Striving for a Healthy Microbiome for Optimal Health

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All Diseases Begins in the Gut - Hippocrates

Objectives

- Explain what is the gut and roles of the gut
- Explain how the brain and gut are connected
- Understand how gut bacteria works and why it is crucial for overall health
- Better understanding which foods hinder gut bacteria
- Discuss which foods help the gut bacteria flourish
- Explain what is a leaky gut?
- What to look for when choosing a probiotic
- Lifestyle changes to implement to right away to improve gut health and overall health

The Gut



Small Intestine

- MVP of the gut
- Accounts for 20 30 feet of an average adult GI tract
- Where all the magic happens! (digestion, nutrient absorption)
- Need help from pancreas and gallbladder for enzymes that are secreted to the s. intestine via specialized ducts
- Internal walls of s. intestine have structures called villi (fingerlike) – purpose is to increase surface area
- More surface area = more nutrient absorption





Roles of the Gut

- **Food Digestion** converts food into usable energy
- Nutrient absorption take nutrient from food, absorb them and deliver them to other systems in the body (macronutrients and micronutrients) – absorption happens in small intestine
- Waste disposal Undigested unused food residue moves into your large intestine. Bacteria in your large intestine turn residue to feces by removing water from it.
- Immunity- over 80% of body's immune cells are in the digestive system. Connect to the gut mucosa the lining of the intestinal wall. In addition to immune cells the gut is home to trillions of good bacteria that play a key role in a healthy immune function. Diet is a direct influence on the bacteria in your gut. Wrong foods = overgrowth of bad bacteria this imbalance hinders gut to create immune cells

The Connection between the Brain and the Gut

- Feeling queasy or uneasy in an uncomfortable situation
- Butterflies in your stomach when you are at job interview
- Heart beats faster when you are scared, nervous
- All examples of how the gut and the brain communicate with each other. Digestion begins in the brain (taste, touch, smell,)
- Gut feelings are real after all!

The Vagus Nerve

- This nerve is the longest nerve and has braches to multiple organs in your chest and abdomen
- It's the communication highway between your gut and brain
- Before you eat nuerotransmitters (chemical messengers) to your gut via the vagus nerve: secrete saliva, gastric juices, muscle contractions
- Vagus nerve influences heart rate, BP and breathing
- Vagus nerve responds to stress also other emotions "gut feeling" scared, anxious
- Helps activate the fight or flight response "fight" mode reduces production of gastric juices and limits blood flow to the gut.



Enteric Nervous System (ENS)

- "Second brain" Made up of 100 million nerves that help control digestion.
- Housed in gut's lining and sends signals back and forth to your brain during digestion
- Gut health and the signals the ENS sends to your brain impact mood and play a role is disease.
- Serotonin is a neurotransmitter which directly influences mood, pleasure, appetite, muscle function, about 95% of it is found in your gut
- Scientists are unlocking some of the mysteries of how gut influences health of our immune system, mental health and overall health.
- Gut health is something we have control over. Better understanding of diet + lifestyle choices that affect the gut = you to take control of your health!

Signs of a Healthy Gut

- Meal leaves your stomach anywhere from 2-5 hours
- Bowel movements (1-3 a day) only a few minutes, soft stool with no pain and little effort
- 75% of your stool is water 25% is old cells, mucus, fibre and bacteria
- Passing gas 10-18 times a day

Signs of an Unhealthy Gut

- We all experience occasional GI upsets (bloating, excessive gas, heart burn) usually when we travel, eat different foods, illness
- When these issues become normal, this can be a problem
- Other issues manifest outside the GI tract include autoimmune disorders, mental health, skin disorders, vitamin deficiencies
- Bloating too much air can be caused by eating fast, gum, carbonated drinks with straw, stress and anxiety, swallowing too much air.

Signs of an Unhealthy Gut Cont'd

- Excessive gas: beans, lentils, Brussels sprouts, cabbage, sorbitol, fructose, dairy, whole grains
- Bacterial overgrowth (SIBO) excessive bloating refined carbs
- Vitamin deficiencies needed for health of gut microbes: Potassium common with unhealthy guts. B12 and iron – needed by brain neurotransmitters. Mg absorption and Iron (Anemia)

Common Digestive Disorders and Diseases

- GERD acid reflux
- Ulcers overactive pathogenic bacteria
- Gallstones cholesterol and salt deposits
- Constipation hemorrhoids, toxin accumulation, colorectal problems
- Diverticulitis pouches that form in walls of GI tract
- □ IBS 3x a month suffer between constipation and diarrhea
- □ IBD Chron's and ulcerative colitis chronic inflammation
- Stress suppresses growth of good bacteria and promotes e.coli (bad bacteria)

What is Microflora???

- "gut bugs", "gut flora", "human microbiome" = microbes (yeasts, bacteria, parasites) that live in the gut.
- Outnumber our cells 10:1
- Tens of trillions of these bugs live in our GI tract
- We need these bugs produce enzymes to help us absorb nutrients and communicate with our nervous, immune and circulatory system
- Microbiota are like body guards the more we have the better!

Good and Bad Bacterial Flora





The various strains help to regulate levels of other bacteria in the gut, modulate immune responses to invading pathogens, prevent tumour formation and produce vitamins.



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Several types inhabit the human gut. They are involved in the production of vitamin K2 (essential for blood clotting) and help to keep bad bacteria in check. But some strains can lead to illness.



CAMPYLOBACTER

C Jejuni and C coli are the strains most commonly associated with human disease. Infection usually occurs throught the ingestion of contaminated food. ENTEROCOCCUS FAECALIS A common cause of post-surgical infections.



LACTOBACILLI Beneficial varieties produce vitamins and nutrients, boost immunity and protect against carcinogens.



CLOSTRIDIUM DIFFICILE Most harmfull following a course of antibiotics when it is able to proliferate.

Where do we get Micobiota?

From our mom's!

- When baby's pass through vaginal canal they pick up all kinds of microbiomes
- C-section, babies get through mom's and dad's skin
- Breastmilk filled with micorbiome to help babies build microbiota
- carbohydrates in breast milk "teach" specific bacteria in infants on how to respond to pathogens. Not clear if man made formula can perform this task
- Microbiota help make 2 important vitamins: B and K

Poor Microbiome = Leaky Gut

- Bad bacteria > good = poor intestinal immunity
- Leads to inflammation and affects the brain-gut axis leading to depression, anxiety, stress IBS and IBD (all are related)

What is Leaky Gut?

- Last 30 years research has found that the cells in the intestinal wall are held together by tight junctions (doors that like to remain closed)
- Allow for small particles released in the circulatory system can be good or bad.
- Tight junctions communicate with certain proteins to keep intestinal lining intact.
- 2 roles of Gut
- 1. absorbing nutrients
- 2. keep pathogens in check

The Role of Zonulin

- In 2000, Dr. Alessio Fasano and his team found that there is a protein that is responsible in opening and closing the tight junctions = ZONULIN
- SIBO and Gluten will open tight junctions and release material to the bloodstream. If you have a healthy immune system this is not a problem.
- Elevated levels of zonulin in those that have an autoimmune disease.

The Role of Zonulin



Examples of Autoimmune Disease

- Celiac disease
- Type 1 diabetes
- IBS
- MS, rheumatoid arthritis
- Asthma
- Crohn's Disease
- Lupus
- Eczema, psoriasis, anemia

Need to take a probiotic to help heal gut

How Do We Imbalance our Gut?

- *Genetics
- Antibiotics, antacids
- Travel
- Poor diet
- Stress
- Leaky gut damaged cell walls allowing undigested food to enter bloodstream and harmful bacteria in gut
- Food intolerances
- Nature deprivation spend time outdoors!

Common Food Triggers and Gut Imbalance

- Simple carbs and sugar promote pathogen overgrowth
- Mass produced nonorganic animal products modern conventional farming practices use low-dose antibiotics and low quality livestock feed
- Genetically modified organisms (GMOs): Can contain harmful chemical residues from farming practices

The Problem with Western Diets

- Too many processed sugars, high carb, low fibre
- Ultra processed food and denatured food products stripped out of their original nutrients and replaced with salt and sugar
- Artificially boosted flavors distort taste buds and sensory receptors in the brain = addicted to these flavors (artificial sweeteners)
- Need to cut them out to retrain taste buds
- Trans fat promote disease, gut bacteria imbalance, compromised immune function, man made fats that requires heavy metal to change its function



The Problem with Western Diets – Lack of Fibre

- Lack of fibre carbohydrate that body does not digest. 2 types of fibre
- Soluble dissolves in water helps to lower cholesterol and blood sugar (peas, oats, apples, carrots, barley psyllium)
- Insoluble does not dissolve in water promotes healthy stool formation (nuts, seeds, beans, most veggies, whole grains)
- Fibre ferments in lower GI tract and produces short chain fatty acids which may prevent colorectal cancer – we all need more fibre!

The Problem with Western Diets – Sodium

- Sodium chloride not all sodium is created equal. Crystal salt and sea salt occur in nature are different than sodium chloride "table salt"
- Sodium chloride heavily processed no trace minerals, which can lead to water retention, HBP, and circulation troubles can lead to gallstones or kidney issues
- In nature, sodium chloride has trace elements such as potassium, zinc, magnesium and calcium - need to be mindful of what kind of salt we are using.
- We need sodium for basic cell function stay clear of refined salt and choose Celtic sea salt and Himalayan – which have minerals that help get iodine absorbed more efficiently.
- Have "Dirty salt"

The Problem with Western Diets – <u>Gluten and Grains</u>

Gluten sensitivity is widespread

- For those who have celiac gluten does not stay in Gl tract it "leaks" into bloodstream
- Refined grains disrupt balance of gut pathogenic bacteria thrives on refined grains – weaken white blood cell produced in the intestine.
- If you can tolerate, add whole grains such as quinoa, oats, buckwheat and wild rice – chia, hemp, flax and sesame

The Problem with Western Diets – Legumes

- High in fibre, protein and carbs
- Can be an issue for many, causing inflammation
- The seed is designed to be resilient legumes are not designed to be digested or absorbed
- Legumes have lectins found in all plants and designed to defend against pests and microorganisms. If you have legumes – soak and pressure cook them!
- Phytates found in legumes and grains and can disrupt the gut, interferes with absorption and since they bind to essential minerals and prevent intestinal wall from absorbing them
- If you have a healthy gut legumes may not be an issue at all GI does need to work a lot harder to produce enzymes to digest legumes using vital nutrients in the process

The Problem with Western Diets – Dairy

- Genetics and gut microbes
- If people's gut are healthy milk can be tolerated fine
- Amino acids are not broken down properly and gut allows antigens to be released to the body and can lead to inflammation
- If you notice skin issues, bowel, bloating, or breathing issues phase it out of diet
- If you do have dairy have organic, full fat, stick to fermented dairy such as kefir and yogurt

The Problem with Western Diets – Acrylamides and GMOs

- Cancer causing compound found in overcooked grains and potatoes (found in processed foods)
- High temps change the chemical makeup of the food very hard to digest - sits there and becomes toxic - irritates lining of the gut and alters gut bacteria
- GMOs altered natural state to be more pest and drought resistant – less nutrition and have high levels of glyphosate (herbicide) has been shown to attack health gut microbes



MHAT DO I EAT išiši

- Whole foods, fruit and vegetables garlic and leeks powerful prebiotic called inulin promote good bacteria
- High fibre healthy gut bacteria thrive on fibre
- Bananas, artichokes, broccoli, cabbage, kale, cauliflower and berries, Brussels sprouts, collard greens, arugula, watercress
- Gluten free whole grains in moderation
- Protein eggs, poultry, fatty wild fish, meat ideally grass-fed and antibiotic free
- Fermented dairy yogurt, kefir
- Fermented foods sauerkraut, kimchi, miso
- Healthy fats nuts, seeds, avocados, coconut oil virgin coconut oil is 50% lauric acid body converts it to monolaurin and fights pathogenic bacteria

Gluthathione

- Molecule in the body that helps enzymes work in body detoxification process. Powerful antioxidant by neutralizing free radical damage and stopping cell damage
- Made up of fatty acids that contain sulfur acts like a mop
- Involved in methylation process molecule gives another molecule a set of atoms when this happens healing happens – explain how genes get affected by our diet and lifestyle choices

How to Boost Glutathione

- Garlic, onions, cruciferous veggies (contain sulfur compounds) as well as arugula, radishes, watercress, kale and mustard greens
- □ Foods rich in vitamin C, E, B6 an B12
- Minerals are selenium, folate, (beef liver)
- □ 30 min of exercise daily
- Eliminate toxic substances from our diet and Immediate environment (smoking) to keep glutathione work its magic

Fermented Foods

- Been around for centuries perseveration
- Contain lactic acid and probiotics
- Helps with digestion replenishes good bacteria increased HCL production
- Probiotics are good but don't come close to the power of food (bacteria in foods and stomach acid)
- Highly bioavailable body can easily absorb nutrients
- Absorb 50-300 x more vit C from fermented cabbage than raw or cooked cabbage
- Calm gut irritation, regulate transit time,
- Olives, kefir, matzoon, lassi, yogurt, cheese, miso, natto, tempeh, kimchi
- Added gradually to avoid bloating 1 tsp per meal

Bone Broth

- Simmer for 24 hours bones and meat filled with amino acids and nutrients that are easily absorbed
- Staple in every cuisine worldwide for thousands of years
- Cheap and good for you utilize every part of animal not just muscle meat – to draw out nutrients in toughest parts of the animal(tendon, ligaments, bones, marrow, knuckles, skin and feet)
- Contains Proline and collagen healthy skin, bones
- **Gelatin** soothe and repair gut lining
- Glycine and sulfur detox, nutrient absorption, help methylation, aid in glutathione production
- **Glucosamine and chondroitin** joint health
- Cysteine powerful antioxidant that boost immune system (chicken bone broth)

Supplements and Probiotics

- A compromised gut lining has a harder time absorbing vitamins and minerals – focus on vitamin A and D – cod liver oil, digestive enzymes
- Food source always better than supplements
- Isolated strains look for supplement that has at least 3 strains: lactobacilla, bifidobacteria, and Bacillus subtilis
- Lactobacilli strains produce lactic acid, lowers pH of mucus membranes so harder for pathogens to thrive
- Bifidobacteria helps immune system and gut lining integrity help absorb vitamin D and iron
- Bacillus subtilis found in soil alleviate allergies and autoimmune symptoms – make digestive enzymes – not permanent in our gut help break down material
- Choose a probiotics that has several strains more diverse the better, for adults take 15 billion probiotic cells for first several months to heal you gut then around 8 billion a day. Keep track.

Probiotic Brands

About VSL#3®

blend consisting of live, freeze-dried lactic acid bacteria and contains 450 billion live bacteria.



The Living Shield[®]

- High potency blend of different bacteria).
- Contains the highest available c bacteria (450 billion live bacteria)
- Helps protect the gastro intestii



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Non-Medicinal Ingredients: Cellulose, hypromellose Ingrédients non médicinaux : Cellulose, hypromellose

Human MicroFlora (HMF) probiotic strains are researchand clinically proven in randomized, double-blind, pl controlled human trials at 25 billion CFU per day. Prop non-pathogenic human-sourced microflora bacterial strai utilized as they have strong epithelial adherence and a na high tolerance to stornach acid.

Lifestyle – Exercise

- GI tract is a muscle, regular movement and moderate exercise help "speed things along" aids with digestion
- Exercise helps body release toxins from sweat
- Endorphins are released stress reliever and boost mood

Lifestyle – Stress

- We need to decompress, exercise, pray, spend a few minutes outdoors – (less stress = more productive)
- Even short periods of stress can upset balance of your gut bacteria
- Stress can prevent you from making enough enzymes for digestion
- Emotional stress makes you feel threatened
- In Flight or Fight digestion takes a backseat and is compromised. Hormones redirect energy to muscle, heart and respiratory
- Chew properly, (20 chews per swallow) don't distract yourself when you have meals – put away your phones!!!!

Lifestyle – Sleep

Often overlooked

- Without sleep your work on diet and exercised can be reversed
- Need 7-9 hours every night
- Chronic sleep deprivation can lead to metabolism issues
- Cell renewal and cell repair when we sleep

Daily Habits for Gut Health

- Quiet time: Meditate, walks in nature, prayer, yoga, start with 10 min
- **Hydrate:** drink 2-3 liters of water daily re-mineralized water
- **Chew:** 20 chews per mouthful
- **Be Mindful:** eat in a calm state and be mindful
- **Exercise:** 30 min a day
- **Sleep:** 7-9 hours a night
- Journaling: write down what brings you joy without the need for another person

Questions?

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