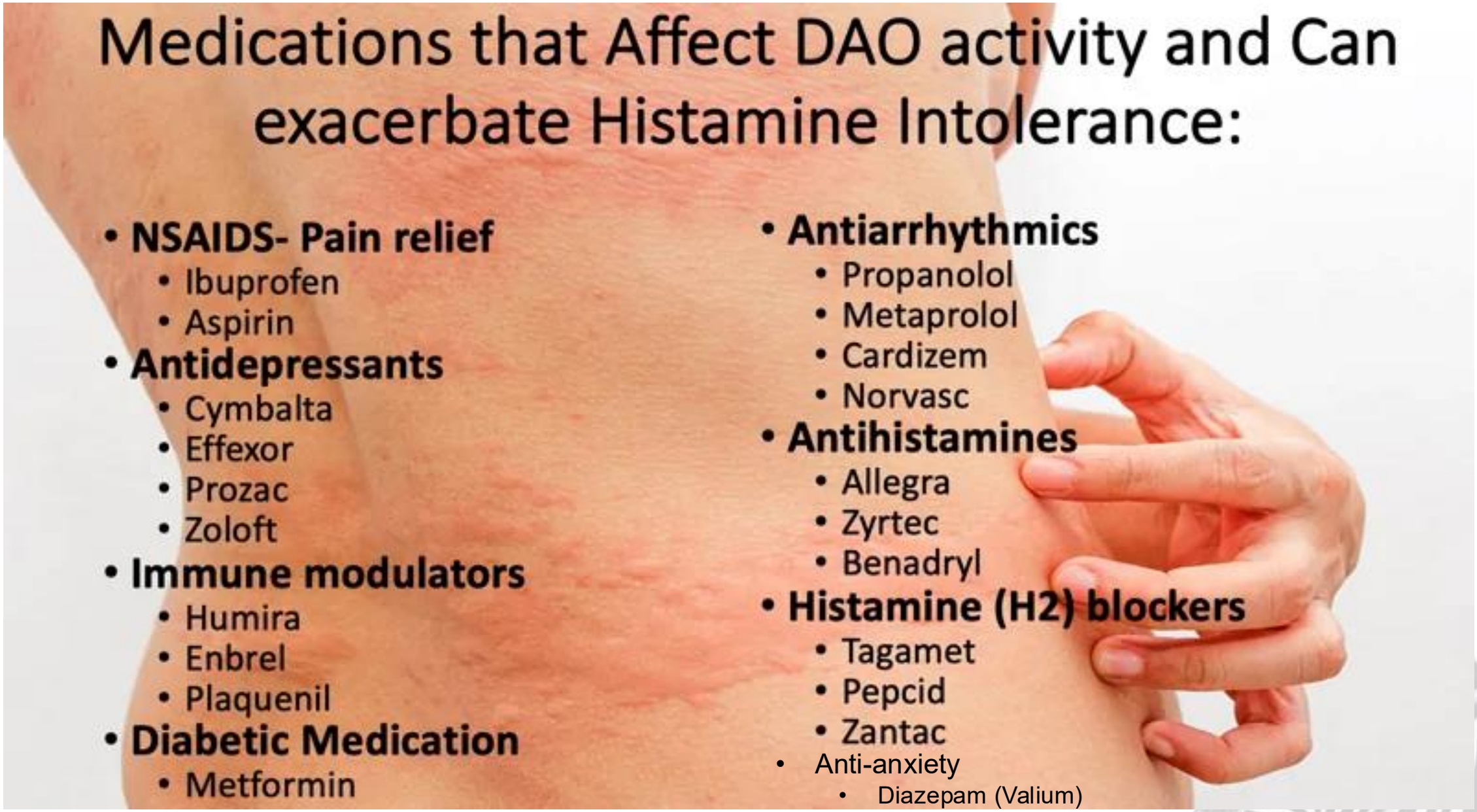
Comas-Baste, 2020

- Histamine is one of many chemicals released by mast cells
- There is no definitive diagnostic criterion for histamine intolerance.
- DAO normally breaks down histamine in the gut
- Leads to excessive histamine absorbed through the gut into the blood
  - Leads to systemic problems (i.e., other organ systems)

DAO Deficiency

- Some people have genetically defective DAO
  - Common in gluten and lactose sensitive people
  - People with chronic migraines tend to have deficient DAO
- Some medicines inhibit DAO
- DAO supplements before meals seem to help many people
  - Note: DAO is also a recommended treatment for migraines (Izquierdo-Casas, 2019)
- There is a blood test for DAO, but it is not readily available.
- Note – Lam, 2023 article states that there is insufficient evidence to show that DAO is a problem in the trifecta.

Medications that Affect DAO activity and Can exacerbate Histamine Intolerance:



- **NSAIDS- Pain relief**
  - Ibuprofen
  - Aspirin
- **Antidepressants**
  - Cymbalta
  - Effexor
  - Prozac
  - Zoloft
- **Immune modulators**
  - Humira
  - Enbrel
  - Plaquenil
- **Diabetic Medication**
  - Metformin
- **Antiarrhythmics**
  - Propanolol
  - Metaprolol
  - Cardizem
  - Norvasc
- **Antihistamines**
  - Allegra
  - Zyrtec
  - Benadryl
- **Histamine (H2) blockers**
  - Tagamet
  - Pepcid
  - Zantac
- Anti-anxiety
  - Diazepam (Valium)

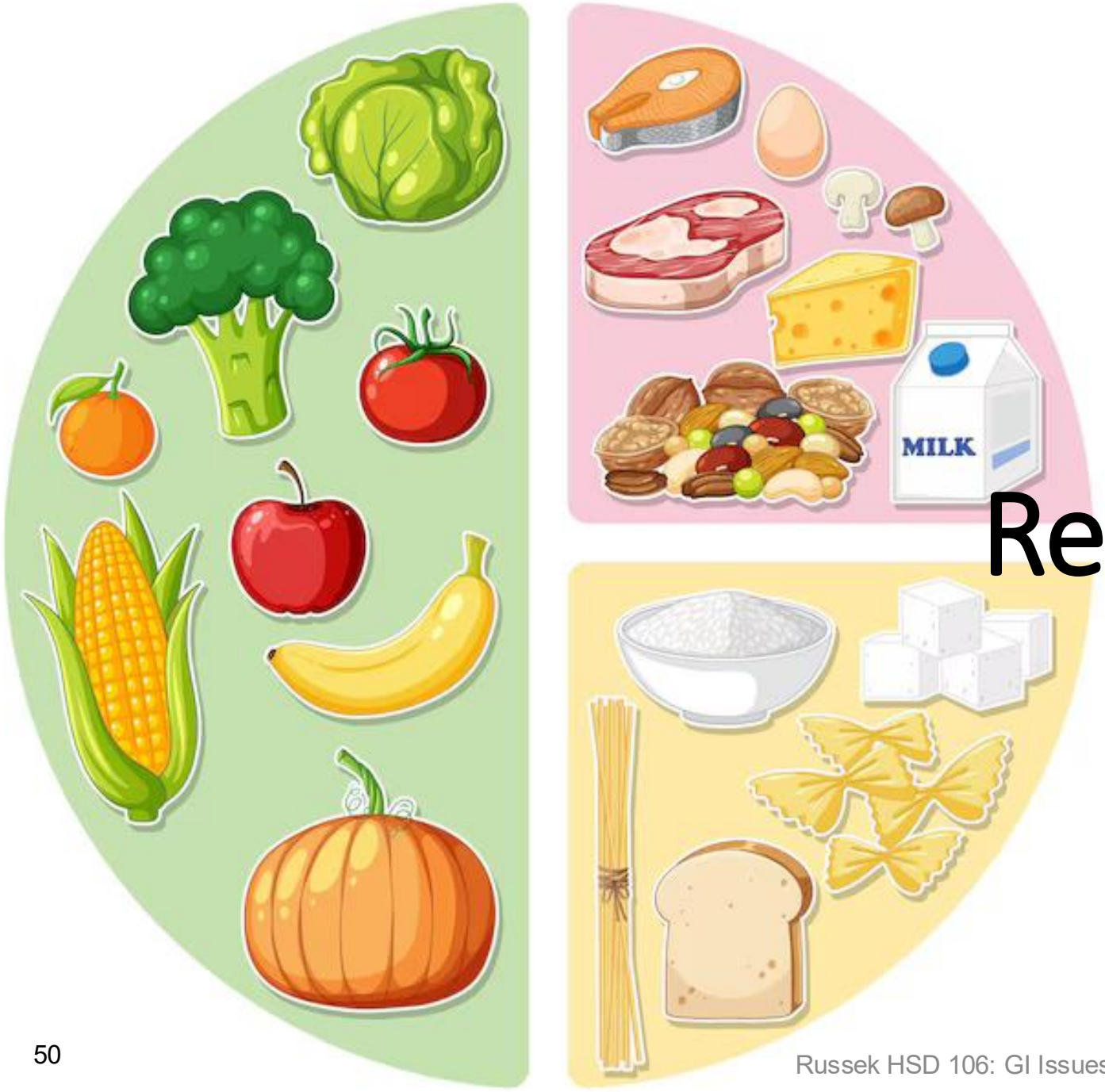
https://www.drhagmeyer.com/dao-deficiency-how-to-activate-the-enzyme-that-reduces-histamine-intolerance-and-mcas-symptoms/

Managing MCAS/Histamine Intolerance

Managing MCAS

Check Your Meds

- Avoid intake:
  - Avoid high histamine or histamine-releasing foods
  - Avoid medications that aggravate mast cells
- Improve breakdown:
  - Take DAO supplements before meals
- Counteract histamine effects:
  - Take antihistamine medications



Dietary Recommendations

Dietary Recommendations

- FODMAP for IBS in general, especially HSD issues
  - Low fermentable oligosaccharide, disaccharide, monosaccharide and polyol (FODMAP)
  - Evidence that it decreases pain, bloating, diarrhea, constipation in people with HSD (Fragkos, 2019)
- Low histamine diet for histamine intolerance, especially MCAS issues
  - Growing evidence, especially for MCAS or histamine intolerance
- Heidi Collins EDS diet
  - Anecdotal evidence
- Elimination diets are not intended for long-term use
  - They are often not nutritionally sound
  - Once the gut is stabilized, begin adding foods back in
- Work with a knowledgeable dietician, if possible

Low FODMAP Diet

A low FODMAP diet may help people with gastrointestinal problems like bloating, gas, or irritable bowel syndrome (IBS).

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Avoid

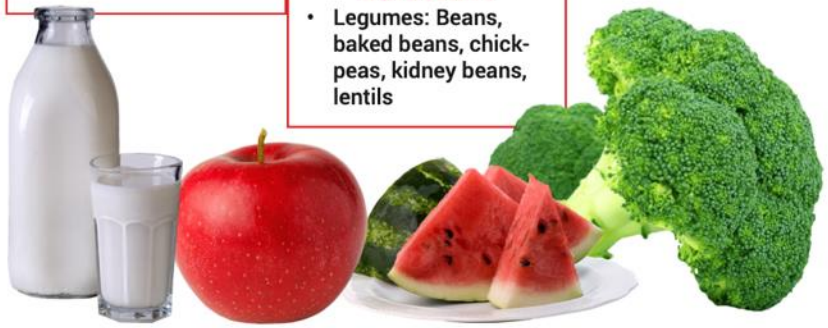
Excess Fructose
- Fruit: apple, mango, nashi, pear, canned fruit in natural juice, watermelon.
- Sweeteners: fructose, high fructose corn syrup, corn syrup, honey.
- Concentrated fructose: concentrated fruit, large servings of fruit, dried fruit, fruit juice.

Lactose
- Milk: milk from cows, goats, or sheep.
- Custard, ice cream
- Yogurt
- Cheese: soft, unripened cheeses like cottage, cream, mascarpone, ricotta

Fructans
- Asparagus
- Beetroot
- Broccoli
- Brussels sprouts
- Cabbage
- Eggplant
- Fennel
- Garlic
- Leek
- Okra
- Onion (all)
- Shallots
- Cereals: wheat and rye in large amounts (e.g. bread, crackers, cookies, couscous, pasta)
- Fruit: custard apple, persimmon, watermelon
- Misc: chicory, dandelion, inulin

Galactans
- Legumes: Beans, baked beans, chickpeas, kidney beans, lentils

Polyols
- Apple
- Apricot
- Avocado
- Blackberry
- Cherry
- Lychee
- Nashi
- Nectarine
- Peach
- Pear
- Plum
- Prune
- Watermelon
- Vegetables: Green bell pepper, mushroom, sweet corn
- Sweeteners: sorbitol (420), mannitol (421), isomalt (953), maltitol (965), xylitol (967)



Enjoy

Fruit
- Banana
- Blueberry
- Boysenberry
- Canteloupe
- Cranberry
- Durian
- Grape
- Grapefruit
- Honeydew melon
- Kiwi
- Lemon
- Lime
- Mandarin
- Orange
- Passionfruit
- Pawpaw
- Raspberry
- Rhubarb
- Rockmelon
- Star anise
- Strawberry
- Tangelo

Misc
- Sweeteners - sucrose, glucose, artificial sweeteners not ending in "-ol", and sugar in small quantities
- Honey substitutes - small quantities of golden syrup, maple syrup, molasses, and treacle

Vegetables
- Alfalfa
- Artichoke
- Bamboo shoots
- Beat shoots
- Bok choy
- Carrot
- Celery
- Choko
- Choy sum
- Endive
- Ginger
- Green beans
- Lettuces
- Olives
- Parsnip
- Potato
- Pumpkin
- Red bell pepper
- Silver beet
- Spinach
- Summer squash (yellow)
- Swede
- Sweet potato
- Taro
- Tomato
- Turnip
- Yam
- Zucchini

Starch
- Gluten free bread or cereal products
- 100% spelt bread
- Rice
- Oats
- Polenta
- Other: arrowroot, millet, psyllium, quinoa, sorgum, tapioca

Dairy
- Milk - lactose-free milk, oat milk, rice milk, soy milk (check for additives)
- Cheeses - hard cheeses, brie, and camembert
- Yogurt (lactose free)
- Ice cream substitutes - gelati, sorbet
- Butter substitutes (e.g. olive oil)

www.gastroconsa.com

Download the FODMAP App

Monash University: https://www.monashfodmap.com/about-fodmap-and-ibs/high-and-low-fodmap-foods/

Food Intolerances 12+
Histamine, FODMAP & IBS Guide
Baliza GmbH
4.5 • 602 Ratings
Free · Offers In-App Purchases

LOW-HISTAMINE DIET

A buildup of histamine can happen due to an excess of your body's natural production of histamine and from overconsumption of histamine-releasing foods. A low histamine diet will not completely solve a sensitivity or intolerance to histamine or address the root cause, but it can help provide symptom relief. A combination of healing your gut and following a low histamine diet can resolve histamine intolerance for many people.

FOODS TO AVOID

- Alcohol and fermented beverages (especially wine and kombucha)
- Citrus, most berries (including bananas and avocado), and dried fruit
- Fermented foods (kimchi, sauerkraut, yogurt, kefir, etc.)
- Soured foods (sourdough bread, buttermilk, etc.)
- Aged cheese and cow's dairy
- Chocolate, cocoa, and cacao
- Processed, cured, smoked, or leftover meat. Meat should be as fresh as possible.
- Vinegar and vinegar containing foods (pickles, relishes, etc.)
- Teas (green, black, mate)
- Spinach, eggplant, and tomatoes
- Artificial food colorings and preservatives
- Seafood (fin or shellfish, in any preservation such as canned, smoked, etc.)
- Spices such as curry, cayenne, chili, cloves, cinnamon, and nutmeg
- Yeast
- Pineapple and papaya

FOODS TO TRY INSTEAD

- Olive oil and coconut oil
- Freshly cooked meat
- Fresh caught seafood (avoiding fin or shellfish)
- Cooked eggs (be mindful of the whites if you are particularly sensitive)
- Gluten free grains such as rice, quinoa, and buckwheat
- Fresh fruits (excluding berries, avocado, citrus, bananas, pineapple, and papaya)
- Dairy-free milks
- Leafy herbs and greens (excluding spinach)
- Freshly ground spices (avoiding curry, cayenne, chili, cloves, cinnamon, and nutmeg)
- Pure nut butters
- Carob as an alternative to cocoa
- Coconut products (coconut oil, coconut butter, coconut meat, coconut milk)
- Hemp, chia, and flax seeds
- Fresh vegetables (excluding spinach and tomatoes)
- Herbal teas

CLEANEATINGKITCHEN.COM

https://www.cleaneatingkitchen.com/getting-started-low-histamine-diet/

American Gastroenterological Association Practice Recommendations for HSD

1. Be aware of links between HSD, POTS, MCAS & GI problems
2. Test for POTS/MCAS if patients present with those symptoms
3. Ask patients about joint hypermobility, screen for hEDS/HSD or refer
4. Test for POTS or refer for testing if patients with refractory GI problems have POTS symptoms after making behavioral modifications
5. Consider MCAS in patients with symptoms in multiple systems
6. Request blood testing for MCAS
7. If MCAS is suspected, refer to allergy specialist or MCAS center
8. Evaluate for Disorders of Gut-Brain Interaction (DGBI) as for other patients with DGBI

Aziz, 2025

American Gastroenterological Association Practice Recommendations for HSD

9. Test for celiac disease if indicated
10. Test for functional defecation (pooping) disorders and pelvic floor dysfunction
11. Pts with upper GI symptoms, test for gastric emptying.
12. Focus on treating most severe symptoms and POTS and MCAS
13. Treat POTS with behavioral recommendations or medications
14. Treat MCAS with medications and advice to avoid dietary and other triggers
15. Nutritional support and counseling, especially if recommending special diets; avoid restrictive eating
16. GI symptoms not consistent with POTS or MCAS should be managed with multidisciplinary care

Aziz, 2025

Table 2. Treatment Considerations for Patients With Hypermobile Ehlers-Danlos Syndrome or Hypermobility Spectrum Disorder With POTS and/or MCAS

Symptom	Treatment
POTS symptoms	**Lifestyle** (exercise, dietary fluid/salt, salt tablets, acute/chronic intravenous hydration [rare], compression garment) **Blood volume expanders** (fludrocortisone, desmopressin, erythropoietin) **Heart rate lowering agents** (propranolol, ivabradine) **Central nervous system sympatholytics** (clonidine, methyldopa) **Other** (midodrine, pyridostigmine, droxidopa, modafinil)
Diarrhea	**Dietary modification** (low FODMAP, gluten free, soluble fiber) **Microbiome modification** (rifaximin, *Bifidobacterium infantis* 35624) **Antidiarrheals** (loperamide, diphenoxylate) **Bile acid sequestrants** (cholestyramine, colesevelam, colestipol) **μ- and κ-opioid receptor antagonist and δ-receptor antagonist** (eluxadoline)[a] **5-HT$_3$ receptor antagonist:** alosetron (female patients only)
Constipation	**Fiber supplements** (psyllium, methyl cellulose) **Osmotic laxatives** (PEG 3350, lactulose, and milk of magnesia) **Stimulant laxatives** (bisacodyl and senna) **Chloride channel activator** (lubiprostone) **Guanylate cyclase-C agonist** (linaclotide and plecanatide) **5-HT$_4$ agonist** (prucalopride) **Sodium hydrogen exchanger 3 inhibitor** (tenapanor)

Aziz, 2025

Table 2. Treatment Considerations for Patients With Hypermobile Ehlers-Danlos Syndrome or Hypermobility Spectrum Disorder With POTS and/or MCAS

Symptom	Treatment
Nausea/vomiting	**Antiemetics** (ondansetron, prochlorperazine, promethazine, aprepitant, off-label use of carbidopa)[b] **Prokinetics** (metoclopramide, domperidone, pyridostigmine and off-label use of prucalopride) **Complementary medicine therapies** (aromatherapies, ginger tea, STW5)
Abdominal pain	**Acid Suppression** (H_2 receptor antagonist, proton pump inhibitors) **Antispasmodics** (dicyclomine, hyoscyamine and peppermint oil) **Neuromodulators** (TCA, SSRI, SNRI, neuroleptics, anticonvulsants) **Psychological therapies** (cognitive behavioral therapy, hypnotherapy, relaxation therapies)
Autoimmunity	**Corticosteroids or immunoglobulins**[20,c]
MCAS	**H_2 receptor antagonist** (famotidine, nizatidine, ranitidine) **Second-generation H_1 antagonist** (cetirizine, levocetirizine, fexofenadine, loratadine) **Mast cell stabilizer** (cromolyn sodium, ketotifen[d]) **Leukotriene receptor antagonist** (montelukast)

MCAS, mast cell activation syndrome; POTS, postural orthostatic tachycardia syndrome; SNRI, serotonin and norepinephrine reuptake inhibitor; SSRI, selective serotonin reuptake inhibitor; TCA, tricyclic antidepressant.

[a]Contraindicated in patients having ≥3 alcoholic beverages per day, postcholecystectomy, and moderate-to-severe hepatic insufficiency.

[b]Patients often require multiple therapeutic agents, and care should be taken to monitor for QT prolongation on the electrocardiogram.

[c]Gastroenterology providers may need to refer to allergy and immunology or mast cell specialists for the management of these medications.

[d]Not approved by the Food and Drug Administration but can be compounded.

Aziz, 2025

Summary

- The gut is affected in all 3 components of the “Terrible Trifecta”
  - Possibly in different ways
  - We have probably not sorted out the differences
- Symptoms can sometimes be managed if you understand what imbalances contribute to the problem
  - Constipation/gastroparesis: positioning on toilet, diet, exercise, abdominal massage
  - Diarrhea: address triggers of Dumping Syndrome and MCAD/histamine intolerance
  - Small Intestinal Bacterial Overgrowth: antibiotics acutely, then managing delayed gastric emptying and diet (e.g., FODMAP)
  - Anterior Abdominal Wall Synd.: exercise, activity modification, manual therapy
  - Median Arcuate Ligament Synd. & Superior Mesenteric Artery Synd.: See GI MD
- Avoid restricting your diet too severely, as this makes it difficult to get balanced nutrition. Best to work with a licensed dietician/nutritionist.
- It is very complicated!

Resources

- EDS specialist nutrition course: https://nasarnutrition.com/eds-nutrition-pain-protocol/
  - Bonnie Nasar, RDN (Registered Dietitian Nutritionist) also provides telehealth consultations
- Mast cell activation food information and cookbook: https://www.mastzellaktivierung.info/en/downloads.html
- See Monash University website, and their FODMAP app with food listings and recipes. https://www.monashfodmap.com/about-fodmap-and-ibs/high-and-low-fodmap-foods/
- A helpful app: ***Food Intolerances: Histamine, FODMAPs & IBS Guide***. It has a strawberry logo. (https://apps.apple.com/us/app/food-intolerances/id419098758)

Articles for Your Gastroenterologist

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Table 2 Summary of the main foregut gut–brain disorders, key features, management options and optimal nutrition approach

Foregut gut–brain disorder diagnosis	Key features	Diagnostic basis and tests	Management options	Optimal nutrition approach
Oesophageal dysmotility	Difficulty swallowing	Abnormalities on high resolution manometry	Dietary adjustment and eating behavioural modification.	Oral nutritional supplements if needed. NG feeding if malnourished.
Rumination syndrome	High pressure gastric contractions precede regurgitation/vomiting	Typical history. Concurrent impedance/manometry with meal provocation	Diaphragmatic breathing, baclofen, Nissens fundoplication (selected patients)	Optimised effortful oral feeding, short term bridging NJ to therapies only if malnourished
Cyclical vomiting syndrome and cannabis hyperemesis syndrome	Bouts of hyperemesis with intervals of normality. History of migraines. Relief from hot baths.	Clinical history is typical. Exclusion of other structural or central neural causes	May respond to tricyclics and migraine prophylaxis. Abstinence from cannabis.	Short bouts may need parenteral fluids/electrolytes. NJ likely to be unstable and unnecessary.
Chronic nausea and vomiting	Low-grade background constant nausea and vomiting	Clinical history and exclusion of other structural or central neural causes	Prokinetics, antiemetics, gut–brain neuromodulators	Optimised effortful oral feeding, avoid NJ unless malnourished.
Functional dyspepsia and gastroparesis	Overlapping spectrum of varying degrees of sensorimotor impairment of gastroduodenal function	Clinical history and solid meal gastric emptying test off medication affecting gastric emptying (but not based on gastric emptying study alone)	Pain management (avoid opioids), psychosocial support, buspirone, gut-brain neuromodulators including mirtazapine, pro-kinetics.	If malnourished with predominantly gastric muscle failure (gastroparesis), then trial of NJ with view to longer term post-pyloric feeding tube.
CIPO and enteric (small bowel) dysmotility (ED)	Non-mechanically obstructed dilated small bowel (CIPO) or significantly abnormal small bowel manometry or transit (ED)	CIPO—dilated small bowel radiologically. ED—small bowel manometry or abnormal transit. Full thickness biopsy if undergoing venting surgery.	Prokinetics, small intestinal bacterial overgrowth therapy, non-opioid analgesia with gut–brain neuromodulators	CIPO more likely to need parenteral nutrition than ED which should be manageable with optimised effortful oral or enteral feed.
Centrally mediated abdominal pain and narcotic bowel syndrome (NBS)	Chronic continuous abdominal pain with neuropathic features. Escalating opioid doses in NBS.	Clinical history and exclusion of other causes.	Non-opioid analgesics (eg, duloxetine). Opioid stabilisation and reduction. Mu-opioid antagonists.	Avoid enteral tube and parenteral feeding.
Somatoform disorder/ central sensitivity syndrome	Overlapping multiple functional symptom syndromes	Psychiatric evaluation	Clinical psychology/ liaison psychiatry. Central neuromodulators	Avoid iatrogenesis due to escalating invasive approaches.
Avoidant restrictive food intake disorder	Restrictive and avoidant behaviours not body image driven, but anxiety, fear, food related symptom and fixed (eg, health) beliefs	Psychiatric evaluation.	Clinical psychology and liaison psychiatry input	If severely malnourished may need short-term bridging enteral tube feeding to therapies but need not be post-pyloric.

CIPO, chronic intestinal pseudo-obstruction; ED, enteric dysmotility; NBS, narcotic bowel syndrome; NG, nasogastric; NJ, nasojejunal.

Gut-Brain Disorders

Lam, 2023

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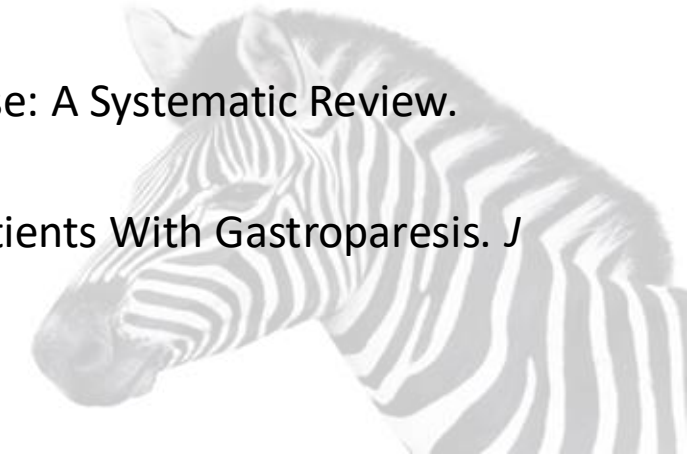

Questions?