Multi-Systemic Implications of the Micro-Flora (Human Micro-Biome)

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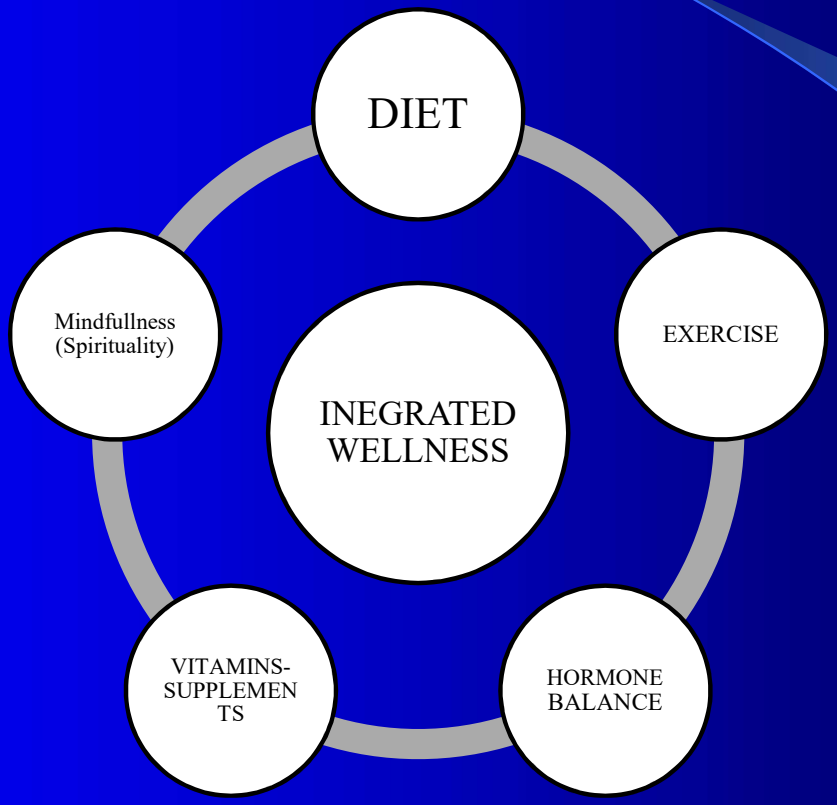
Basic Issues…

- Open your EYES so that you may SEE…
- Open your EARS so that you may HEAR…
- Open your MIND so that you may contemplate New Ideas…

Integrated Wellness…



I have heard it said that…

- - by age 20, you have the skin you have inherited.
- - by age 40 you have the skin you deserve.
- - by age 60 you have the skin you have earned.

Human Microbiome

- Microbiome-the mixed community of microbial cells and the genes they contain
- In early 2010 a group from the EU published its census of microbial genes in the human digestive system
  - 3.3 million genes from more than 1000 species about 150 times the 20-25,000 genes in the human genome
- Bacterial cells outnumber human cells 10:1

Signs of Unhealthy Digestion

- Acid reflux
- Nasal congestion
- Gas
- Bloating
- Inflammation
- Skin disorders
- Digestive disorders
- Loose stools
- Constipation

Disorders linked to changes in the human microbiome

- GI(IBS, Colorectal CA)
- Depression
- Alzheimer's
- Autism
- Fibromyalgia
- MS
- Diabetes

-Holistic Primary Care, Vol 15, No 3

Probiotics (Friendly Bacteria).

- Human intestine contains 100 trillion living bacteria.
- Comprise 4 pounds of our body weight.
- Friendly (good) bacteria have a positive influence on:
    * Immune System.
    * Digestive System.
    * Vitamin Production.
    * Detoxification.

Destroyers of Good Bacteria..

- Anti-biotics.
- Steroids.
- Chlorinated water.
- Oral contraceptives.
- Antacids.
- High sugar diets.
- Diets high in refined and processed foods.
- Chemotherapy and radiation.

Probiotics and …

- Immune System…60% of immune system resides in the intestines (Peyers patches).
- Digestive System..break down of foods.
- Vitamin production..*L.acidophilus*..produce Vit. B-2-3-6-12, Folic acid, and Vit. K?
- Detoxification..elimination of the wastes by increasing intestinal motility.
- *Skin is the largest organ of elimination.*

H. Pylori

- 1998 Martin Blaser(NYU) Publication:
  - H. pylori benefits the body by helping to regulate levels of stomach acid
  - If the stomach churns out too much acid the, strains of the H.Pylori that contain the cagA gene signals the stomach to tone down the acid production
  - In susceptible individuals there is a defect in the cagA gene thus provoking ulcerations

Blaser 2008 study..

- Ghrelin-tells your brain that the body needs to eat
- Leptin-signals that the stomach is full and no more food is needed
- When you have H. pylori you have a post-prandial decrease of gherlin and when you eradicate the H. pylori you lose this signaling effect…

Blaser-2008 study..

- Study looked at 92 veterans that were treated with antibiotics to eradicate H. pylori..

…….it showed that this group gained more wt. possibly because their ghrelin levels stayed elevated when it should have dropped causing them to feel hungry longer and eat too much..

Multistrain Probiotic Treatment May Eradicate Helicobacter Pylori

- *"Probiotic multistrain treatment may eradicate Helicobacter pylori from the stomach of dyspeptics: a placebo-controlled pilot study," Rosania R, Minenna MF, et al, Inflamm Allergy Drug Targets, 2012 Mar 28;*
- Multistrain probiotic administration shows promise in eradicating H. pylori in dyspeptics with helicobacter pylori (H. pylori). Subjects (n=80) with H. pylori were treated with either a mixture of 8 species of probiotics or placebo for 10 days. Urea breath test (UBT) and H. pylori stool antigen (HpSA) detection were performed after 1 month. 13/40 subjects receiving treatment were H. pylori-negative.
- Controls remained positive for H. pylori. Remaining infected patients received triple therapy.
- Results suggest that adequate supplementation with probiotics might eradicate H. pylori.

Probiotics Effective for Preventing Clostridrium difficile-associated Diarrhea

- *"Probiotics for the prevention of Clostridium difficile-associated diarrhea in adults and children," Goldenberg, JZ, Ma SS, et al, Cochrane Database Syst Rev, 2013 May 31;*
- In this systematic review and meta-analysis of 23 randomized controlled trials, including 4213 patients, probiotic supplementation was found to be safe and effective in the treatment of Clostridium difficile-associated diarrhea.
- Probiotics were found to reduce the risk of CDAD by 64%.

Gut microflora and Neurocognitive conditions

- Univ of Reading,UK
  - Studied microbiomes of 58 autistic children, 12 non-autisitic siblings and 10 non-autistic unrelated children of similar age
  - “the most striking finding was the preponderance of Chlostridium histoliticum in the autistic children compared to their non-autistic siblings or unrelated peers”
  - Clostridia are recognized toxin producers including neuro-toxins
  - Parracho HM, et al. J Med Microbiol. 2005;54(10):987-991

Topic: Multi-Strain Probiotic Supplementation has Significant Impact on Symptom Severity in Patients with Irritable Bowel Syndrome (IBS)

- Reference: "Randomised clinical trial: a liquid multi-strain probiotic vs. placebo in the irritable bowel syndrome - a 12 week double-blind study, "Sisson G, Ayis S, et al, Aliment Pharmacol Ther, 2014 May 11;
- Summary: In a single-centre, randomized, double-blind, placebo-controlled trial involving 186 adult patients (of which 152 completed the trial) with symptomatic IBS, supplementation with multi-strain probiotics was found to have a beneficial effect. Patients received 12 weeks of treatment with the probiotic or placebo (1 mL/kg/day). The primary efficacy measure was the difference in change in the IBS symptom severity score (IBS-SSS) between probiotic vs. placebo at week 12. The mean difference in the IBS-SSS was statistically significant (-35.0).
- The authors conclude, "These results suggest this probiotic confers benefit in IBS and deserves further investigation."

Topic: Probiotic Supplementation During Pregnancy and Infancy May Significantly Reduce the Incidence of Eczema

- Reference: "Comparative probiotic strain efficacy in the prevention of eczema in infants and children: a systematic review and meta-analysis," Mansfield JA, Bergin SW, et al, Mil Med, 2014 June; 179(6): 580-92.
- Summary: In a systematic review and meta-analysis of randomized control trials (from 1945-2013) examining the effects of probiotic usage on eczema development, the evidence supports a strong correlation between probiotic supplementation and the decline in the incidence of infantile and childhood eczema. Participants included were 7 years of age or younger with probiotic exposure in utero or below 6 months of age and were not previously diagnosed. Twenty seven publications describing 16 studies assessing 10 probiotics involving 2,797 participants met the criterion for the analysis. The pooled relative risk of all the studies (0.74) indicated that probiotic supplementation in the first several years of life did have a significant impact on development of eczema.
- The authors conclude, "Probiotic supplements taken during pregnancy and/or during infancy produces a significant decline in the incidence of eczema."

Topic: Probiotics and Antibiotics in the Prevention of Recurrent Urinary Tract Infection

- Reference: "Combination of probiotics and antibiotics in the prevention of recurrent urinary tract infection in children," Mohseni MJ, Aryan Z, et al, Iran J Pediatr, 2013 Aug; 23(4): 430-8.
- Summary: In a preliminary randomized clinical trial involving 85 children with a history of recurrent urinary tract infections (RUTI), treatment with probiotics in addition to antibiotics was found to be safe, and more effective than treatment with prophylactic antibiotics alone, in reducing the incidence of febrile urinary tract infections. Subjects were randomized to 2 groups: Group 1 (n=41; mean age: 8.3 years) received probiotics (Lactobacillus acidophilus and bifidobacterium lactis, 10(7)/ml, as 0.25 ml/kg, three times a day) in addition to prophylatic antibiotics (Nitrofurantoin (1 mg/kg/d)); and Group 2 received prophylactic antibiotics alone - over the course of 3 years. Results found that while incidences of UTI - febrile and afebrile - reduced in both groups without significant differences after 2 years of prophylaxis,the incidence of febrile UTIs was significantly lower in Group 1 (0.00 vs 0.13) as compared to Group 2, in the last year.
- The authors conclude, "The consumption of probiotic and antibiotics in children with RUTI is safe and more effective in reducing the incidence of febrile UTI in comparison to prophylactic antibiotics alone."

Topic: High Dose Probiotics May Benefit Critically Ill Patients

- Reference: "Effect of a Probiotic Preparation (VSL#3) on CardiovascularRisk Parameters in Critically-Ill Patients," Sanaie S, Ebrahimi-Mameghani Me, et al, J Cardiovasc Thorac Res, 2013; 5(2): 67-70..
- Summary: In a randomized, placebo-controlled study involving 40 patients admitted to the intensive care unit (ICU), supplementation with a high-dose probiotic (VSL #3) for a period of 7 days was found to be associated with significant reductions in levels of serum triglycerides and high-sensitivity C-reactive protein (a marker of inflammation), and increases in HDL-cholesterol levels, as compared to levels found in the group who received a placebo. No significant different in total cholesterol or LDL-cholesterol levels were found.
- These results suggest that supplementation with a high-dose probiotic may benefit critically ill patients by reducing inflammation and benefiting the lipid profile.

Topic: Irritable Eye Syndrome: Role of Subclinical Inflammation and Effects of Probiotics and Other Nutritional Supplements

- Reference: "Irritable eye syndrome: neuroimmune mechanisms and benefits of selected nutrients," Feher J, Pinter E, et al, Ocul Surf, 2014 April; 12(2): 134-45;
- Summary: In a prospective, open-label, phase I/II randomized controlled clinical trial involving 40 subjects affected by ocular dysesthesia and hyperesthesia and comorbid enteral and anxiety-depression symptoms, supplementation with a composition containing probiotic lysate, in addition to vitamins A, B, D and omega-3 fatty acids, was found to be more effective at significantly decreasing counts of WBC and lymphocytes and monocytes, as well as IL-6 and TNF-alpha, as compared to a 'control' group that received supplementation with the vitamins and omega-3 fatty acids, but not the probiotics, over a period of 8 weeks.
- The authors conclude, "This proof-of-concept study suggested that subclinical inflammation may be a common mechanism connecting ocular, enteral, and anxiety/depression symptoms, and supplements affecting dysbiosis may be a new approach to treating this syndrome."

Topic: Probiotics May Help Alleviate Childhood Constipation

- Reference: "The effect of probiotics on childhood constipation: a randomized controlled double blind clinical trial," Sadeghzadeh M, Rabieefar A, et al, Int J Pediatr. 2014;
- Summary: In a randomized, controlled, double-blind clinical trial, supplementation with probiotics was found to have dramatic effect on young subjects after just one week of supplementation, with a lessening of fecal incontinence and abdominal pain, and by the end of the 4 week study, probiotics were associated with improved consistency of defecation. For 4 weeks, subjects (48 children between the ages of 4-12 years) were given either supplementation with probiotics (lactulose plus Protexin) or lactulose plus placebo, daily. A significant weight gain was observed at the end of the 1st week in the treatment group as well as a significant lessening of fecal incontinence and abdominal pain. However by the fourth week, the continued lessening of fecal incontinence and abdominal pain was insignificant, but the frequency and consistency of defecation improved significantly.
- **The authors conclude, "This study showed that probiotics had a positive role in increasing the frequency and improving the consistency of defecation by the end of the 4th week."**

The Dynamics of the Human Infant Gut Microbiome in Development and in Progression toward Type 1 Diabetes.

- Harvard, Massachusetts General Hospital, along with those from the DIABIMMUNE Study Group have identified a correlation between changes in gut microbiota and the onset of type 1 diabetes in the largest longitudinal study of the microbiome to date.
- ***In the participants who developed diabetes during this period, the team observed a 25% drop in the number of distinct species present in the microbiome one year prior to the onset of the disease.***
- In addition, this population shift included a decrease in beneficial bacteria as well as an increase in opportunistic bacteria that are known to promote inflammation.
- ***These findings indicate further evidence of a link between gut inflammation and type 1 diabetes.***
- Source: Aleksandar D. Kostic, Dirk Gevers, Heli Siljander, Tommi Vatanen, Tuulia Hyötyläinen, Anu-Maaria Hämäläinen, Aleksandr Peet, Vallo Tillmann, Päivi Pöhö, Ismo Mattila, Harri Lähdesmäki, Eric A. Franzosa, Outi Vaarala, Marcus de Goffau, Hermie Harmsen, Jorma Ilonen, Suvi M. Virtanen, Clary B. Clish, Matej Orešič, Curtis Huttenhower, Mikael Knip, Ramnik J. Xavier. The Dynamics of the Human Infant Gut Microbiome in Development and in Progression toward Type 1 Diabetes. Cell Host & Microbe, 2015;

AFTER DRINKING A CAN OF DIET COKE

DID YOU KNOW?

"Findings from a variety of studies show that routine consumption of diet sodas, ***even one per day***, can be connected to higher likelihood of heart disease, stroke, diabetes, metabolic syndrome and high blood pressure, in addition to contributing to *weight gain*." Susan E. Swithers, a professor of psychological sciences and a behavioral neuroscientist.

1 FIRST 10 MINUTES

TRICKS YOUR TASTE BUDS & ATTACKS YOUR TEETH

The phosphoric acid attacks the enamel in your teeth, while the artificial sweeteners like aspartame hit your system. Aspartame may trigger taste receptors and trick your body into thinking it has just processed sugar.

2 20 MINUTES

CAN SWITCH ON FAT STORAGE MODE

Like regular Coke this can trigger insulin, which sends your body into fat storage mode.

Data from a number of studies, including the Nurses' Health Study and the Health Professionals Follow-up Study also reported greater risk of type 2 diabetes, high blood pressure and heart disease.

Also some data indicates those who consume artificially sweetened

INCLUDING & NOT LIMITED TO COKE ZERO & OTHER DIET SODAS WITH SIMILAR INGREDIENTS

3 40 MINUTES

CAN CAUSE ADDICTION

The potentially deadly combination of caffeine and aspartame creates a short addictive high similar in the way cocaine works. Excitotoxins are released which may exhaust your brain by overstimulating it's neuroreceptors, especially if consumed on a regular basis.

4 60 MINUTES & BEYOND

CAN DEPLETE NUTRIENTS, MAKE YOU HUNGRY & THIRSTY FOR MORE

Unlike the small amount of satisfaction you get from regular coke your body may still crave sweets. This makes you likely to reach for another soda, or worse, some other junk food you consider to be safe and the cycle continues.

A can of diet coke provides no nourishment and would replace a more nutritious drink you could have drunk while potentially depleting your body of essential minerals.

It will never quench your thirst as it dehydrates rather than hydrates your body. A lack of vital water can lead to brain fog, poor concentration, fatigue and feeling irritable.

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1 FIRST 10 MINUTES

10 teaspoons of sugar hit your system. (100% of your recommended daily intake.) You don't immediately vomit from the overwhelmingsweetness because phosphoric acid cutsthe flavor allowing you to keep it down.

2 20 MINUTES

Your blood sugar spikes, causing an insulin burst. Your liver responds to this by turning any sugar it can get its hands oninto fat. (There's plenty of that at this particular moment)

3 40 MINUTES

Caffeine absorption is complete. Your pupils dilate, your bloodpressure rises, as a response your liversdumps more sugar into your bloodstream.The adenosine receptors in your brain are now blocked preventing drowsiness.

4 45 MINUTES

Your body ups your dopamine production stimulating the pleasure centers of your brain. This is physically the same way heroin works, by the way.

5 60 MINUTES

The phosphoric acid binds calcium, magnesium and zinc in your lower intestine, providing a further boost in metabolism. This is compounded by high doses of sugar and artificial sweeteners also increasing the urinary excretion of calcium.

6 60 MINUTES

The caffeine's diuretic properties come into play. (It makes you have to pee.) It is now assured that you'll evacuate the bonded calcium, magnesium and zinc that was headed to your bones as well as sodium, electrolyte and water.

Artificial Sweeteners get a Gut Check

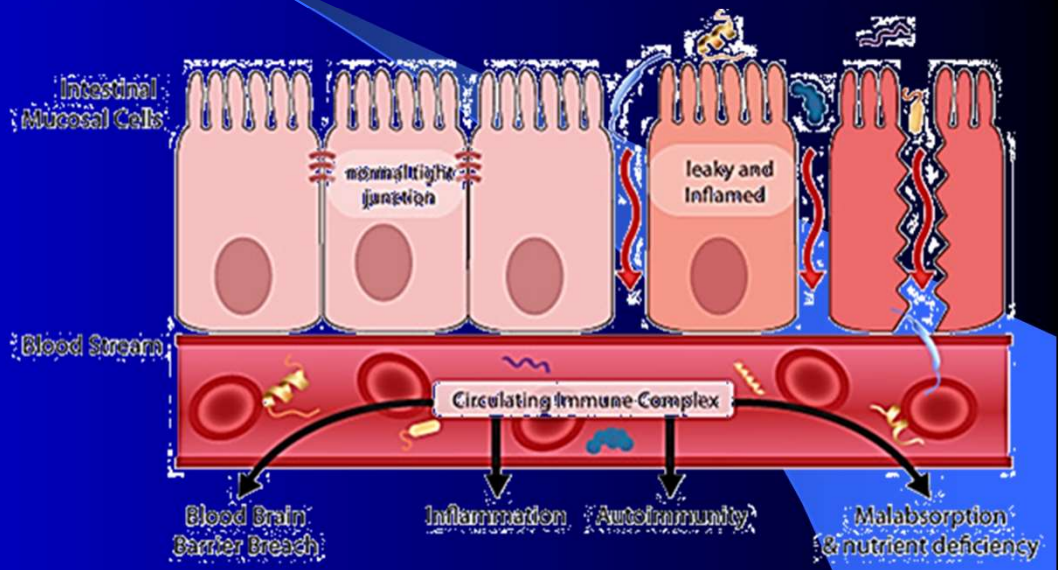
- "Israeli study suggests that artificial sweeteners enhance the population of gut bacteria that are more efficient at pulling energy from our food and turning that energy into fat"
- Change in the gut flora also affect leptin levels thus turning off satiety during eating
- ***After 11 weeks mice receiving glucose and sucrose had gained less weight and had better blood glucose levels as compared to mice feed aspartame, sucralose or saccharin***

Zonulin and Leaky Gut

- In a healthy intestine, a protein called **Zonulin** holds together **tight junctions** between the intestinal cells to establish a protective "barrier" between the stomach and the bloodstream
- Gluten breaks down Zonulin and thus tight junctions, making the gut more permeable
  - (aka "leaky gut")

Consequences of leaky gut

- Foreign particles (undigested proteins, toxins, harmful bacteria, yeast/fungi) can now enter the bloodstream. This can cause
  - INFLAMMATION
  - malabsorption
  - nutrient deficiency
  - **autoimmunity** (thyroid, rheumatoid arthritis, lupus, etc.)



Vitamin D

- A calculation error may have skewed the vitamin D recommendations by the National Academy of Sciences (NAS), Institute of Medicine (IOM). They are far too low, by a factor of ten, say researchers at UC San Diego and Creighton University.
- **Robert Heaney, M.D., of Creighton University, wrote: "We call for the NAS-IOM and all public health authorities concerned with transmitting accurate nutritional information to the public to designate, as the RDA, a value of approximately 7,000 IU/day from all sources." Garland noted, "This intake is well below the upper level intake specified by IOM as safe for teens and adults, 10,000 IU/day"**
- References:

- 1. Heaney, R.P. et al. 2015. Letter to Veugelers, P.J. and Ekwaru, J.P., A Statistical Error in the Estimation of the Recommended Dietary Allowance for Vitamin D. Nutrients 2014, 6, 4472–4475; doi:10.3390/nu6104472
- 2. Veugelers, P.J. et al. 2014. A Statistical Error in the Estimation of the Recommended Dietary Allowance for Vitamin D. Nutrients 2014, 6(10), 4472-4475; doi:10.3390/nu6104472

Vitamin E

- JAMA, July 6, 2005-Vol 294, No.1, Pg.56-65.
- The Women's Health Study..Vitamin E supplementation provides no protective effect for CV disease or cancer prevention.

Vitamin E

- Comment-Pg.63..
- ..“the possibility exists that the gamma tocopherol, rather than the Vitamin E(or alpha tocopherol) may be the relevant compound for CVD prevention. Gamma tocopherol appears to have a similar or greater efficacy than alpha tocopherol inhibiting lipid peroxidation under oxyradical systems and much more potency using nitration systems.”

The Different Types of Vit. E..

- Tocopherols:
  - Alpha.
  - Beta.
  - Gamma.
  - Delta.
- Tocotrienols:
  - Alpha.
  - Beta.
  - Gamma.
  - Delta.

Conclusion

St. Francis of Assisi…

….Make me a channel of Your peace, where there is hatred let me sow Your love, where there is injury pardon, where there is doubt faith, where there is despair hope where there is darkness light, and where there is sadness joy…

God Bless You All…..