

NATURE'S CHILDREN:

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OUTLINE

- Outcomes to avoid
 - Atopy
 - Eczema
 - Asthma
 - Allergies
 - ADD/ADHD
 - Autism
 - Autoimmune Disorders
 - Obesity
- Gut Physiology
 - Leaky Gut Syndrome
 - The Gut Brain
- Anti-Biotics: friend or foe?
- Getting off to the right start
 - Breastfeeding
 - Food introduction
- What if we got off to the wrong start?
 - It's never too late
 - Alive and whole foods
 - Set their 'clock'
 - Limit screen time
 - Limited supplements

OUTCOMES TO AVOID: ALLERGIES, ASTHMA & ECZEMA

- Eczema
 - Effects ~ 17% of Canadian children and presents with:
 - Dry, red, itchy areas
 - Infants: cheeks, scalp and forehead
 - Children: elbow creases, behind knees, finger webbing, wrists and feet
 - Incidence is on the rise
 - Treatments
 - Comfort measures: baths, lotions etc..
 - Topical corticosteroids
- Consequences?
 - Secondary infections
 - Quality of life



OUTCOMES TO AVOID: ALLERGIES, ASTHMA & ECZEMA

- Asthma
 - Most common chronic disease of childhood
 - Effects ~12.5% of children presenting with:
 - Coughing, wheezing, and shortness of breath
 - Chronic or intermittent
 - Mild or severe
 - Allergic or non-allergic
 - Incidence is on the rise
- Treatments
 - Steroid inhalers
 - LTRAs
 - Rescue inhalers
- Consequences?
 - Most common cause of disability in children
 - Restriction of activity
 - Quality of life

OUTCOMES TO AVOID: ALLERGIES, ASTHMA & ECZEMA

- Allergies
 - ~ 9% of children presenting with
 - Chronic runny nose
 - Watery eyes
 - Sneezing
 - Severe: anaphylaxis
 - 8% have documented food allergies
 - 30% have multiple food allergies
 - Peanuts and dairy most common
 - Incidence is on the rise
 - ~40% of population have IgE reactions to environmental proteins
- Treatments
 - Antihistamines
 - Epi-pen



OUTCOMES TO AVOID: ADD/ADHD

- Affects ~ 11% of children
- Presentation can vary
 - Hallmarks are:
 - Impulsive
 - Difficulty with transitions
 - Forgetful
 - Avoids tasks with continual mental effort
 - Hyper focus
 - Unable to organize tasks
 - Easily distracted
 - Gets out of seat at inappropriate times
- Treatment
 - Comprehensive
 - Parents/caregivers
 - School
 - Psychologist
 - Occupational therapist
 - Medical doctor
 - E.g. Methylphenidate/Ritalin



OUTCOMES TO AVOID: AUTISM

- Prevalence on the rise
 - 1970s and 1980s
 - 1 in every 2000 children
 - Presently
 - 1 in every 68 children
 - Includes collection of brain development disorders
 - E.g. Asperger's Syndrome
- Features: *Variable*
 - Difficulty in behaviors
 - Communication
 - Social interaction
 - Sensory sensitivities



OUTCOMES TO AVOID: AUTOIMMUNE DISORDERS

- Immune system unable to discriminate between self and non-self
 - Type 1 Diabetes
 - Celiac
 - Juvenile (Rheumatoid) Idiopathic Arthritis
 - Lupus
 - Juvenile dermatomyositis
 - Scleroderma
- Incidence is increasing
 - E.g. Between 2001 and 2009 Type 1 Diabetes rose 23%
 - Multiple Sclerosis rates over last 50 years in Finland have tripled
 - 3% increase per year in Scotland, England, the Netherlands, Denmark, and Sweden

"With the rapid increase in autoimmune diseases, it clearly suggests that environmental factors are at play due to the significant increase in these diseases. Genes do not change in such a short period of time."

Virginia T. Ladd, President and Executive Director of the American Autoimmune Related Diseases Association (AARDA)

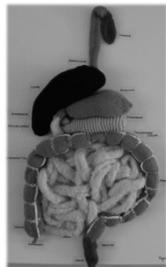
OUTCOMES TO AVOID: OBESITY

- 1 in three children are now considered obese
- First generation to have a lower life expectancy than their parents
- Significantly higher risk for
 - Diabetes
 - Cardiovascular disease
 - Endocrine dysfunction
 - Respiratory problems
 - Mental illness
- Significant impact on quality of life
- Multiple factors involved



GUT PHYSIOLOGY: A PRIMER

- Our digestive tract:
 - Mouth
 - Teeth
 - Tongue
 - Saliva glands
 - Esophagus
 - Stomach
 - Small intestine
 - Most digestion and absorption take place here
 - 70% of immune tissue resides here
 - 80% of 'plasma cells' reside here
 - sIgA
 - Large intestine

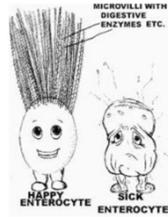


LEAKY GUT

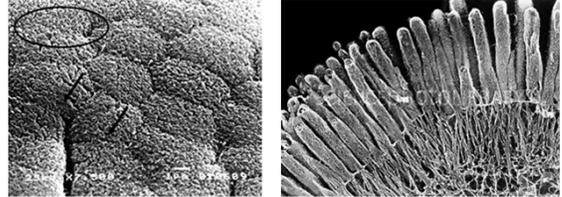
- Also known as 'intestinal permeability'
- Dysfunction at the level of the enterocyte (cells along the small intestine wall)
 - Tight junctions allow foreign material across the gut wall
 - Picked up by regional lymphatics and bloodstream as 'foreign'
 - Subsequent antibody development
 - Creates confusion in immune system
 - Over react: Atopic conditions
 - Attack self: autoimmunity
- What causes a leaky gut?
 - Antibiotics
 - Oral contraceptive pill
 - Extreme stress
 - Unbalanced bacteria
 - Foods that irritate
 - Gluten
 - Tomatoes
 - Legumes
 - Dairy
 - Birth
 - Gaps in continuity of small intestine to allow for absorption of fats and proteins from mother's breastmilk.

LEAKY GUT: THE CONSEQUENCE

- Often, but not always, associated with gastrointestinal symptoms
 - Gas, bloating, reflux, pain, constipation, diarrhea
- Chronic irritation to gut wall allows for more food particles and waste material to enter
- Immune system becomes increasingly reactive
 - Continued antibody formation and inflammation
 - Atopy: eczema, asthma, allergies
 - Autoimmune disorders
 - Mood/behavioral disorders
- Over time gut architecture becomes compromised
 - Lose ability for optimal absorption and assimilation of food
 - Nutritional compromise
- Susceptibility to infection
 - H. pylori
 - Fungal infection
 - Parasites



SMALL INTESTINE: A COMPARISON



THE GUT BRAIN

- Leaky Gut associated with
 - Migraines
 - Depression/Anxiety
 - ADD/ADHD
 - ASD
 - Obesity
- How?
 - Via vagus nerve
 - 80% of fibers send info TO the brain
 - Affected by gut microflora
 - Metabolites are neuroactive
 - GABA, noradrenaline, serotonin, dopamine
 - Negative emotions suppress activation
 - Decreased stomach acid
 - Reduces secretion of pancreatic enzymes
 - Decreased blood flow to digestive tract
 - Suppresses IGA
 - Chronic inflammation
 - Chemical messengers travel to brain and activate immune cells in the brain
 - Result is SLOWER nerve conduction



ANTIBIOTICS: FRIEND OR FOE?

- Prior to 1940, infectious disease most common cause of death
 - Presently, cardiovascular disease, cancer and diabetes are most common causes
- Recall: ADD/ADHD, ASD, Atopy and autoimmunity are all on the rise
 - While wiping out presenting infection, ABCs also wipe out protective bacteria
 - ABC misuse leads to drug resistant bacteria
 - Refractory to treatment
- Side effects of ABCs
 - Nausea/Vomiting
 - Rashes
 - Diarrhea
 - Abdominal pain
- Increase risk of:
 - Pseudomembranous colitis
 - C. difficile
 - Lowered immunity
 - Lacking protective effect of beneficial bacteria
 - Intestinal hyper permeability
- Hygiene hypothesis said to be linked to increases in autoimmunity and Atopy



PROBIOTICS: WHAT'S THE BIG DEAL?

- Immune benefits
 - Crowd out harmful bacteria
 - Induce immune tolerance
 - Help cope with environmental pathogens
 - Protect against autoimmunity
 - Protect against mood disorders
 - Initiates immune development in infants
 - Entero-mammary pathway
 - Reduces risk of atopy
- Digestive benefits
 - Reduces putrefaction of foods
 - Reduces bloating and gas
 - Aids elimination
 - Stimulates bile release
 - Manufactures nutrients
 - Vitamin K2, folate
 - Converts fiber into short chain fatty acids
 - Feed the gut wall
 - Protective against excessive weight gain
- All cultures have some source of fermented food



GETTING OFF TO THE RIGHT START

- Starting in third trimester of pregnancy and throughout lactation
 - Good quality, high dose probiotics
 - Populates the maternal gut
 - Bathes the developing fetus in beneficial bacteria
 - Crosses into breastmilk
 - Breastfeed if possible
 - Nutritionally complete
 - Profile changes according to need
 - WHO recommendations



GETTING OFF TO THE RIGHT START

- Food introduction
 - Starts usually at 6 months of age
 - Follow your baby's cues
 - Manner of food introduction based on age and condition of gut
 - Least allergenic/non constipating foods first
 - FYI: rice cereal and bananas are VERY constipating.
- Start with vegetables, meat and fruit
 - Avocado
 - Berries
 - Apples (stewed)
 - Chicken/lamb/game/beef
 - Egg yolks
- Grains, nuts and seeds should wait until 1 year of age
 - Lack enzymatic capacity to digest before then
 - Jump start enzymatic process – soak and ferment

GETTING OFF TO THE RIGHT START

- General considerations
 - Follow baby's instinct
 - Let them decide when they are full
 - Offer healthy choices – keep the focus on variety
 - Organic vs commercial foods
 - Baby's detoxification pathways not yet fully mature
 - Compromises critical developmental windows when children are most vulnerable
 - Whole foods
 - Avoids the issue of having to read labels
 - Balance glycemic index
 - Avoid excessive starches and **NO JUICE!!**
 - Opt for high fats: fermented cod liver oil can be given as early as 4 months of age
 - Avoid using plastic dishes

IS IT TOO LATE? NEVER!

- Can start at any time
- All outcomes to avoid in pediatrics stem from the gut or have simultaneous gut issues
 - Healing digestion should be first priority
 - Healing diet: multiple strategies
 - Probiotics
 - Glutamine powder
 - Herbs: slippery elm and DGL
- Supplements will depend on presenting health concern
 - Fish oil for all
 - Vitamin D for all
 - B complex and magnesium for nervous system support
 - Iron for kids with celiac
- Limit screen time
- Set your child's clock
- Plenty of exercise and fresh air
 - Disease festers in stagnant environments

PAY IT FORWARD!



"A grand adventure is about to begin"

~Winnie the Pooh~