Medical Consequences of Eating Disorders

Eating Disorder Resource Center (EDRC) Parent Group

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Setting the tone

We as parents must:

"…locate the problem of fat shame in society as opposed to the individual person's body and provide individuals with tools to identify and resist fat stigma and oppression, rather than provide them with tools to reshape their bodies."

Brown-Bowers A, Ward A, Cormier N. Treating the binge or the (fat) body? Representations of fatness in a gold standard psychological treatment manual for binge eating disorder. Health (London). 2017 January; 21(1):21–37. doi: 10.1177/1363459316674788.

How do eating disorders happen?

- Genetic (temperament) foundation
- Constant exposure to fat-phobic/thin-focused values
- Weight loss happens either by accident (illness) or on purpose
  - Positive social feedback, pleasant numbness, positively distracting to focus on food & weight rather than life, some people's brains get hooked
  - Same with exposure to alcohol: some are fine, some become addicted
- Then restricting calories, bingeing and purging, or bingeing alone can become irresistible

Types of eating disorders

- Anorexia nervosa
- Atypical anorexia nervosa
- Bulimia nervosa
- Binge eating disorder
- Avoidant restrictive food intake disorder (ARFID)

Most people with eating disorders aren't visibly underweight

Epidemiology (world)

- **Anorexia**
  - 0.1% of population
  - Second highest mortality rate of any mental illness after opioid use disorder (US)
  - 5-20% die, depending on severity
  - 6x death rate, 18x risk of suicide compared w peers
  - Approximately 10:1 female : male predominance
  - Severe medical complications, some measurable and some not

Epidemiology (world)

- **"Atypical" AN**
  - Up to 3% of population (vs 0.1% of "typical" AN)
  - 2x death risk
  - Often missed as patients are not visibly/medically "underweight"
- **Bulimia**
  - 1-3% of population, 2x death risk, 7x suicide risk
  - Around 3:1 female:male predominance
  - Medical complications of severely low blood electrolyte levels (potassium), acid corrosion, and dehydration
- **Binge eating disorder**
  - 2-4% of population
  - Commonest eating disorder, doesn't always result in weight gain
  - Equal prevalence across gender

Thin privilege: a powerful force

"Thin privilege is never having your body shape used as a shorthand in books, comic books and movies for gluttony, greed or villainy."

(And more importantly, thinner bodies move through the world much easier: ease restaurant and airplane seats, clothing availability, job promotion, finding a partner, avoiding stigma and undertreatment in the doctor's office, protection from microaggressions…the power of thinness is immense)

What most of us are taught

- Thinner people are always healthier than fatter people
- Weight is a product of individual choice and self-restraint: calories in and calories out
- If people could just stop overdoing it, they'd be thinner, heathier, and happier
- With so many medical problems connected with higher weight, it's everyone's responsibility to focus on weight at all ages

Thin privilege helps cause & sustain EDs

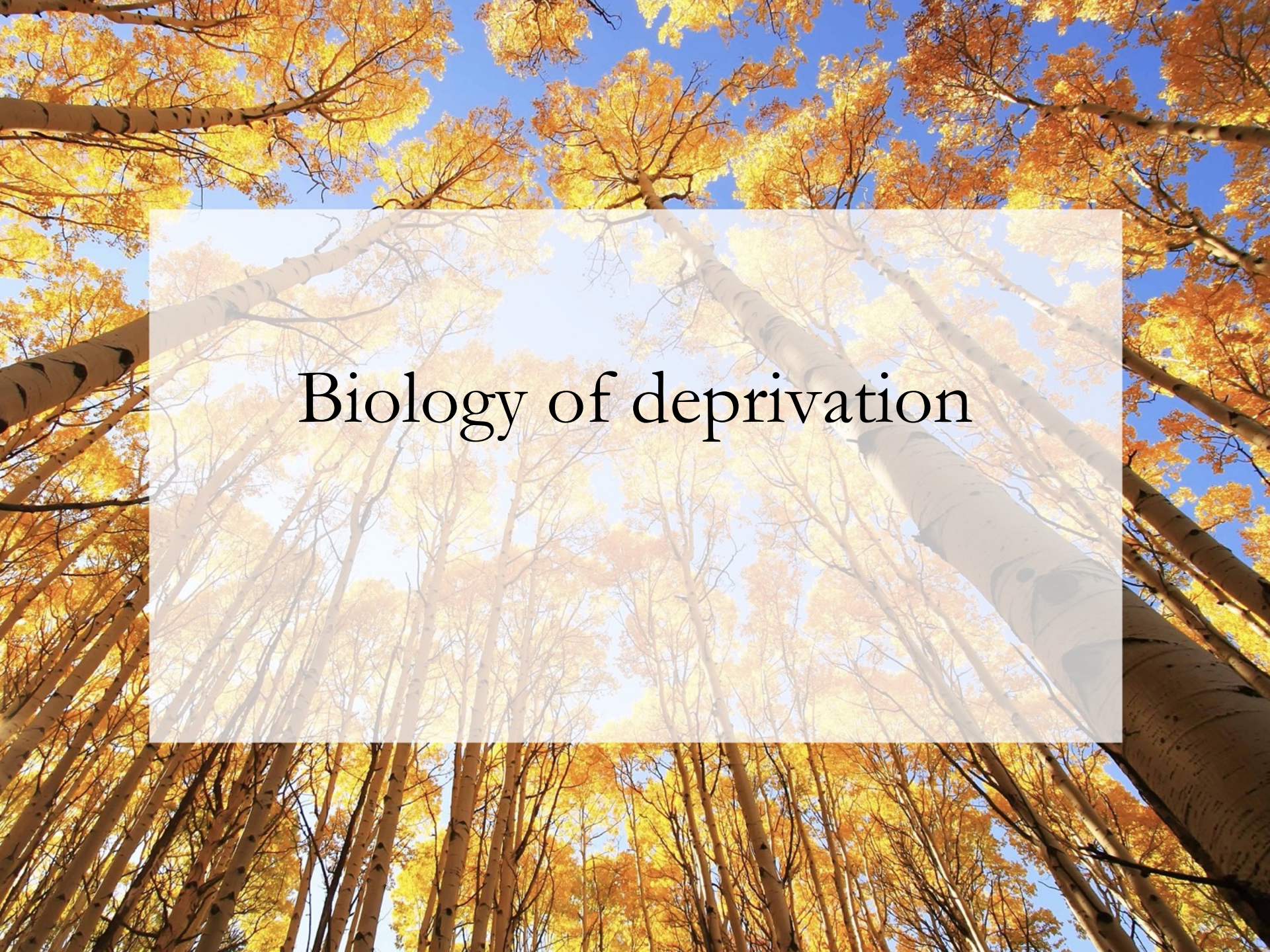
- Bombarded from an early age
- Never without reminders of what body type is safe, desirable, appropriate, moral

How it shows up in parenting

You cannot tell whether someone is healthy by the appearance of their body

(except maybe at each far end of the spectrum)

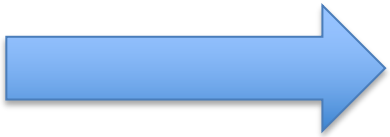
Praise for "healthy" choices may inadvertently be praise for a fledgling eating disorder



Biology of deprivation

Biology of deprivation

- Our brains evolved to protect us from death by starvation
- This topic relates not just to eating disorders but anyone who's experienced malnutrition
  - (Insufficient energy intake for whatever reason, compared with what a body needs, regardless of body shape or size)



Dynamic metabolism

Dynamic metabolism & biological weight conservation

- Why doesn't the equation "calories in, calories out" work?

Overview of cave person brain response

- "I'll slow your metabolism to save your life"
  - Cooler body temps, including hands and feet
  - Slowed heart rate
  - Slowed digestion
  - Eventually: reversion of sex hormones to pre-puberty (which contributes to fragile bones and injuries)
  - Starved brain, rigidity, less creative/slower cognitive ability
  - Drive for food, weight preservation, rise in set point weight range
- **Weight may or may not change with eating disorder behaviors, depending on genes**
- **Possible resetting of genetic set point weight range, to protect from the next "famine"**

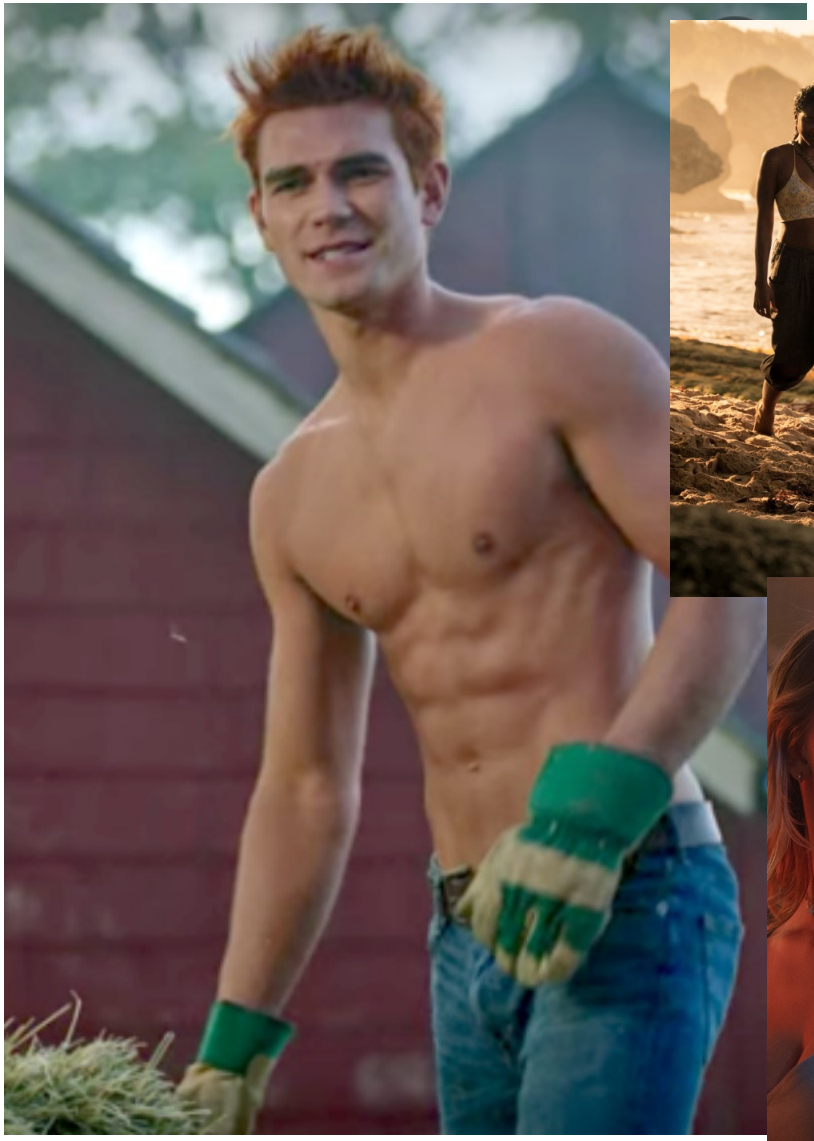
What *is* healthy eating?

- Abundant, satisfying, balanced, regular eating without set rules or restrictions apart from honoring allergies
- Moving your body for fun and to achieve athletic or personal adventure goals

- Anything else is disordered, if not formally an eating disorder

Science of normal adolescence

Body pressure in adolescence



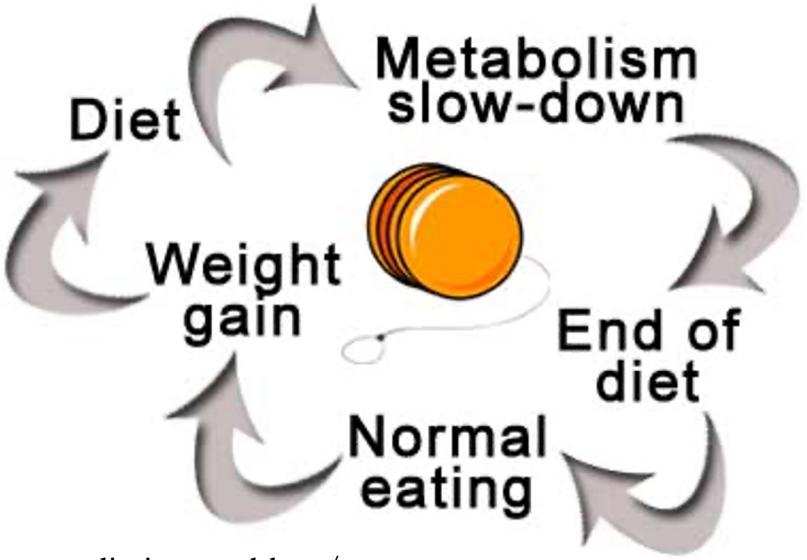
Weight cycling: **deadly**

- **Weight cycling:** gaining and losing weight over and over
- Those with highest lifetime weight cycling compared with least weight fluctuation had:
  - **82% higher risk of major coronary event or death**
  - **99% higher risk of heart attack**
  - **92% higher risk of stroke**

- Bangalore, S., Fayyad, R., Demicco, D.A., Colhoun, H.M., and Waters, D.D. (2018). Body weight variability and cardiovascular outcomes patients with type 2 diabetes mellitus. Circ. Cardiovasc. Qual. Outcomes 11, e004724
- Bangalore, S., Fayyad, R., Laskey, R., Demicco, D.A., Messerli, F.H., and Waters, D.D. (2017). Body-weight Fluctuations and outcomes in coronary disease. N. Engl. J. Med. 376, 1332– 1340

Focusing on weight loss

- **Goal:** Improve health, vitality, and social acceptance
- **Actual outcome:** Weight cycling, dismay, wasted time and energy

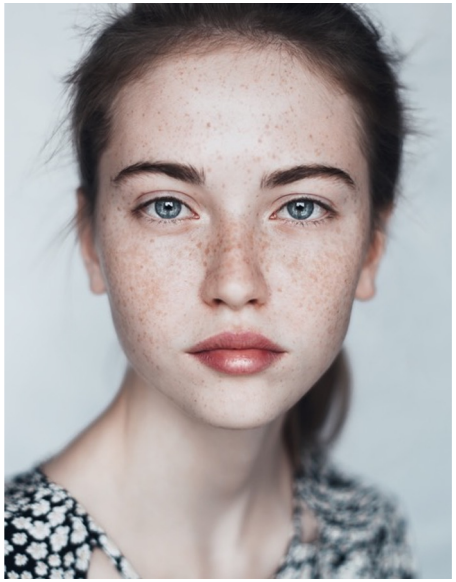


https://www.awaremed.com/uncategorized/weight-cycling-and-yo-yo-dieting-problem/

Medical complications of restriction

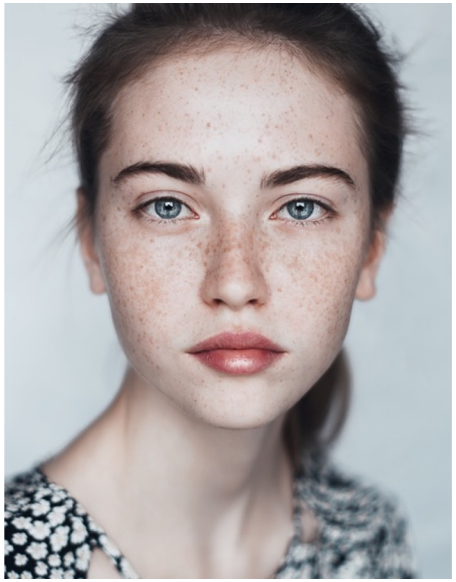
Case: Emily

- Emily is an 16-year-old Caucasian cisgender cross country runner and straight-A high school student
- For the last 6 months, she's gone on a "health food kick"
- She loses weight, and everyone compliments her for being eating "clean" and for how good she looks
- She gets full and bloated quickly, which her ED says means "this food is bad for you"
- Constipation, nausea, and distention make eating even harder
- She trends from healthy choices into rigid food rules
- As her brain gets more starved, she develops body distortions



In non-ED informed settings

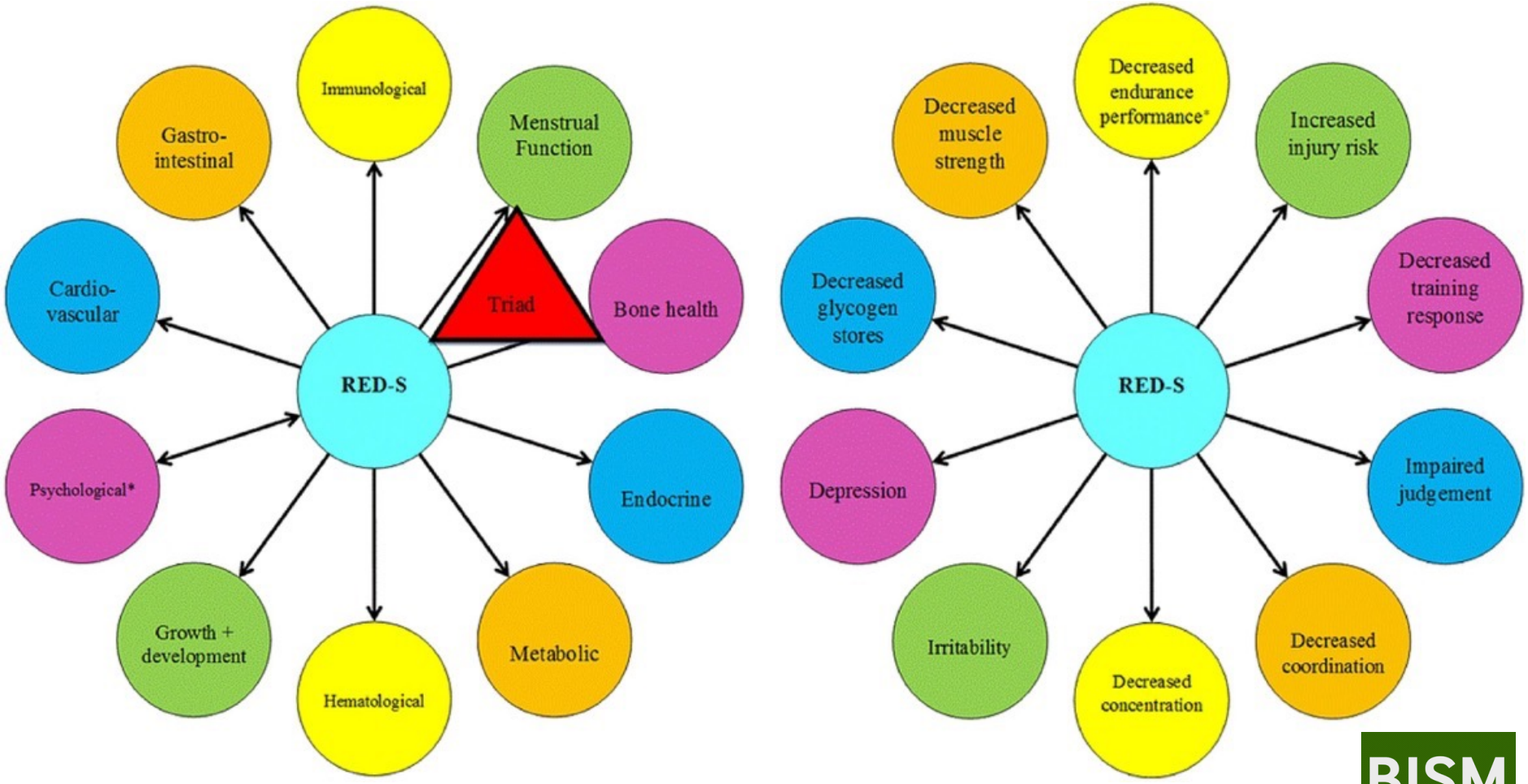
- After initially feeling good about their child's refusal to eat "junk food," Emily's parents start to worry as they see her eat less and lose more, and they bring her to her pediatrician
- Nurse tells her on the way in that she looks "great"
- Doctor sees a heart rate of 45 and believes her when she says it's because she's a runner
- Lab work normal
- He tells her to just keep eating healthy foods since she's not "that" underweight
- She continues to restrict for 6 more weeks, insisting she's fine the whole time, before she passes out and is admitted to a hospital and then to an eating disorder program



Diagnostic alternatives (same malnutrition, same medical issues)

- Emily has always had texture issues, was a highly picky eater, had digestive issues much worsened by food, or developed emetophobia (fear of vomiting) that led to the malnutrition, without drive for thinness/body distortions
  - **Avoidant Restrictive Food Intake Disorder (ARFID)**
- Emily just happened to become medically malnourished while eating "clean" without developing fear of food/drive for thinness
  - **Relative Energy Deficiency of Sport (RED-S)**
- Regardless of diagnosis, **eating disorders often begin concurrent with puberty**

RED-S



Harm: internalized size bias

- Because she looked like a stereotypical "successful 16-year-old" (thin, white, athletic, academically successful, health-focused), the pediatrician missed key signs and enabled her eating disorder
- Her brain was starved far longer than it should have been, risking more refractory disease

Exam

Starved heart

- Hibernation mode due to high vagal tone
  - Bradycardia at rest
  - Blood pressure unchanged posturally
  - **"Walk across the room test" helps distinguish between athletic and starved hearts**

PS: While hibernating, bears don't:

Go to school

Go to work

Raise a family

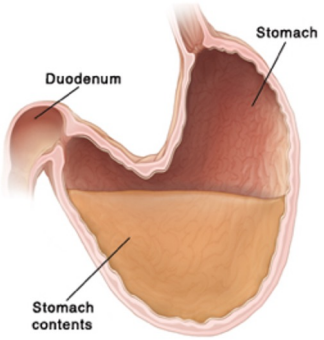
Play sports

Do extracurriculars

Or maintain their social media presence

….they SLEEP

Gastroparesis



- **Loss of normal stomach peristalsis (movement)**
  - Nearly universal in weight loss…regardless of body size
  - Causes early fullness, nausea, bloating, gassiness
  - Rarely is a nuclear med emptying study needed in this population

Gastroparesis

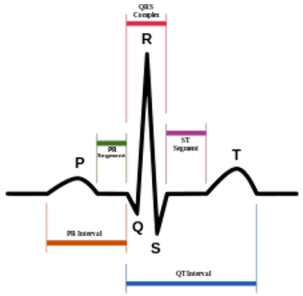
Worsens

- High fiber diets
- Rapid weight loss or longtime underweight
- Severe restriction

Helps

- Smaller meals
- Liquids/semi-solids
- Low fiber
- Kcal dense

Gastroparesis

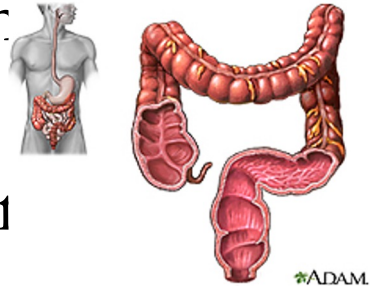


- **Prescription options**
  - First line in kids/teens/sensitive: Cyproheptadine 2-4 mg qhs (appetite, sleep, and motility)
  - Metoclopramide 2.5 mg 30-45 min before meals, and hs
  - Erythromycin ethylsuccinate 200 mg BID another option/ additive, or azithromycin 250 mg a day (less optimal)
  - Review risks and benefits

Chini P, Toskes PP, Waseem S, Hou W, McDonald R, Moshiree B. Effect of azithromycin on small bowel motility in patients with gastrointestinal dysmotility. Scand J Gastroenterol. 2012 Apr;47(4):422-7
Moshiree B, McDonald R, Hou W, Toskes PP. Comparison of the effect of azithromycin versus erythromycin on antroduodenal pressure profiles of patients with chronic functional gastrointestinal pain and gastroparesis. Dig Dis Sci. 2010 Mar;55(3):675-83

Constipation

- **Constipation nearly universal in caloric restriction, regardless of body size or weight loss**
  - Slowed GI transit due to metabolic slowir
- High fiber worsens at low weights
- Long term laxative abuse slows the colo further, maybe permanently
- Osmotic laxatives, good nutrition, glycerin suppositories can all help
- …but what if this isn't enough?



Irritable bowel syndrome

- Irritable Bowel Syndrome (IBS)
  - Constipation, diarrheal, or mixed
  - Mind body connection
  - Incremental, individualized approach with expectation setting
  - Holistic approach
  - Now called "Disorders of Gut-Brain Interaction"
- Affects 11% of the world's population

Drossman DA, Hasler WL. Rome IV-functional GI disorders: disorders of gut-brain interaction. Gastroenterology. 2016;150(6):1257–1261. doi: 10.1053/j.gastro.2016.03.035

IBS: Rome IV criteria

- Recurrent abdominal pain or discomfort at least 3 days/month in the last 3 months associated with *two or more* of the following:
  - Improvement with defecation
  - Onset associated with a change in frequency of stool
  - Onset associated with a change in form (appearance) of stool

IBS

- Be sophisticated in your choice of meds
  - **Constipation subtype:**
    - Amitiza (lubiprostone) 8 or 24 mcg PO bid w/ meals
    - Linzess (linaclotide) 145 or 290 mcg PO daily more than 30 min before 1st meal
    - Trulance (plecanitide) 3 mg PO weekly to daily depending on effect
  - **Diarrheal subtype:**
    - Colestipol 1 gram 30 min before breakfast: absorbs bile (watch timing)
    - Bentyl (dicyclomine) 10 or 20 mg PO QID
    - Levbid (hyoscyamine) 0.125 or 0.25 mg PO TID-QID prn
    - Lotronex (alosetron) BID for severe symptoms unresponsive to above
  - Not proven in the setting of concurrent malnutrition

“Gastric IBS”

- When gastroparesis not present and upper endoscopy normal, but nausea/vomiting persists, consider “gastric irritable bowel syndrome” or visceral hypersensitivity syndrome diagnosis
- Nortriptyline 10-20 mg PO qhs quite effective
  - Camilleri M, Boeckxstaens G. Dietary and pharmacological treatment of abdominal pain in IBS. Gut. 2017 Feb 23. pii: gutjnl-2016-313425. doi: 10.1136/gutjnl-2016-313425. [Epub ahead of print]
  - Simrén M, Törnblom H, Palsson OS, van Tilburg MA, Van Oudenhove L, Tack J, Whitehead WE. Visceral hypersensitivity is associated with GI symptom severity in functional GI disorders: consistent findings from five different patient cohorts. Gut. 2017 Jan 19. pii: gutjnl-2016-312361. doi: 10.1136/gutjnl-2016-312361. [Epub ahead of print]

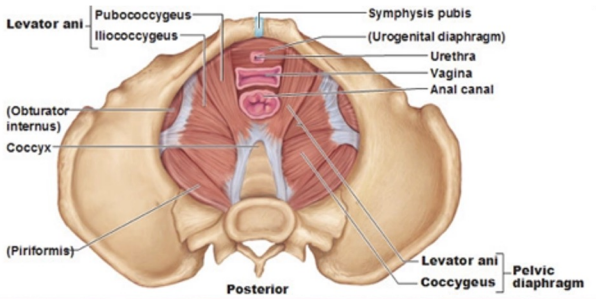
Muscles and IBS+

- **Diaphragmatic function is meaningfully tied to digestive function**
  - Also likely to chronic low back pain, chronic pelvic pain, chronic headache, and temporomandibular joint dysfunction, vagus nerve inflammation, and depression and anxiety
    - Bordoni B, Morabito B. Symptomatology Correlations Between the Diaphragm and Irritable Bowel Syndrome. Cureus. 2018 Jul 23;10(7):e3036. doi: 10.7759/cureus.3036. PMID: 30258735; PMCID: PMC6153095
- In a well-functioning system, in each deep breath, the diaphragm massages the intestines and helps with forward motility, relaxes the pelvic floor, and stimulates vagus nerve, thus triggering parasympathetic (relaxation) responses
- In a system with excessive muscular tension or scarring, and minimal practice of deep breathing, all these healthy benefits are at risk of dysfunction

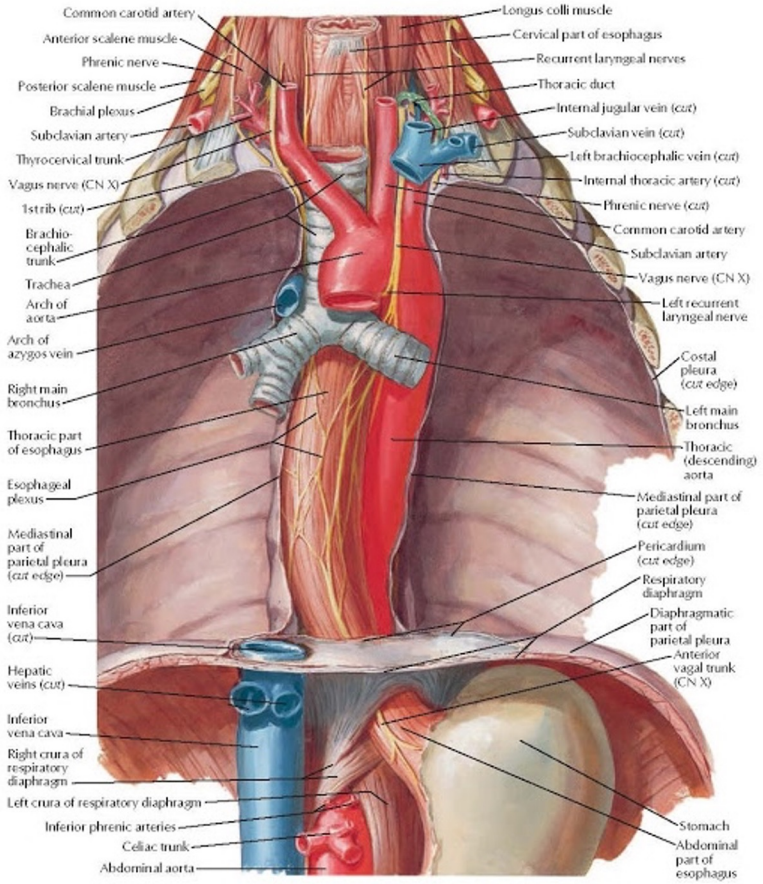
Pelvic floor dysfunction

- **Rome IV symptoms of pelvic dyssynergia:**
  - Having to strain to pass a stool
  - Feeling unable to empty the rectum
  - Having difficulty relaxing to evacuate the stool
- **Other related symptoms**
  - Needing to self-disempact, stool incontinence, abdominal distension

- Rao SC, Bharucha AE, Chiarioni G, Felt-Bersma R, Knowles C, Malcolm A, Wald A. Anorectal Disorders. Gastroenterology 2016;150(6):1430–1442
- Abraham S, Luscombe GM, Kellow JE. Pelvic floor dysfunction predicts abdominal bloating and distension in eating disorder patients. Scand J Gastroenterol. 2012 Jun;47(6):625-31



Abdominal wall dysfunction



- Abdominal wall PT is highly effective for nausea/belly pain when anxious/nervous and fullness after eating
- Myofascial release can be immensely relieving to patients in the moment and long-term
- Diaphragmatic breathing can dramatically help with GERD
- No intimate work makes it an easy recommendation for all
- Diaphragmatic breathing

What can go wrong with these muscles?

- Chronic tension, anxiety, drive to keep stomach held in →overal hypertonicity (high tone) of pelvic floor and abdominal wall muscles
  - The "internal corset"
- Cycles of dieting/muscle mass loss
- Overall tension + weakness of the pelvic floor and abdominal wall

How is it diagnosed?

- Anorectal manometry is one way, but rarely needed and rather invasive
- A skilled pelvic floor physical therapist can also do a detailed exam, both internal and external, and establish diagnoses and plans of care
- Obvious warning for patients who have experienced sexual trauma or are extremely modest…this is an intimate experience

Pelvic floor dysfunction treatment

- **Physical therapy and biofeedback are highly effective** in reducing pelvic pain, dyspareunia (pain with penetrative intercourse), urinary incontinence, constipation, and diarrhea and stool incontinence
- Same professionals can do life-changing work on abdominal wall

This PT = primary prevention!

- Think about abdominal wall or pelvic floor PT in adolescent patients with "sensitive stomachs"/nausea with stress who then get emetophobic →AN or ARFID
- Abdominal wall PT can completely fix that stress→nausea/bloating cycle!

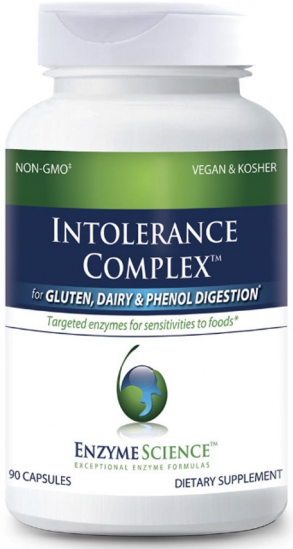
SIBO

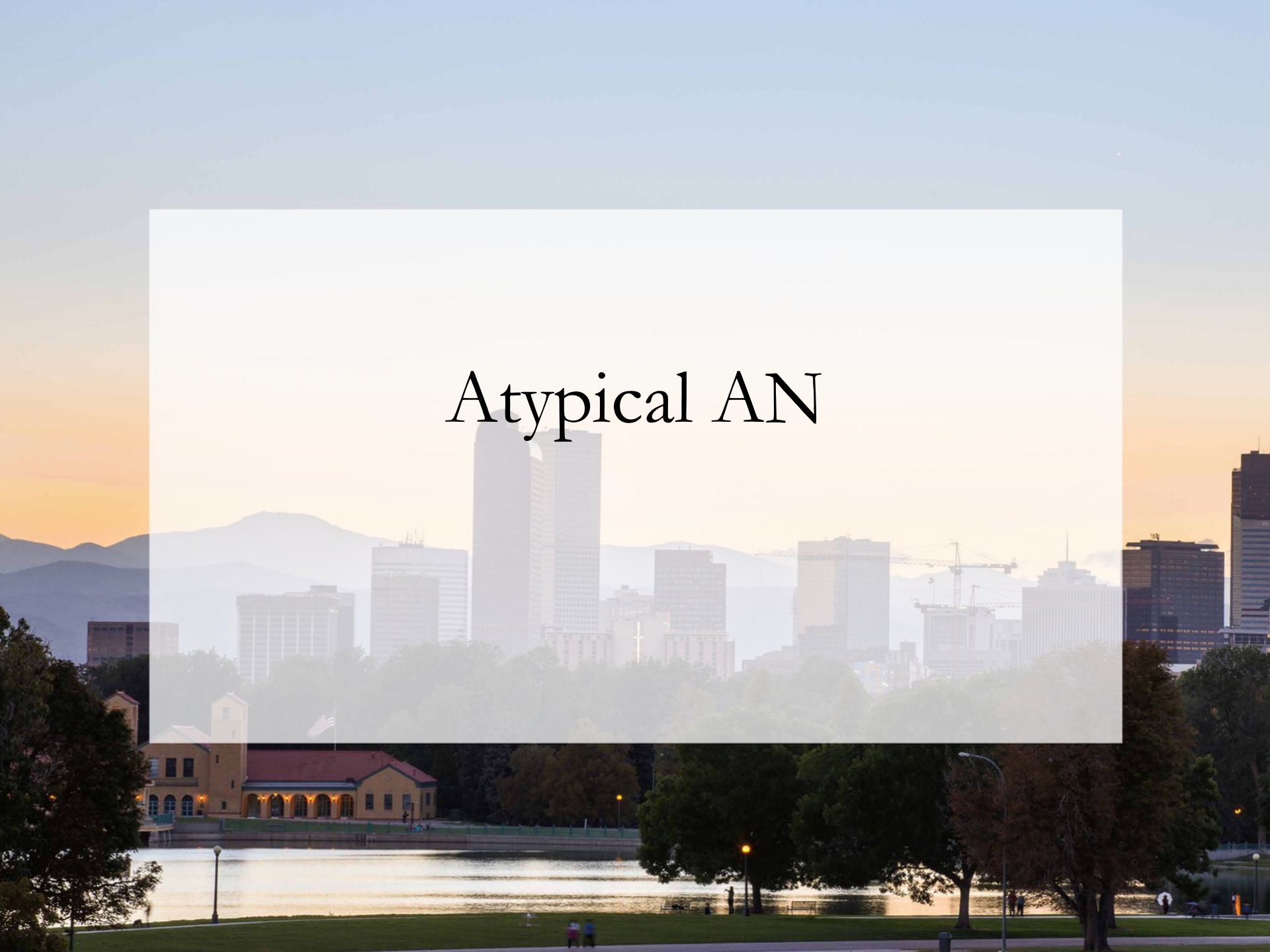
- **Small Intestine Bacterial Overgrowth**
  - The small intestine is supposed to be pretty sterile
  - Loss of GI motility can allow it to get colonized by bacteria that ferment food early
  - Prevalence of SIBO approximately 56% among patients with irritable bowel syndrome (IBS)
    - Chedid V, Dhalla S, Clarke JO, Roland BC, Dunbar KB, Koh J, Justino E, Tomakin E, Mullin GE. Herbal Therapy Is Equivalent to Rifaximin for the Treatment of Small Intestinal Bacterial Overgrowth. Global Adv Health Med. 2014;3(3):16-24

SIBO

- Manifestations range from enteropathy causing severe malabsorption simulating celiac disease to mild symptoms that overlap with IBS
- Lactose breath testing most common test
  - But requires dietary restriction not appropriate for some patients with eating disorders
- Can disrupt epithelial tight junctions, increasing small intestine paracellular permeability, translocation of endotoxin, and induction of proinflammatory cytokines

SIBO treatment





Atypical AN

"Atypical" AN

- Atypical AN
  - Up to 3% of population (vs 0.1% with AN)
  - 2x death risk
  - Often missed as patients are not visibly/medically "underweight."
  - Represent a rising proportion of patients in treatment centers
    - Stice E, Marti CN, Rohde P. Prevalence, incidence, impairment, and course of the proposed DSM-5 eating disorder diagnoses in an 8-year prospective community study of young women. J Abnorm Psychol. 2013 May;122(2):445-57. doi: 10.1037/a0030679. Epub 2012 Nov 12. PMID: 23148784; PMCID: PMC3980846.

Why do we even say AN vs AAN? (Grr)

From my perspective…**weight stigma**

We don't identify "atypical binge eating disorder" vs. "typical binge eating disorder" based on weight

We don't have a cutoff for other mental illnesses that cause medical complications, like "atypical self-harm" or "atypical substance use disorder" based on an arbitrary criterion

AN vs. AAN

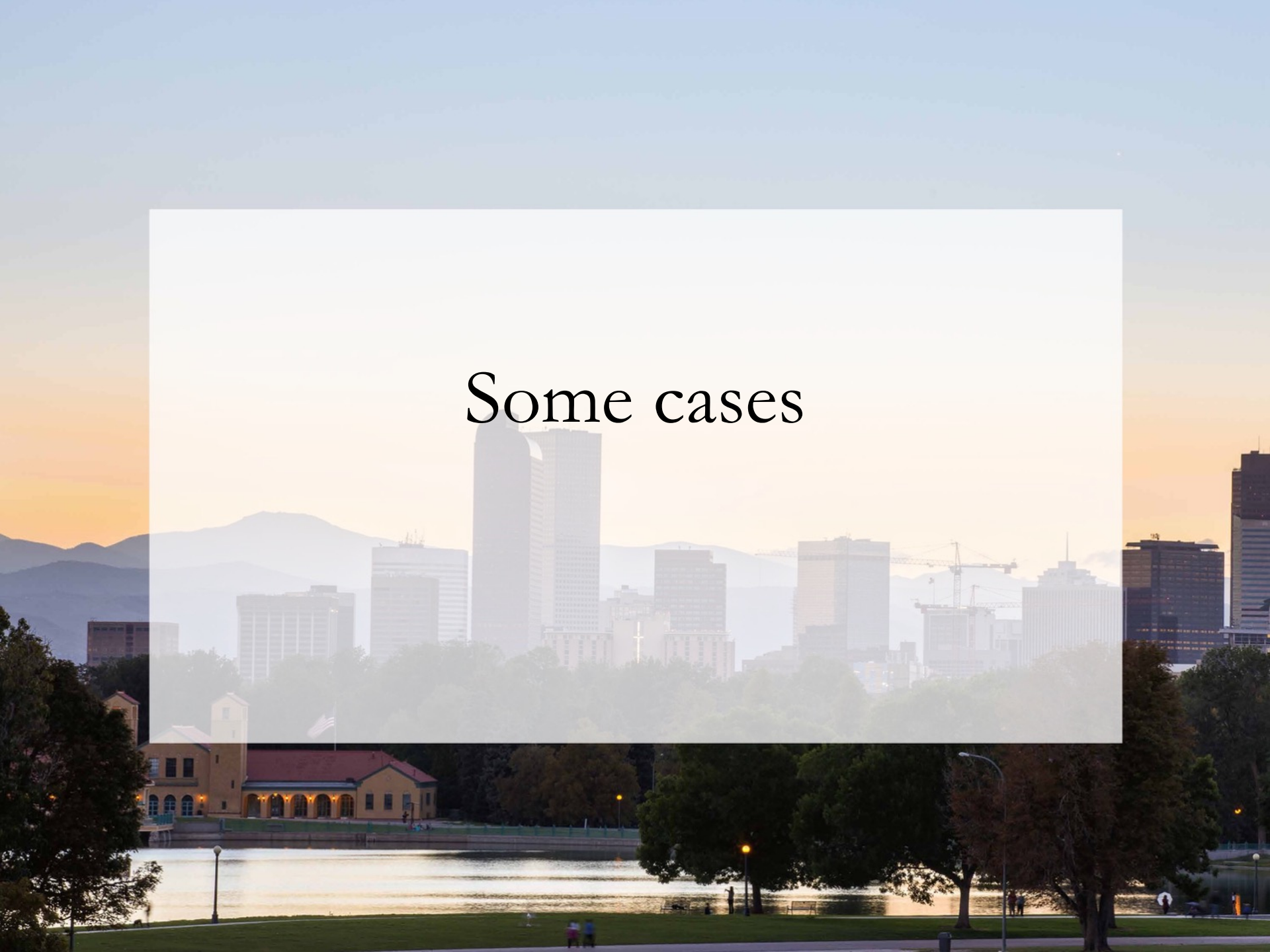
All the medical complications seen in AN are seen with equal frequency and severity in AAN

(Except bone density loss and maybe hypoglycemia)

Rastogi R, Rome Md ES. Restrictive eating disorders in previously overweight adolescents and young adults. *Cleve Clin J Med.* 2020;87(3):165-171. doi:10.3949/ccjm.87a.19034

AN vs AAN

- In adolescents with restrictive EDs, **total weight loss and recent weight loss better predictors than admission weight** of medical complications
  - Whitelaw M, Lee KJ, Gilbertson H, Sawyer SM. Predictors of Complications in Anorexia Nervosa and Atypical Anorexia Nervosa: Degree of Underweight or Extent and Recency of Weight Loss?. *J Adolesc Health*. 2018;63(6):717-723. doi:10.1016/j.jadohealth.2018.08.019



Some cases

Normal puberty

- Jack is an 11-year-old boy
- He's always been at 80th percentile weight, 50th percentile height, congruent with family body type
- Over the last year, he was hungry all the time, his weight surged, and he expressed self-consciousness about his body, especially his belly
- Mom expresses concern to the pediatrician at well visit, and pediatrician acknowledges he's now 90th percentile weight and (kindly) advises food restraint, talking openly with both Jack and mom about the future medical risks related to high weight

Normal puberty

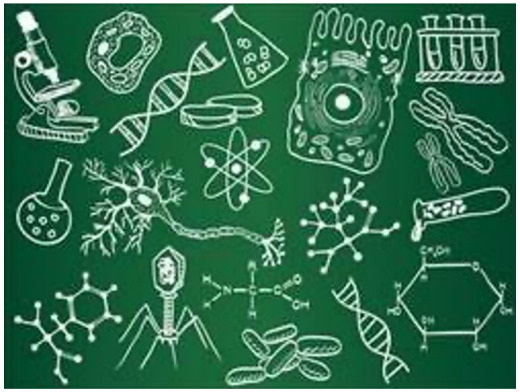
- Jack is determined. He cuts out sugar for Lent and starts to lose weight. People praise him. His list of off-limits foods grows rapidly, and he starts counting calories and exercising every day without fail
- After four months, his weight is lower than it was at his 9-year-old well visit, even as he's not formally "underweight." Grandparents and uncles tell him he's looking great
- He's at the 40^{th0}%ile on the growth chart when mom brings him back in, now quite worried that he won't break any of his food rules

Normal puberty

- The pediatrician astutely diagnoses atypical anorexia nervosa and refers him to a great dietitian who works with him on adequate fueling
- Then seemingly overnight, Jack starts bingeing on all the sweets in the house, and his weight rises rapidly over two weeks. He feels out of control and ashamed and tells his mom he must have been right: he was addicted to sugar

Restricting to bingeing

- **Biological** (but not universally seen)
- Can be scary/shame-inducing for patients
- A great reminder of why consistent, non-scarcity eating is best
- Jack is at risk of diagnosis-switching to binge eating disorder
  - Key concept: Rebellion and restriction drive bingeing



Sugar addiction

There's no such thing (again: biology)

PS: EVERYONE needs carbs. 50% of our energy should come from carbs!

Puberty and weight

- Multiple studies show that **dieting among adolescents leads to greater weight gain**
  - The less you eat, the slower your metabolism goes, the more likely natural set-point weight rises (biology)
- Body dissatisfaction is the number one predictor of early-onset eating disorders
  - Child/parental/doctor worry about surge in weight must be delicately managed
  - Discussions should center around moderation, expectations, and body compassion/patience

Goldschmidt AB, Wall MM, Choo TJ, Evans EW, Jelalian E, Larson N, Neumark-Sztainer D. Fifteen-year weight and disordered eating patterns among community-based adolescents. Am J Prev Med. 2018 January; 54(1):e21–e29. doi: 10.1016/j.amepre.2017.09.005

Rohde P, Stice E, Marti CN. Development and predictive effects of eating disorder risk factors during adolescence: implications for prevention efforts. Int J Eat Disord. 2015 March; 48(2):187–198. doi: 10.1002/eat.22270

Jack

- At that original 11-year-old visit, the pediatrician instead asks open-ended questions about how Jack is feeling about his hunger, his body, his relationship with food and movement, and what conversations he hears about weight (kids are inundated): doctors carry great power to reinforce weight stigma or apply a scientific lens to healing it
- She shows him his growth curve, that adolescence is a time for major gains in height and weight, and gaining in the tummy is totally normal
- If it appears he's been using food to self-soothe or for other reasons than satisfying hunger, or if perhaps food insecurity is present or there's big emotional upheaval in the family, ideally refer for support and warmly reassure that eating enough throughout the day is best for his body, never dieting or denying himself some of what he wants
- Psychoeduation for Jack and mom that this is a risky time for disordered eating to start, that weight and body will be healthiest with no lifetime dieting, and to pay more attention to habits than body shape/size if possible

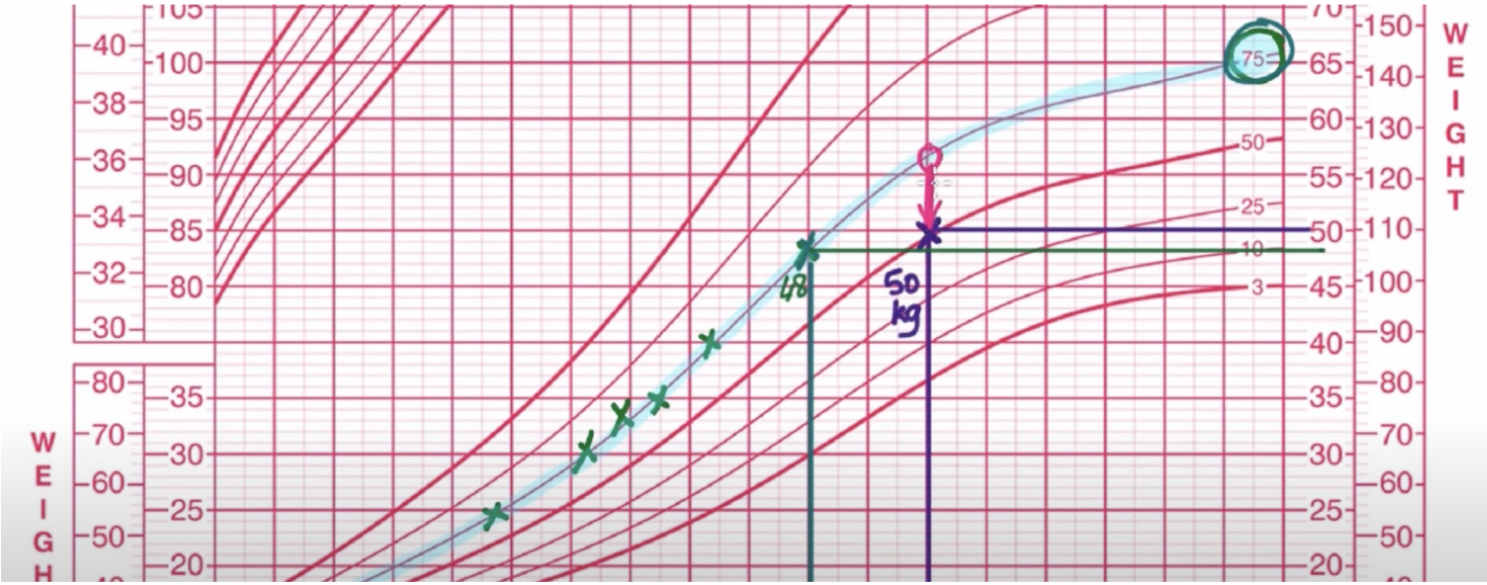
Weight restoration goals?

- Valentina is a 10-year-old girl who began puberty early
- She's always been 60th percentile for weight on the growth curve
- Her pediatrician sees her weight has risen quite a lot over the last year and warns her and her mother to make significant changes. There is a strong family history of diabetes, so Valentina and her mom are worried
- Within 6 months, Valentina has lost a lot of weight and fears food and weight gain, even though she's not formally underweight

Weight restoration goals?

- She's tired, can't concentrate, has constipation, feels cold all the time, is very anxious with OCD behaviors as well, and has stopped growing taller
- The pediatrician recognizes all these symptoms come from AAN and makes the diagnosis, referring the patient to an excellent therapist and dietitian
- But everyone wonders: what should her target weight be? Does she "have to" return to the 95%ile she was before she started losing weight? Or the 60th she was before she hit puberty?

Target weight?



- For the most part, get kids back to their most usual percentile on the growth curve
  - Do **not** under-restore, or medical and psychological issues may persist or become chronic: identify tendency for internalized thin bias
- **Google "Eva Musby Growth Chart" for a fabulous 8 min video**
- **Great blog: https://www.feast-ed.org/when-in-doubt-aim-higher-what-i-wish-id-known-about-target-weights-in-recovery/**

Valentina

- These months of recovery are very difficult for the parents who have to oversee every meal, or she will not eat enough
- They can't believe she needs more than 3000 kcal/day to gain 1-2 lbs a week
- However, almost like magic, when she gets to the 70th percentile, her parents say, "I have my child back." She's happy, creative, more relaxed, and her body distortions really improve

Resuming athletics

- Camila is a 17-year-old with AAN has been receiving good treatment and is doing better
- She has been a soccer player since age 6, and it's a big part of her identity
- However, over-exercise has also played a big role in her eating disorder
- She'd like to get back to soccer in recovery, and her team wonders when this is safe?

Return to play

- My experience is that movement (with exceptions) makes recovery sustainable
- Saying "don't move…you'll burn calories" only reinforces the ED belief about the role of exercise

Debunking old myths

- We were told “eat less, exercise more and you will lose weight and be healthier”
- Remarkable study on average daily energy expenditure in modern nomadic Hadza people

» Pontzer H, Raichlen DA, Wood BM, Mabulla AZ, Racette SB, Marlowe FW. Hunter-gatherer energetics and human obesity. PLoS One. 2012;7(7):e40503. doi: 10.1371/journal.pone.0040503. Epub 2012 Jul 25. PMID: 22848382; PMCID: PMC3405064.

Camila

- As soon as Camila proves she can fuel consistently as recommended by RD, is gaining weight (if needed), and has improvement in VS, we have a few options:
  - One team member (RD, therapist, MD) takes lead on guiding movement parameters, getting everyone's thoughts first
  - Start 1-2 days a week of mindful, sport-appropriate movement that builds strength and endurance. Consider 5 min walk/5 min run followed by process in a journal and plans to process in person with therapist. Vary movement, strength/cardio/stretch
  - Keep following medically with accountability to team for food, rest, and movement
  - Advance permissions as able/desired
  - OR allow coach to oversee this and keep coach in loop with team
  - **Identify that re-embracing athletic identity, the fun of resuming a loved sport, and living one's values are all rewards of recovery**


Purging physiology

Case: Jorge

- Jorge is a 19-year-old Latino male college wrestler
- He's been through countless seasons of dropping weight to make his weight class, from significant caloric restriction to laxative abuse to "sweating it out"
- Each season, he's felt worse about himself and dreads the start of competition and practice
- This year, he's starting out ten pounds heavier, having grown an inch since last season, but his coach still wants him to compete in the same weight class

Case: Jorge

- Jorge wants to compete. His scholarship depends on his sport participation. He'll do whatever he has to do
- He hears guys in the locker room talking about low carb diets and Paleo diets, and he tries them, only to end up feeling exhausted and weak at practice. He finds himself comparing his body to theirs. He doesn't want to be thin. He wants to be "ripped," with low body fat
- Ravenous, depleted, exhausted, he starts bingeing at night and doing extra exercise during the day to "undo" those consumed calories. He purges by vomiting increasingly as well

Case: Jorge

- When Jorge tries to stop purging, he swells up and gains weight, reinforcing his belief that stopping is dangerous
- His muscles feel increasingly cramped
- Sex drive and function radically decrease
- The coach and trainer know about the diets and at least some of the behaviors and encourage them

Harm

- **Males often feel unseen and underrepresented**
  - They may not even know they have an eating disorder because their disorder may not be about thinness at all, but about health, muscularity, body privilege, living up to standards
  - And yet: their eating disorders are no less life-altering and potentially deadly

Male mortality

- Swedish study evaluated over 600 male patients who received hospital care for anorexia nervosa over 27 years
  - Male patients with anorexia nervosa and any other psychiatric comorbidity had a **death rate nine times higher** than healthy peers
  - Males with anorexia nervosa who abused alcohol were more than **11 times as likely to die** of natural (disease-associated) causes, and more than **35 times as likely to die** of unnatural (accident, overdose, or suicide) causes
    - Kask J, Ramklint M, Kolia N, Panagiotakos D, Ekbom A, Ekselius L, Papadopoulos FC. Anorexia nervosa in males: excess mortality and psychiatric co-morbidity in 609 Swedish in-patients. Psychol Med. 2017 June; 47(8):1489–1499. doi: 10.1017/S0033291717000034

Male mortality

- In a mixed-gender acute hospital setting in Japan, **adjusted odds ratio of mortality for male patients was two times greater** than female patients with AN
- This is replicated in multiple studies
    - Edakubo, S., & Fushimi, K. (2020). Mortality and risk assessment for anorexia nervosa in acute-care hospitals: a nationwide administrative database analysis. BMC Psychiatry, 20, 19. https://doi.org/10.1186/s12888-020-2433-8


R

Channing Tatum says he almost didn't film 'Magic Mike 3' because 'you have to starve yourself'

Lauren Edmonds Feb 19, 2022, 10:29 AM

Zac Efron doesn't think his 'Baywatch' body is 'really attainable'

By **Lisa Respers France**, CNN

Updated 5:00 PM ET, Wed September 7, 2022

MORE FROM CNN

Explore world events throu
collectible art, events, and

Efron said he's speaking out about it now, not to complain, but to let people know "how devastating the process was for him, and how long the ill effects of his training lasted."

"I started to develop insomnia and I fell into a pretty bad depression, for a long time. Something about that experience burned me out," said Efron, who added it took six months for him to start to feel better. "I had a really hard time recentering. Ultimately they chalked it up to taking way too many diuretics for way too long, and it messed something up."

What Is ‘Bigorexia’?

A social media diet of perfect bodies is spurring some teenage boys to form muscle dysmorphia.

theblacktrunks Trunks · 2021-2-13

DELISH KISSES & V-DAY WISHES! 🥰 Get satisfied with **@bangenergy**
Delish Strawberry Kiss! 0 sugar, 0 calories & 0 carbs! **#bangenergy**
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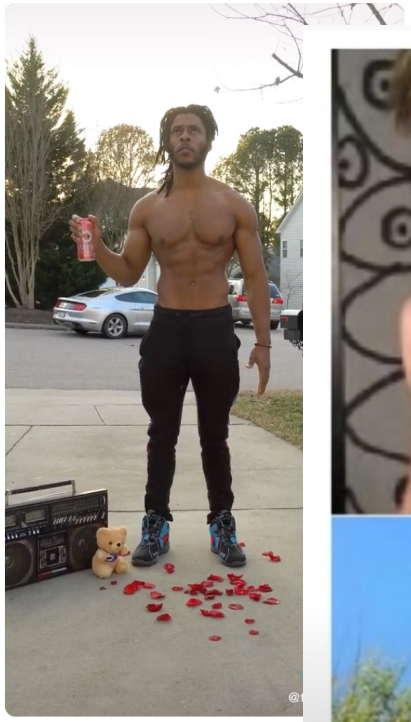
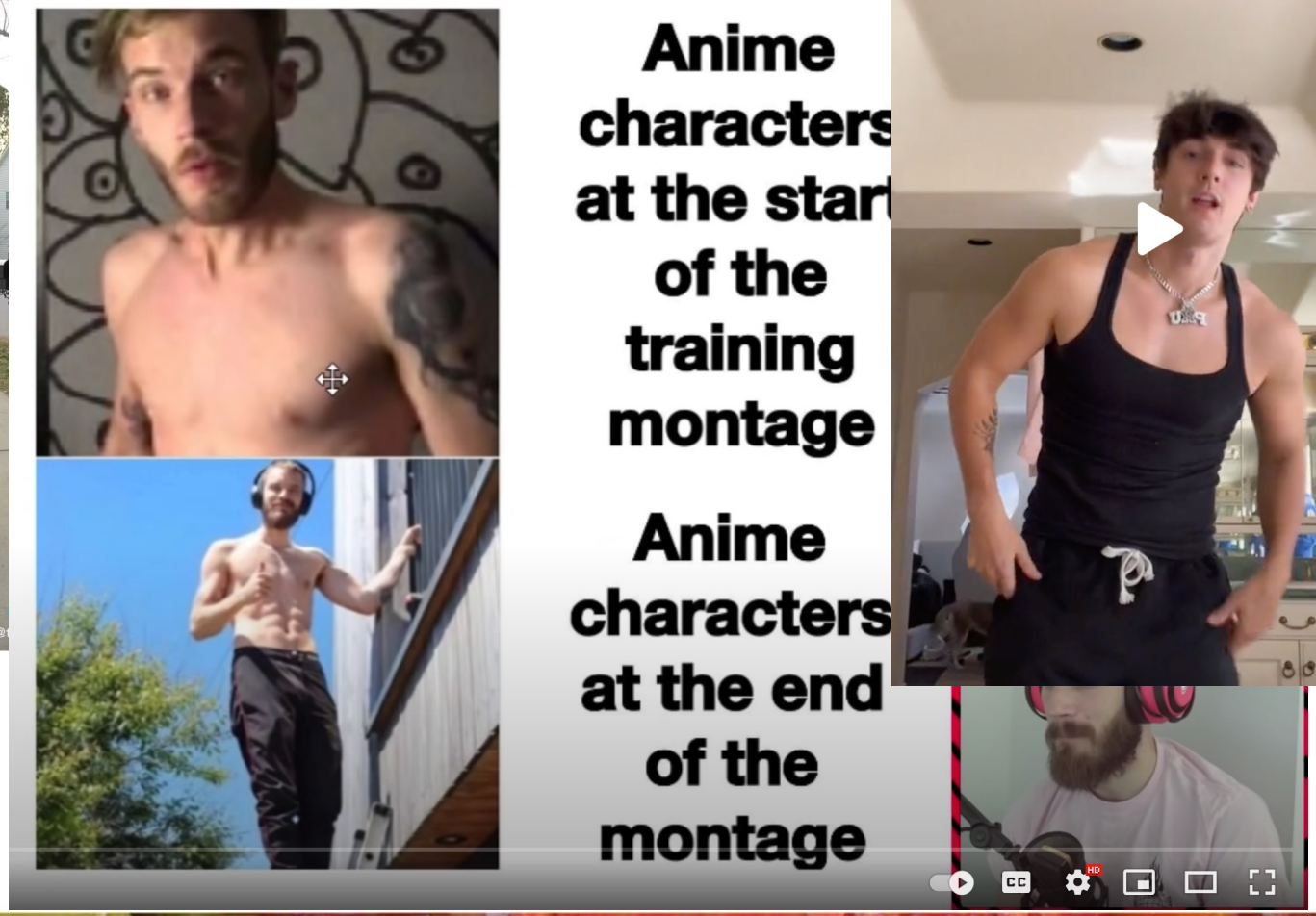
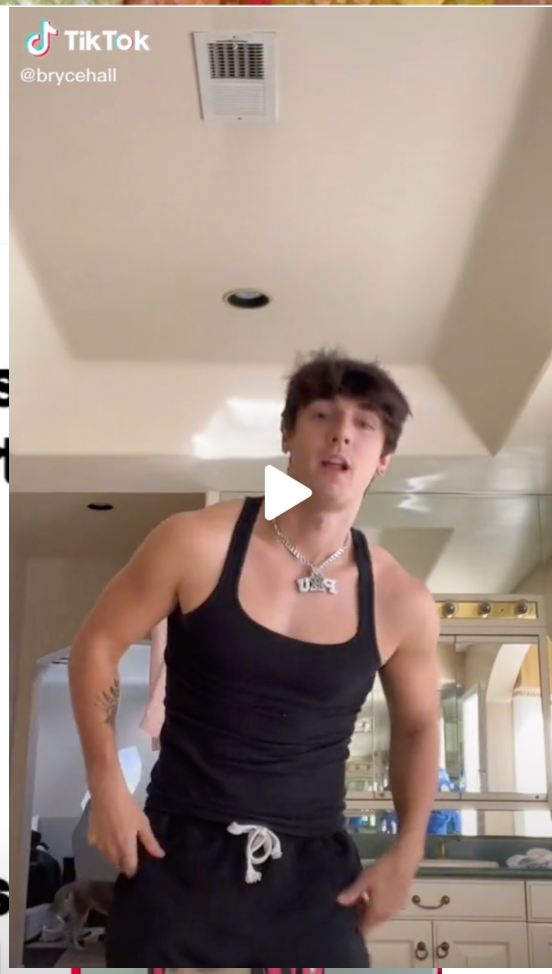
♫ original sound - Trunks







Matt McGorry
May 22, 2020 · 35 min read

Illustration: Eleanor Taylor

THIS IS US

My Journey Toward Radical Body Positivity

Actor and activist Matt McGorry shares how he lost himself to diet culture — and what it took to come home

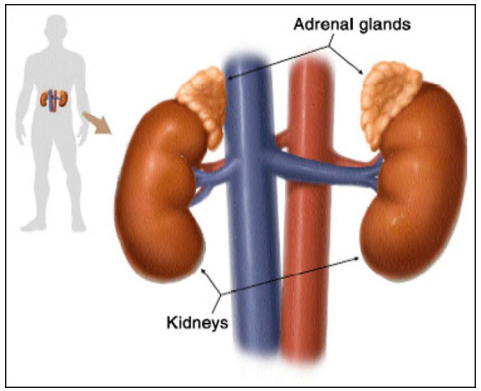
Purging: Why the rebound edema?

Secondary hyperaldosteronism

Bahia A. Mascolo M. Gaudiani JL. Mehler PS. PseudoBartter syndrome in eating disorders. Int J Eat Disord 2012;45(1): 150-3

Pseudo-Bartter syndrome

- Key points to treat
  1. Stop purging
  2. **Slowly** rehydrate
  3. Treat the hormone over-production until body down-regulates



Spironolactone 25 mg daily for 2 weeks if mild

For those with laxative abuse, much harder task. May need 50-100 mg a day and a slow taper over 6 weeks. Will still see weight surge.

Jorge passes out and goes to the hospital

- Potassium: 2.5 mEq/L
  - **Hypokalemia**
- Bicarbonate: 35 mEq/L
  - **Contraction metabolic alkalosis**
- BUN/Cr: 40/1.3
  - **Azotemia and acute kidney injury**

Treating Jorge

- Let's imagine Jorge can remain outpatient, is able to contract NOT to purge
  - No purging at all
  - Stay off the scale (body will still change with simple rehydration)
  - Oral potassium 20 mEq three times daily, check potassium levels twice a week then once weekly
  - Spironolactone 25 mg a day for 2-3 weeks
  - No salt restriction, but maybe max 2-3 L fluids/day
  - No athletic participation until cleared

Case: Mira

A medical diagnosis that may be a game-changer in eating disorder treatment

Mira

- Mira is a 12-year-old girl who had her first period at age 10
- Since she was a toddler, she's had chronic constipation and was a fussy eater who only wanted to eat certain simple foods
- When she gets embarrassed, she flushes deeply over her chest and face
- She tends to get random hives on her skin,is very sensitive and easily gets rashes, and once she had an allergic reaction to an unknown trigger, requiring an ED visit as her throat got tight
  - Dermatologists and allergists have no idea what causes these rashes and reactions

Mira

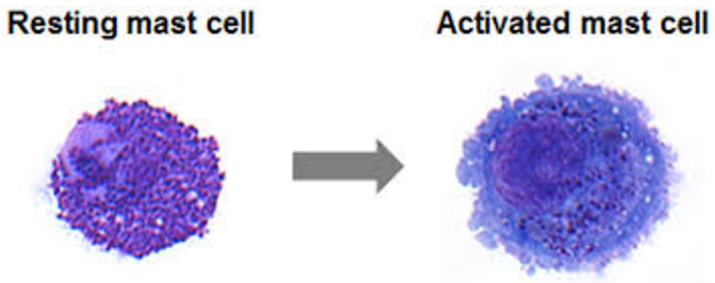
- When Mira's period started, she felt like something went wrong with her. Her health just didn't feel right. Every time she ate, her stomach burned, and she felt sick.
- Periods have been really hard on her with mood swings two weeks a month and heavy bleeding that causes severe cramps.
- She started to lose weight after getting her period, and people around her praised her for this
- Food restriction started to become even more tempting

Mira

- No one's ever asked her, but she gets a drippy nose and sore throat every time she eats, and frequently experiences headaches. She always feels better during the cooler times of year. She also feels sick for several days after air travel
- She doesn't like being in the sun or heat because she feels so tired, and her hands and feet get swollen
- When she gets hurt, people often tell her she's overreacting or too sensitive because of her strong pain response
- Mira starts withdrawing from sports and friendships as she feels more tired and unwell, and by age 12 she has been diagnosed with anorexia nervosa

Mast cell activation syndrome (MCAS)

- A pleiomorphic syndrome in which histamine + over a thousand other mediators are released when they shouldn't be by mast cells, resulting in patients having symptoms described in the cases that range from very mild to life-threatening
- Variably severe
- Mast cell is also a significant driver of Postural Orthostatic Tachycardia Syndrome (POTS), hyperadrenergic subtype, and these patients won't get better unless MCAS is addressed



MCAS

- Phenomenal review article, even if pregnancy not at all relevant to the patient (next image from this article)

The Journal of Obstetrics and Gynaecology

Taylor & Francis
Taylor & Francis Group

Journal of Obstetrics and Gynaecology

ISSN: 0144-3615 (Print) 1364-6893 (Online) Journal homepage: https://www.tandfonline.com/loi/ijog20

Mast cell activation syndrome in pregnancy, delivery, postpartum and lactation: a narrative review

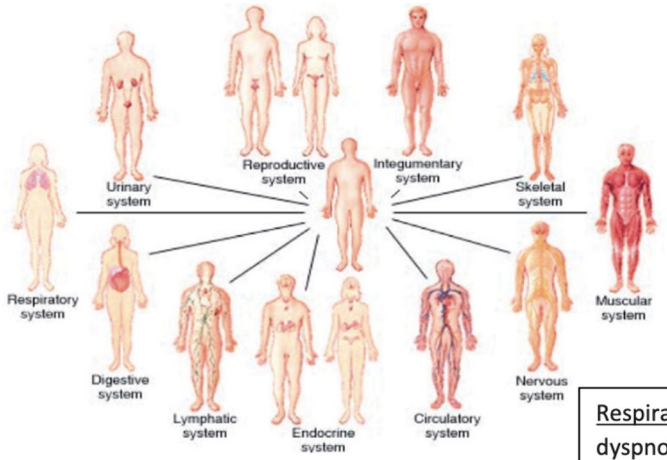
Shanda R. Dorff & Lawrence B. Afrin

Neurologic: headaches, syncope, presyncope, neuritis, neuropathies, paresthesias, spasms, tremors, seizures, pseudoseizures, dysautonomia, dystonia

Constitutional: fatigue, malaise, thermal dysregulation, flushing, pallor, appetite change, weight change, environmental sensitivities

Ophthalmologic: vision changes, eye irritation, dry eye or increased tear production, conjunctivitis, blepharospasm, light sensitivity

Cardiovascular: syncope, presyncope, blood pressure changes, orthostasis, palpitations, dysrhythmias, chest discomfort, arterial spasm, infarction, atherosclerosis, aneurysms, haemorrhoids, varicosities, Raynaud's, arteriovenous malformations, migratory oedema



Nasal/Sinus: congestion, rhinorrhoea, sinus pressure, postnasal drip

Otologic: otitis media, otitis externa, hearing changes, tinnitus, otosclerosis, middle ear effusion, hyperacusis

Endocrine: blood pressure instability, increased adrenalin, blood sugar lability

Respiratory: bronchitis, pneumonitis, dyspnoea, cough, wheezing, obstructive sleep apnoea, pulmonary hypertension

Dermatologic: hair changes, rashes, urticaria, poor wound healing, hives, persistent erythema, fingernail/toenail changes,

Gastrointestinal: pain, irritable bowel, indigestion, reflux, nausea, vomiting, diarrhoea, constipation, organ inflammation, malabsorption, ascites, electrolyte abnormalities, abnormal liver function tests, dyslipidemia, vitamin deficiencies

Musculoskeletal: chronic low back pain, myositis, fibromyalgia, arthritis, joint laxity/hypermobility, osteoporosis or osteopenia, osteosclerosis

Genitourinary: inflammation, delayed puberty, endometriosis, chronic kidney disease, flank pain, dysuria, hydronephrosis, infertility, miscarriage, erectile dysfunction, dyspareunia, decreased libido, menorrhagia, dysmenorrhoea, dysfunctional uterine bleeding, postpartum haemorrhage

Hematologic: easy bruising, splinter haemorrhages, haemangiomas, angioedema, anaemia or polycythaemia, increased ferritin, leucocytosis or leukopenia, thrombocytosis or thrombocytopenia, thromboembolic disease, prolonged bleeding

Psychologic: Mood changes or disorders (depression, anxiety, bipolar, attention deficit with or without hyperactivity, post-traumatic stress disorder, panic), memory difficulty (brain fog, difficulty with word finding), sleep disturbance

Lymphatic: intermittent adenopathy which may or may not be tender and vary in location; biopsy reveals reactive or atypical non-specific lymphoproliferative disorder; left upper quadrant discomfort with or without splenomegaly

Figure 3. Common symptoms across the MCAS population. Most of the symptoms in the individual MCAS patient are a subset of the symptoms shown here. The disease is extremely heterogeneous, and the full symptom profile in the individual MCAS patient is virtually unique.

New blog series MCAS & EDs

Blog Posts by Gaudiani Clinic Team Members & Guests

Jul 28, 2022

Mast Cell Activation Syndrome (MCAS) & Eating Disorders Blog | Part Two: Diagnosing MCAS

It was really exciting to hear back from so many of you after posting Part One (What is MCAS, and why should people with eating disorders care?). People replied from all over the world having realized this pertains to them or their loved ones. Most people's outreach ended with, "So how do you diagnose it, and how do you treat it?" Part Two will address key issues in MCAS diagnosis, and Part Three will start to consider treatment. As the blog series continues, I'll try to address specific crossover populations, like those with postural orthostatic tachycardia syndrome (POTS) and MCAS, those with median arcuate ligament syndrome (MALS) or superior mesenteric artery (SMA) syndrome and MCAS, and more…

Read More →

Jul 21, 2022

Mast Cell Activation Syndrome (MCAS) & Eating Disorders | Part One: What is MCAS, and why should clinicians and people with eating disorders care?

Mast Cell Activation Syndrome (MCAS) & Eating Disorders | Part One: What is MCAS, and why should people with eating disorders care?

By Jennifer L. Gaudiani, MD, CEDS-S, FAED

I have been planning to start writing this blog for about the past three years, which was a year or two after I started seeing patients with mast cell activation syndrome (MCAS). But it took me this long, and my recent attendance at a great MCAS conference with all the key clinicians, to feel I had enough expertise to write about it. I'm still learning every single day! To my knowledge, there aren't any other blogs out there about MCAS and eating disorders, but I'm totally convinced these two issues go together, sometimes in development of and for sure in maintaining an eating disorder (ED). Time to shine light on this and improve care!

Read More →

Prevalence

- Thought perhaps to affect 17% of the population!
- In my (highly specialized) population of patients, I probably have about 30-40/panel of 100 patients with MCAS
  - Jennings S, Russell N, Jennings B, et al. The Mastocytosis Society survey on mast cell disorders: patient experiences and perceptions. *J Allergy Clin Immunol Pract*. 2014;2(1):70-76. doi:10.1016/j.jaip.2013.09.004
  - Afrin LB, Self S, Menk J, Lazarchick J. Characterization of Mast Cell Activation Syndrome. *Am J Med Sci*. 2017;353(3):207-215. doi:10.1016/j.amjms.2016.12.013

Diagnosis

- Two schools of thought
  - "Only those who have specific measurable blood/urine abnormalities can be diagnosed"
  - "Anyone with a reasonable number of symptoms can be empirically started on MCAS treatment, and if they feel better, they have a mast cell issue"
    - Even better, catch positive labs/GI biopsy with CD117 stain
- I favor the latter, as the former approach misses myriad patients

Treatment

- **#1, 2, 3: AVOID TRIGGERS**:
  - There's no such thing as a truly low-histamine diet (esp as there are over 1000 mediators released from the MC, not just histamine), and prescribing restrictive eating is dangerous for those with eating disorders.
    - But the RD has to listen to the patient's lived experience and allow for certain foods to be off the list until MCAS is more controlled. Goal is least restrictive eating tolerated
  - Reducing heat/sun exposure
  - Avoiding alcohol and sometimes NSAIDs
  - Reducing exposures to fumes/strong smells, stress mitigation
  - Avoiding FD&C dyes (yep, sounds orthorexic but a necessity) including in medications!
    - Schofield JR, Afrin LB. Recognition and Management of Medication Excipient Reactivity in Patients With Mast Cell Activation Syndrome. Am J Med Sci. 2019 Jun;357(6):507-511. doi: 10.1016/j.amjms.2019.03.005. Epub 2019 Mar 22. PMID: 31126513
  - Each patient will learn their own triggers; believe them

Treatment

- Treatment involves many possible options and depends on patient response…many don't need a prescription!
  - **Starting out:**
    - An H1 blocker BID-QID (over the counter Claritin, Allegra, Xyzal, Zyrtec)
    - H2 blocker BID (over the counter Pepcid or rx cimetidine)
    - Mast cell stabilizer like herbal Quercetin 500-1000 mg bid
    - Singulair 10 mg bid (but BIG risk for severe exacerbation of depression/suicidality zafirlukast
  - **More usually needed:** Add other mast cell stabilizers
    - Oral cromolyn ramping up to 10-20 ml QID 30 min before meals & bedtime
    - Compounded ketotifen 1-4 mg bid: over 2 mg a day can be fatiguing
    - Low dose naltrexone (4.5 mg daily) can be helpful
    - Benzos can be helpful, depending on safety/appropriateness for patient
  - **For severe cases:**
    - Xolair injections monthly for "chronic idiopathic urticaria"
    - Budesonide 9 mg daily (s/p r/o IBD via EGD/colo)
    - Imatinib mesylate (Gleevec)
    - Hydroxyurea 500 mg daily to bid esp for bone pain

PS

- Many of the treatments for MCAS are over the counter and have very low risk profiles, so non-medical providers who feel this applies to their patients can urge the patient to bring it to their PCP, but if resistance/no PCP/long delay, empower patients to consider if they want to try initial treatments and watch for triggers!

Case conclusion

- Mira feels hopeful when diagnosed with MCAS ("not all in my head")
- She requires 4 different medications before she feels a lot better, but then the difference is huge
- Her bloating, edema, and rashes are gone.
- Periods aren't fun but are no longer a subject of dread and anxiety
- Her mood is much better
- Her eating disorder is much easier to treat now that food doesn't make her feel like she's getting the flu each time
- Only gets flushed/hives now once or twice a summer when also severely stressed. She no longer has pain or nausea with eating

What Actually Leads to Best Health Outcomes

Data to help you resist diet culture

Phenomenal review article

Gaesser GA, Angadi SS, Obesity treatment: Weight loss versus increasing fitness and physical activity for reducing health risks, iScience (2021), https://doi.org/10.1016/j.isci.2021.102995

iScience

Review

Obesity treatment: Weight loss versus increasing fitness and physical activity for reducing health risks

Glenn A. Gaesser[1,*] and Siddhartha S. Angadi[2]

Cardiorespiratory fitness!

- **Low cardiorespiratory fitness is more hazardous than high BMI**
    - Barry, V.W., Caputo, J.L., and Kang, M. (2018). The joint association of fitness and fatness on cardiovascular disease mortality: a meta-analysis. Prog. Cardiovasc. Dis. 61, 136–141

Physical activity

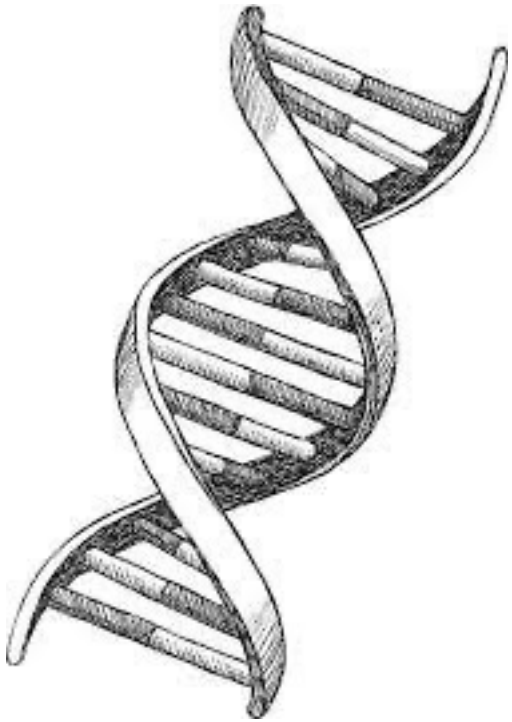
- **Increasing physical activity**
  - 15-50% reduction in all-cause mortality and cardiovascular mortality (Gaesser, 2021)
- **Improving muscle strength**
  - 10-20% reduction in all-cause and some cancer mortality with 30-60 minutes of strength work a week (more not better)
    - Momma H, Kawakami R, Honda T*, et al.* Muscle-strengthening activities are associated with lower risk and mortality in major non-communicable diseases: a systematic review and meta-analysis of cohort studies. *British Journal of Sports Medicine* Published Online First: 28 February 2022. doi: 10.1136/bjsports-2021-105061

Physical activity

- **Physical activity associated with equal improvements in risk markers** compared with weight loss
  - Blood pressure
  - Glycemic control (aerobic and resistance training)
  - Lipids
  - Vascular function
    - Joris, P.J., Zeegers, M.P., and Mensink, R.P. (2015). Weight loss improves fasting flow-mediated vasodilation in adults: a meta-analysis of intervention studies. Atherosclerosis 239, 21–30

Exercise isn't for weight loss

- In Oslo Ischemia Study, those who improved physical activity had no change in BMI but:
  - 34% lower all-cause mortality
  - 60% lower risk of stroke
    - Prestgaard, E., Mariampillai, J., Engeseth, K., Erikssen, J., Bodegard, J., Liestol, K., Gjesdal, K., Kjeldsen, S., Grundvold, I., and Berge, E. (2019). Change in cardiorespiratory fitness and risk of stroke and death. Stroke 50, 155–161
- **How someone looks as a result of exercise is mostly about genetics**



Cost reductions and fitness

- US Veterans Exercise Testing Study
  - Annual health costs for moderately-to-highly fit men with obesity **$10,000-$27,000 lower** than health costs for least fit men in normal BMI category
    - de Souza de Silva, C.G., Kokkinos, P., Doom, R., Loganathan, D., Fonda, H., Chan, K., De Araujo, C.G.S., and Myers, J. (2019). Association between cardiorespiratory fitness, obesity, and health care costs: the Veterans Exercise Testing Study. Int. J. Obes. (Lond) 43, 2225–2232

Sustainability

- In Finnish Diabetes Prevention Study
  - **Twice as many participants were able to achieve the activity recommendation** (120 min/week) as were able to achieve the weight loss goal (>5% initial body weight)
    - Tuomilehto, J., Lindstrom, J., Eriksson, J.G., Valle, T.T., Hamalainen, H., Ilanne-Parikka, P., Keinanen-Kiukaanniemi, S., Laakso, M., Louheranta, A., Rastas, M., et al. (2001). Prevention of type 2 diabetes mellitus by changes in lifestyle among subjects with impaired glucose tolerance. N. Engl. J. Med. 344, 1343–1350

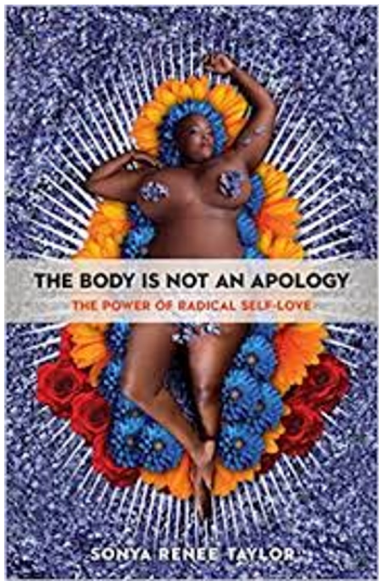
Studies show diets don't work

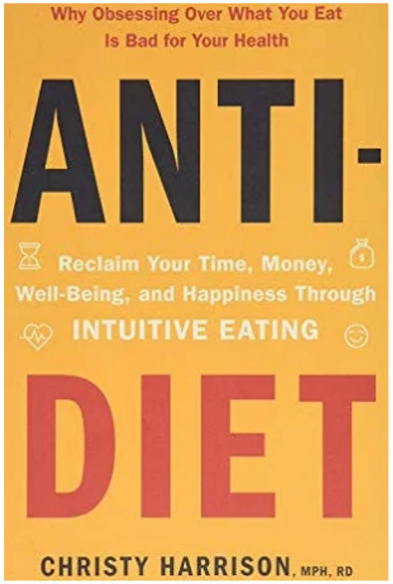
- **Meta-analysis of weight loss studies**
  - 8 lb difference from control groups after 1 year
  - 5.4 lb difference after 3 years
    - Singh, N., Stewart, R.A.H., and Benatar, J.R. (2019). Intensity and duration of lifestyle interventions for long-term weight loss and association with mortality: a meta-analysis of randomised trials. BMJ Open 9, e029966
- Without medication or surgery, most people who lose weight by dieting regain it, plus more

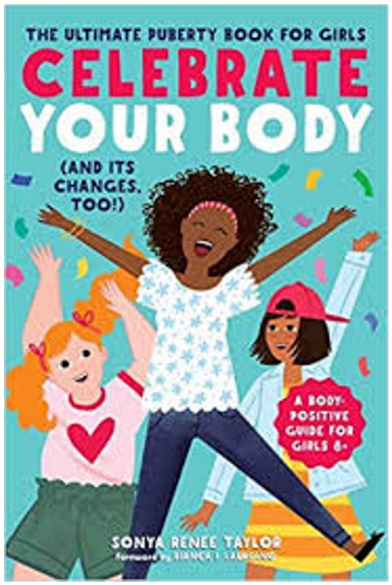
For health, focus on strength and fitness, not body shape or size

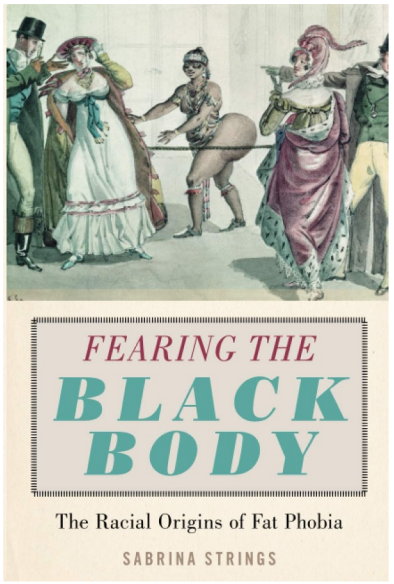
A few more great resources

Wonderful books (and podcasts)









Taylor, Sonya Renee. The Body Is Not an Apology. 2nd ed., Berrett-Koehler, 2021. Front Cover.

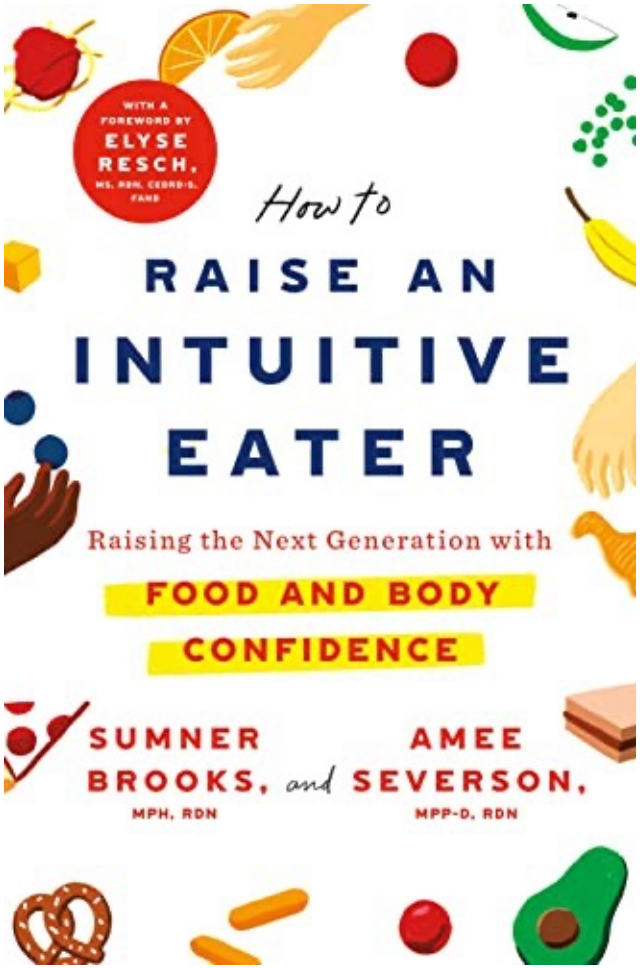
Harrison, Christy. Anti-diet : reclaim your time, money, well-being, and happiness through intuitive eating. Little, Brown Spark, New York, 2019. Front Cover.

Taylor, Sonya Renee. Celebrate Your Body (and Its Changes, Too!): The Ultimate Puberty Book for Girls: A Body-Positive Guide for Girls 8+. Callisto Media, New York, 2018. Front Cover

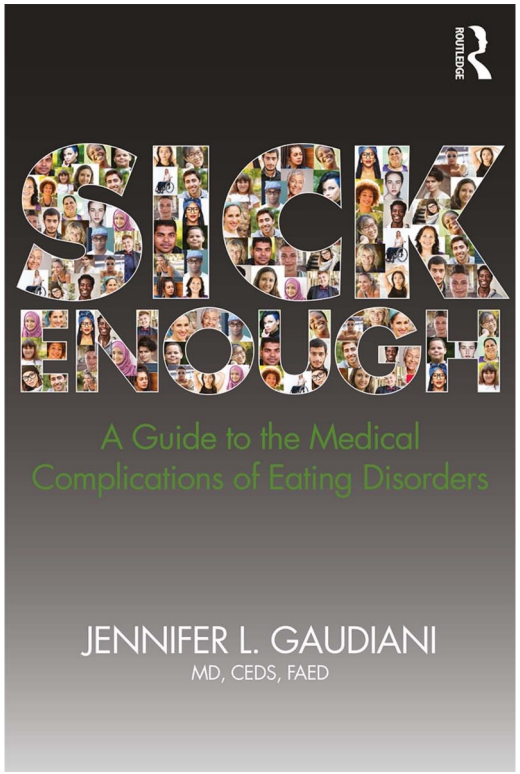
Strings, Sabrina. Fearing The Black Body: The Racial Origins of Fat Phobia. New York University Press, New York, 2019. Front Cover

Brilliant "Poodle Science" Video from ASDAH (Association for Size Diversity and Health)

THE best book for parents/kids/food



My book



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Thank you!

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