

Eating Your Way to Health
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Women's Mid-Life Health Program
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Saskatoon Sk

Summary of Presentation by

Dr. Louise Gagne: Your Gut: The Foundation for Health, Healing Your Gut

A healthy gut is foundational for the health of the body.

Our microbiome (MB) is a very important part of how our body functions. They outnumber our human cells. There are 10 times as many of them as there are human cells.

Key roles of the digestive system:

1. Absorption of nutrients
2. Protection: keeping out bacteria, toxins and undigested proteins
3. Elimination of wastes; detoxification
4. Provides a home for the microbiome

Absorption: the gut has villi (Tiny fingers sticking out from the inside of the gut tube). And also thousands of microvilli that project off each villi. When the microvilli are flattened out, they will cover 400 m squared surface area. This is a huge surface available for absorbing nutrients.

What do we need for absorption to work best?

- Good nutrition
- Chewing – digestion starts in the mouth as there are enzymes that are secreted in the mouth
- Enzymes
- Hydrochloric acid is secreted from the stomach.
- Bile is secreted from the gall bladder
- A healthy intact intestinal epithelium (brush border)
- For good digestion to take place we need to be in the 'rest and digest' mode of functioning. This is a parasympathetic nervous system dominated state – you feel safe, at ease, not under threat. This is when we can digest best.
- When we are under the sympathetic nervous system dominated state (fight or flight), the functions of the digestive system are suppressed.

Protection: How do we protect unwelcome things from getting through the gut lining?

Tight Junction prevents gap between cells. Our body has a 'customs department' in the bowel that decides what it wants to take in. If you are short of iron, the epithelial cells will allow more iron in. If you have too much iron in the body, they will keep it out.

- If the tight junctions are not working, unwelcome toxins and protein fragments can slide in between the cells and lead to activation of the immune system and inflammation.
- *The mucous layer* helps to keep pathogens (unwelcome organisms) out.
- Our gut protects us by utilizing the GALT or Gut Associated Lymphoid Tissue. This is located just beneath the epithelial layer. It helps to distinguish between friend and foe. Is this a safe thing for the body?

The human microbiome (MB) includes all of the bacteria, protozoa, viruses and fungi that live on us and in us.

The central role of the gut microbiome:

- Influences appetite
- Influences levels of inflammation in the body
- Protects us from pathogens (disease causing organisms)
- Helps to maintain and repair the gut lining
- Helps us to develop "immune tolerance"
- Interacts with our nervous system and our hormonal system
- Produces short chain fatty acids that provide food for the cells that line the digestive tract
- We know that chronic inflammation is one of the drivers of aging and disease. We are more likely to have a heart attack, diabetes, cancer, Alzheimer's disease if there is chronic inflammation in the body.

Obesity and the Microbiome:

- Children born by C-section are more likely to become obese than children born vaginally
- Children given antibiotics in the first 3 years of life are heavier on average than children not given antibiotics
- Fecal transplants from obese mice to lean mice caused the lean mice to become obese with no change in diet
- In humans, obesity is associated with changes in the relative abundance of the two dominant bacterial divisions: the *bacteroidetes* and the *firmicutes* resulting in an increased capacity of the gut to harvest energy (calories) from the food we eat.
- Changes in the microbiome may have something to do with the obesity epidemic in the world.
- When we have more firmicutes compared to bacteroidetes we have a higher tendency to be obese.

Diet Drinks: Research has shown that diet drinks (artificial sweeteners) alter the MB in the gut and increase the bacteria that harvest more calories. Rather than promoting weight loss, diet drinks and other forms of artificial sweeteners can contribute to weight gain.

Personality Traits even seem to be transmitted via fecal transplants in mice. Timid mice became more adventurous after receiving stool transplants from adventurous mice.

The Human Microbiome Project launched in 2008 by the National Institutes of health in US:

- Took 242 healthy US volunteers
- More than 5000 samples were collected from various body sites
- All the DNA from the bacteria was analyzed
- They found that:
 - More than 10,000 microbial species occupy the human ecosystem
 - Microbes contribute more genes responsible for human survival than the human's own genes
- The ultimate goal is to understand how changes in the microbiome are associated with human health and disease

Dysbiosis – microbiome is out of balance

- If we have dysbiosis, this leads to increased intestinal permeability. This increases immune activation which leads to inflammation. Inflammation increases intestinal permeability and the cycle goes on.
- How do we end up with dysbiosis?
 - Antibiotics
 - Chronic stress
 - Poor diet
 - Medication i.e. acid blockers
 - Alcohol
 - Infections

When things go wrong with the gut:

- Malabsorption of important nutrients
- Over absorption of calories which can lead to obesity
- GI symptoms – heartburn, gas, bloating
- Allergies and food intolerances (intestinal permeability issue)
- Increased risk of diseases seemingly unrelated to the digestive system i.e. psoriasis and migraine headaches

Altered gut microbiome is now linked to:

- Obesity
- Type 1 and 2 diabetes
- Non-alcoholic fatty liver
- Cardiovascular disease
- Crohn's disease, ulcerative colitis, irritable bowel syndrome
- Depression
- Autoimmune conditions i.e. rheumatoid arthritis
- Psoriasis

- Autism
- Gallstones
- Allergies

Healing Program to Restore Gut Health – the 5 R program

1. Remove
2. Replace
3. Re-inoculate
4. Repair
5. Restore and rebalance

- **Remove:**

- The first step is a carefully planned elimination diet
- A comprehensive stool analysis may also be done and if pathogens are found these can be treated. However, these tests are not available locally, they are expensive and it is *usually* not necessary.
- In most cases, much can be accomplished by simply doing an elimination diet
- IgG serum tests for food intolerances: have not been found to be consistent or reproducible and they are not recommended
- **Elimination diets** remain the gold standard for identifying food intolerances (what foods you should remove)
 - Prepare well for this
 - Common food intolerances: dairy, gluten, soy, peanuts, shellfish, eggs, corn, beef/pork, oranges
 - Be screened for celiac disease before you begin an elimination diet
 - Step 1 Planning Phase
 - Choose a 2-3 month time period when most meals can be prepared from scratch
 - Avoid embarking on an elimination diet while travelling or during a holiday season
 - Stock up on allowed foods and try a few new recipes
 - Plan sample menus for breakfast, lunch, supper and snacks
 - Become familiar with allowed foods and foods to avoid
 - Step 2 Elimination Phase
 - Foods on the 'avoid list' are completely eliminated from the diet for 3 or more weeks
 - Typical foods on the 'avoid list' are: dairy products, gluten containing grains, citrus fruits, corn, eggs, shellfish, tree nuts, tomatoes, eggplant, potatoes, peppers, grapes, beef/pork, mushrooms, food additives/coloring, MSG (monosodium glutamate)

- Sample menu:
 - Breakfast: toasted rice bread with pumpkin seed butter, banana, blueberries, tea
 - Lunch: homemade chicken or vegetable soup with rice or rice noodles, salad, apple
 - Supper: wild salmon with ginger/garlic sauce, quinoa, steamed vegetables, coconut milk ice cream with frozen raspberries
 - Snack: trail mix made from dried fruits (cranberries, apricots) and seeds (sunflower, pumpkin, hemp) and rice crackers
- After the 3 weeks – note any changes in health during this time
- Step 3 Challenge Phase
 - Carefully re-introduce one food or food group at a time
 - New food eaten in moderation twice a day for 2-3 days (eat each food individually for a few days)
 - Symptoms are recorded in a diary
 - If adverse response wait at least 2-3 days before introducing the next food.
- Step 4 Review and Diet Planning Phase
 - See doctor to analyse the response to the elimination diet
 - Foods that caused symptoms can be eliminated completely OR they can be eliminated for 3-6 months and then re-introduced. It may be possible to eat them occasionally without difficulty.
- **Replace:**
 - There may be some components to add in, often just temporarily, while the system is healing and getting back into balance
 - Supplements may include:
 - Digestive enzymes – betaine hydrochloride (not if you have ulcers!)
 - Swedish bitters, vinegar, fiber
 - Dandelion root, artichoke (to increase flow of bile)
- **Re-inoculate – try to have a healthier more diverse microbiome**
 - Prebiotic rich foods feed the MB (have fibers the MB like to feed on) – asparagus, bananas, onions, garlic, cabbage, beans, bran, artichoke hearts, root vegetables, apples
 - Prebiotic supplements – inulin, fructooligosaccharides, psyllium
 - Probiotic rich foods (live, friendly bacteria) – Kefir, yogurt, sauerkraut (traditionally made with salt not vinegar)
 - Probiotic supplements – look for a variety of lactobacilli and bifidobacteria
- **Repair – optimize nutrition**
 - Choose a variety of unprocessed whole foods with abundance of fruits and vegetables
 - Nutrients important for gut health: Vitamins A, D, C, E, zinc, pantothenic acid
 - Lower /decrease inflammation – eat lots of fruits and vegetables – 8-10 servings per day
 - Use extra virgin olive oil as your primary cooking oil
 - Eat walnuts, hemp seeds, flax, and chia seeds

- Eat fatty fish such as salmon 3-4 times per week or fish oil capsule (1200 mg of EPA or DHA/day)
- Most people need to increase Omega 3 and decrease Omega 6
- Lower intake of red meats
- L-glutamine and Phosphatidylcholine (lecithin – egg yolks, soy beans) repair the gut lining
- **Re-balance: the gut brain connection**
 - The enteric nervous system is often called your ‘second brain’
 - Stress can directly:
 - Alter gut motility
 - Decrease gut blood flow
 - Increase gut permeability
 - Increase pain sensation
 - Increase secretion of gastric acid
 - Modify gut MB
 - Increase inflammation
 - Stress can aggravate reflux (GERD), peptic ulcers, irritable bowel syndrome and inflammatory bowel disease
 - Need to spend more of our lives in the rest and digest mode, not the fight or flight mode of stress
 - Mind body therapies
 - Meditation
 - Biofeedback
 - Breath work
 - Self-hypnosis
 - Guided imagery
 - Mindful eating practices

Summary:

- Eat a varied whole food diet
- Eat a plant based diet
- Eat high fiber foods, especially soluble fiber
- Eat foods with live organisms – kefir has a broader range of bacteria than yogurt, yogurt, sauerkraut (traditionally made), Kombucha (fermented tea)
- Prebiotics and probiotics
- Don’t be too clean
- Avoid use of antibiotics, use only when absolutely necessary
- Work on reducing your chronic stress

Resources:

Recommended Reading:

1. The Good Gut by Justin and Erica Sonnenburg
2. Some of my best friends are germs by Michael Pollan NYT magazine may 15, 2013
3. The Inside Tract by Dr. G. Mullin and K. Swift
4. Why Zebras don't Get Ulcers by R. Sapolsky
5. Meditation for Optimum health by Jon Kabat-Zinn and Andrew Weil
6. American Gut Project www.americangut.org