DR. HYMAN+

A Functional Medicine Approach to Winter Immune Resilience

Dr. Elisa Song, MD
Founder, Healthy Kids Happy Kids

WHO I AM

The 2 things I’m most proud of:

Mom to 2 awesome kids! ☺

Integrative pediatrician in the SF Bay Area

Who I am

- Stanford undergrad in political science/public policy
- NYU School of Medicine
- UCSF Pediatric Residency
- Additional training in:
  - Functional Medicine
  - Homeopathy
  - Traditional Chinese Medicine (acupuncture and herbs)
  - Western herbs, homotoxicology, essential oils, acupressure, infant massage, clinical hypnosis (SDBP)
- Lecturer for: CEDH, Academy for Pain Research, Center for Advanced Acupuncture Pediatrics, IFM, Holistic Pediatric Association
- Started Whole Child Wellness, an integrative pediatric practice in December 2005, now Whole Family Wellness
- Started Healthy Kids Happy Kids in June 2016, an online holistic pediatric and pediatric functional medicine resource for parents and practitioners

What we'll cover

- Winter basics - what you should know about colds, influenza, COVID, RSV and other winter respiratory viruses
- How to support your child's immune system to protect them from serious disease ALL YEAR LONG
- Why Tylenol and Tamiflu may not be your child's best options
- The top superfoods and supplements to support your child's immune system
- What not to do when your kids are sick

Disclaimer

The contents of this presentation are for informational purposes only and are not intended as a substitute for professional medical advice, diagnosis, or treatment provided by your healthcare professional or physician. If you suspect that your child has a medical problem or emergency, you should contact your healthcare provider or physician immediately. Do not disregard professional medical advice or delay in seeking professional advice because of something you have read on this presentation.

Always check for allergies and speak with your physician or other healthcare professional before taking or giving your child any medication or nutritional, herbal or homeopathic supplement, or adopting any treatment for a health problem.

Building Immune Resilience

The “Crud” is here to stay –
it’s always the right time to build Immune Resilience

Is there an immunity debt?

- The lack of exposure to otherwise self-limited and very common childhood infections when children are young may be driving some of the increased severity of current infections
- Are we seeing this with RSV?
  - Before the pandemic:
    - Virtually ALL of kids will have had RSV by the time they're 2 years of age
    - 97-100% in different studies!
  - From https://www.cdc.gov/rsv/high-risk/infants-young-children.html Nov 2022

" Most of the time RSV will cause a mild, cold-like illness"

Acute hepatitis in a children – A case of immunity debt?

- Severe acute hepatitis in young children seen worldwide
  - Majority (76%) are 5 years and younger
- Leading theory for why this is happening
  - Adenovirus 41 (“common cold virus”) and HHV-6 (“roseola”) found in many affected children
  - Adeno-associated virus 2 (AAV2) also found in blood and liver tissues
    - A “dependoparvovirus” – can’t replicate in host’s cells unless another virus is present
  - Genetic susceptibility (class II HLA-DRB1*04:01 allele) identified in Scottish cases
  - AdV-F41 or HHV-6 may be necessary but not sufficient to cause hepatitis
    - Severe acute hepatitis = Genetic risk + AdV-F41/HHV-6 + AAV2
      - https://www.medrxiv.org/content/10.1101/2022.07.19.22277425v1
      - https://media.gosh.nhs.uk/documents/MEDRXIV-2022-277963v1-Breuer.pdf

Acute hepatitis in a children – A case of immunity debt?

- **THEORY**: During the early days of the pandemic, there was a lack of training for infants' immune systems and early exposure to common childhood viruses (AdV-F41 and other adenoviruses, and HHV-6)
- As pandemic restrictions eased, young children were suddenly exposed to confluence of AdV-F41 or HHV-6 simultaneously with AAV2
    - ALL of which by themselves, should be BENIGN and SELF-LIMITED
- "Two years of reduced exposure have lowered individual immunity to diseases and made society as a whole more vulnerable. That is especially true for young children — typically germ amplifiers — who missed opportunities to gain antibodies against common viruses."
    - https://www.cnbc.com/2022/06/10/flu-hepatitis-monkeypox-diseases-suppressed-during-covid-are-back.html

Children as “germ amplifiers”
(in the short run)

- Parents, educators, pediatricians → we’ve ALL experienced this
  - Increased in viral infections as our kids enter daycare/school, we start teaching kids, or start seeing kids in our practice
  - Over time, each year we and our kids get sick less and less frequently

- WHY?
  - Germs don’t just suddenly disappear when our kids are older or as we teach or practice for more years …
  - We’ve built Immune Resilience

Immune resilience

- Immune resilience ≠ never getting sick
- Immune resilience = ability of cells to cope with stress and recover rapidly and completely
  - EVEN IF we get sick
  - The ability to bounce back and be even stronger for the next “hit”
    - → Cellular hormesis (from the Greek *hórmēsis* "rapid motion, eagerness“)
    - → Cellular memory of how to do it even better the next time!
- Cells differ less in the “vulnerability,” than in their “resilience”
  - Smirnova L et al. Food for Thought… Cellular Resilience. https://www.ncbi.nlm.nih.gov/pubmed/26536287

“It is not important whether you fall, but whether you get up again.”

There is a silver lining

(we'll get through this together ...)

Vulnerability vs. Resilience

We’re all vulnerable …

What would make us resilient?

Winter Respiratory Virus (“Crud”) Basics

The winter “crud”

- What we’ve always had during the winter:
  - RSV
  - Influenza
  - Influenza-like illnesses (many different non-influenza viruses)
  - Common colds – caused by over 200 different viruses, including ***rhinoviruses***, coronaviruses, adenoviruses
- What we now have:
  - COVID-19
- What also goes around:
  - Stomach flu (not to be confused with “the flu” caused by influenza
  - Pharyngitis (viral or bacterial – usually caused by Group A Strep)

Crud Type	What causes it	How contagious?	Common symptoms	Risk for severe disease	Conventional treatment
RSV	Respiratory Syncytial Virus	R0 ~3.0 **(>42% are asymptomatic)**	• Mild fever • **Runny nose/congestion** • Sneeze • **Copious mucous** • **Cough** • Wheeze/Difficulty breathing • Headache	• Premature infants • Infants 6 months and younger • Children <2 years with chronic lung disease or congenital heart disease • Children with immunocompromise • Children with neuromuscular disorders	• **Supportive** • +/- albuterol • Steroids no not help • Oxygen if needed • SYNAGIS (monoclonal antibody for prevention of RSV in high-risk babies)
The "flu"	• Influenza A virus – subtypes A(H1N1) and A(H3N2) • Influenza B virus – lineages B(Victoria) and B(Yamagata) **This year, Influenza A (H3N2) is most prevalent**	R0 ~ 1.3-1.5 depending on season **(>50% may be asymptomatic)**	• **Sudden onset** • **High fever** • **Body aches** • **Chills** • Fatigue • Headache • Sore throat • Cough • Runny nose/congestion • Nausea/vomiting/diarrhea	• Children< 2 years, especially infants < 6 months • Adults > 65 years • Asthma and chronic lung disease • Neurologic or neurodevelopmental conditions • Obesity • Chronic conditions • Pregnant and immediately post-partum women • Certain racial/ethnic minority groups (Black persons, Hispanic or Latino persons, and American Indian or Alaska Native persons)	• **Supportive** • Tamiflu (will discuss shortly – not my preferred) • Xofluza (baloxavir)
Common Cold	Most often Rhinovirus (also coronavirus, adenovirus and 200+ others)	R0 < 1.0 for most cold viruses **(70% or more may be asymptomatic)**	• Low-grade fever or none • Runny nose/congestion • Sneeze • Sore throat • Cough	Severe disease uncommon	• **Supportive**
COVID-19	SARS-CoV-2 Virus	R0 of BA.4/A.5 ~ 6-10 **(up to 40-50% may be asymptomatic)**	• Fever • Cough • **Sore throat** • **Runny nose/Congestion** • **Headache** • Abdominal pain • **Fatigue** • Body aches • Nausea/vomiting/diarrhea • Loss of taste or smell	• **Adults > 65 years** • Chronic co-morbidities • Obesity • Immunocompromised • +/- Asthma • Certain racial/ethnic minority groups (Black persons, Hispanic or Latino persons, and American Indian or Alaska Native persons)	• **Supportive** • Paxlovid (watch for rebound) • Molnupiravir (cancer and birth defect concerns) • Tocilizumab (IL-6 antagonist used to treat Rheumatoid Arthritis) for severe COVID • Evusheld for pre-exposure prophylaxis
Influenza-like illness	Many different non-influenza viruses		Same as influenza	Same as influenza	• **Supportive**
"Stomach flu"	Many different viruses		• Abdominal pain • Nausea/vomiting/diarrhea • Low-grade fever	Young children (the biggest concern is dehydration)	• **Supportive**
Pharyngitis	Many different viruses, or Bacterial (usually group A strep)		• **Sore throat** • Headache (strep) • Abdominal pain (strep) • Fever • **Very few upper respiratory symptoms**	Severe disease is uncommon	• **Supportive if viral** • Supportive + Antibiotics if Strep throat

Should you bother testing?

- Conventional treatment is “supportive”
- Integrative recommendations are based on your child’s symptoms, not the diagnosis
- So should you bother testing and go to a germy ER/doctor’s office?
  - Maybe …
  - Some people are still vulnerable to serious COVId-19 disease
    - Be mindful especially as you plan visits to visit elderly or vulnerable relatives
  - For influenza virus specifically – baloxavir (Xofluza) may be an option for anyone > 5 years

Tamiflu, Xofluza & flu vaccine basics

(This information is specific to influenza A + B viruses)

What about the flu vaccine?

- Most people refer to the “FLU” as any flu-like illness
  - Can be caused by Influenza virus or many other non-influenza viruses
  - During the winter, kids are exposed to many influenza and non-influenza viruses
- There are several Influenza virus A and Influenza virus B strains
  - Influenza A virus strains typically cause more severe disease
- Flu vaccine intended to protect only against Influenza virus

Flu vaccine effectiveness

- Is this year's flu vaccine a "good match"
  - Flu vaccine made by trying to predict the 3 or 4 most prevalent influenza virus strains that will be circulating the following year
    - Some years it's a good match, other years not at all
- Even with a great match, flu vaccine probably at best 40-60% effective
- Cochrane 2010 review of 50 flu vaccine studies (Cochrane Databse Syst Rev, 2010 Jul 7;(7):CD001269)
  - "Influenza vaccines have a modest effect in reducing influenza symptoms and working days lost. There is no evidence that they affect complications, such as pneumonia, or transmission."

What about this year's flu vaccine?

- This year's flu vaccine is a good match for the most prevalent circulating Influenza A (H3N2) strain
- Unfortunately, flu vaccines tend to be least effective against Flu A(H3N2) even with a great match
  - This year's flu vaccine effectiveness is ~40-50%
  - Flu vaccine effectiveness → reduction in risk of hospitalization, serious disease and death
- For some – reduction in risk for serious disease by 40-50% is WORTH IT
  - Every parent must take into account their child's risk for serious disease and risk for complications from the flu vaccine, and be supported in whatever decision they make – without shame or guilt
  - For my patients who decide to take the flu vaccine, I support them with my V-Support Kit to improve effectiveness while reducing risk of adverse reactions

What to know about Tamiflu

Cochrane 2014 review of Tamiflu (oseltamivir) and Relenza (zanamir)

http://www.cochrane.org/CD008965/ARI_regulatory-information-trials-oseltamivir-tamiflu-and-zanamivir-relenza-influenza-adults-and

- Looked at manufacturers' clinical study reports from trials to the FDA and FDA comments which were UNPUBLISHED and CONFIDENTIAL
- Only effective if you've had symptoms for LESS THAN 48 hours – possibly
- Both drugs reduce symptoms by LESS THAN A DAY in healthy teens and adults
- Tamiflu did not reduce number of hospitalizations
- Unclear benefit on complications of influenza (pneumonia, bronchitis, ear infections, sinus infections)
- No benefit for children with asthma
- Both may help with prophylaxis and reduced risk of symptomatic influenza

What to know about Tamiflu

- Most common side effects – nausea, vomiting, headache
- Risk of anaphylaxis, serious skin reactions, kidney problems and psychiatric events
- Psychiatric effects most common in children:

"Some people using oseltamivir have had rare side effects of sudden confusion, delirium, hallucinations, unusual behavior, or self-injury. These symptoms have occurred most often in children. It is not known whether oseltamivir was the exact cause of these symptoms. However, anyone using oseltamivir should be watched closely for signs of confusion or..."

- Japan banned the use of Tamiflu (oseltamivir) in children under 17 in March 2007. Ban was lifted May 2018 with updated warning label.

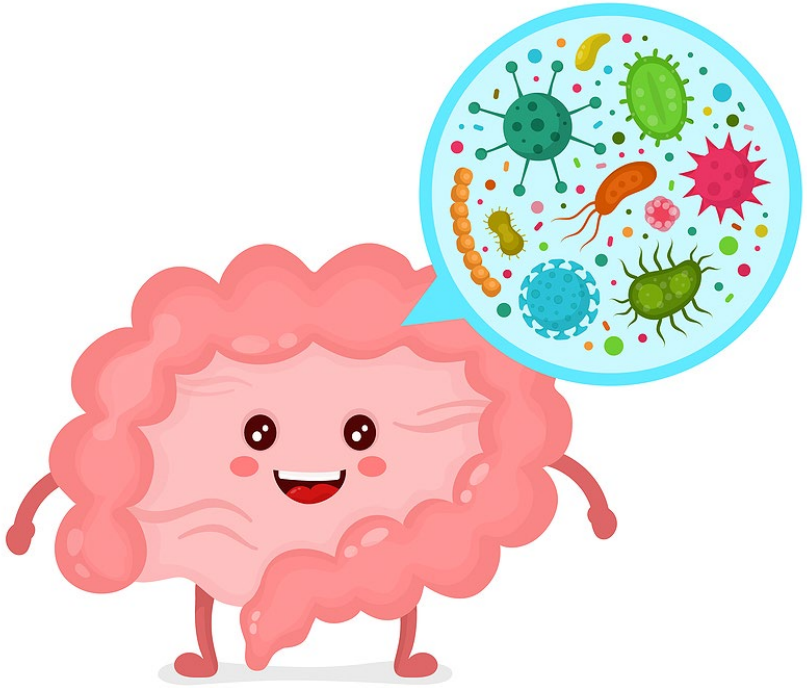
Is baloxavir (Xofluza) a better, safer, more effective option?

- Tamiflu is a neuraminidase inhibitor
  - Prevents virus that has already replicated inside cells from breaking through the cell membrane to escape and invade other cells
- Xofluza is a polymerase acidic (PA) endonuclease activity
  - Directly inhibits influenza virus replication
  - Better safety profile than Tamiflu
  - Must start within the first 48 hours of symptoms
    - Before virus has time to do much replication
    - EVEN when your child is starting to get that glassy look counts as the start of symptoms
  - Authorized for people ages 5+ years
  - Single oral dose
  - Kenzi was 100% recovered < 24 hours after Xofluza (I started 4 hours into her symptoms)

The #1 way to support your child's immune resilience

(and protect from serious disease ALL YEAR LONG)

Have a healthy, happy gut microbiome!



Your child's gut-immune system connection

- Our gut microbiome is home to over 100 trillion microscopic organisms
  - 10 bacteria for every 1 human cell in and on our body
- 70% of our immune system is in our GUT!
- Our gut is one of our FIRST and LARGEST interface with the outside world (foods, toxins, pathogens)
  - Tonsil-like patches along our entire gut → Gut-associated lymphoid tissue (GALT)
  - GALT decides who is friend or foe and how to respond
    - Too little → get sick frequently and stay sick longer
    - Too much → chronic inflammation
    - Wrong kind → autoimmune

Healthy, happy gut = Healthy, happy immune system

Your child's gut microbiome & the winter crud

- Gut microbiota composition influences response to common childhood respiratory viral infections, and vice versa
  - Gut dysbiosis influences the severity of respiratory infections
  - Viral infections can trigger/worsen gut dysbiosis
- Heathy gut microbiome associated with fewer respiratory tract infections (RTIs) in babies and children
- Unhealthy gut microbiome (gut dysbiosis) associated with more frequent RTIs in babies and children
- Gut dysbiosis associated with more severe RSV and non-RSV bronchiolitis in infants and children
  - https://www.mdpi.com/2072-6643/14/14/2992/htm

Your child's gut microbiome & the winter crud

- Gut microbiota regulate immune defense against influenza A
  - https://www.pnas.org/doi/full/10.1073/pnas.1019378108
- Gut dysbiosis and leaky gut associated with COVID-19 infection
  - Persistent gut dysbiosis seen in long COVID
  - Leaky gut found in children with MIS-C
- Healthy gut microbiome, and probiotic supplements, may improve influenza and COVID-19 vaccine effectiveness

Get your child's gut microbiome "crud-ready"!

A crud-ready microbiome with food as medicine

- Avoid Microbiome Mischief Makers
  - Food additives
  - Added sugar
  - Glyphosate
- Bring on Microbiome Champions
  - Fiber
  - Fermented foods
  - Movement
  - Sleep
  - Mindfulness

Get your child's gut microbiome "Crud-ready"!

With Food as Medicine

Take out Microbiome Mischief Makers – FDA-approved food additives

- Cause direct harm to gut microbiome and cause gut dysbiosis and leaky gut
- Read ingredients
  - If you can't pronounce, or you have to Google what it is → DON'T BUY IT

YUCK!

INGREDIENTS: CORN MASA FLOUR (PROCESSED WITH LIME), SOYBEAN AND/OR PALM AND/OR CANOLA OIL, IODIZED SALT, SUGAR, NATURAL AND ARTIFICIAL FLAVOR, CITRIC ACID, SOY PROTEIN, YEAST, MONOSODIUM GLUTAMATE, MALTODEXTRIN, SODIUM DIACETATE, PARTIALLY HYDROGENATED SOYBEAN OIL, ARTIFICIAL COLORS (RED No. 40 LAKE, YELLOW No. 6 LAKE), ONION POWDER, HOT CHILI PEPPER (CHILE), SODIUM BICARBONATE, SODIUM GUANYLATE, SODIUM INOSINATE, SILICON DIOXIDE (ANTICAKING), ANTIOXIDANT (BHT, TBHQ, PROPYLENE GLYCOL, BHA).

MAY CONTAIN MILK, WHEAT AND EGG.

A little better

INGREDIENTS: STONE GROUND YELLOW CORN, VEGETABLE OIL (HIGH-OLEIC SUNFLOWER OIL, HIGH-OLEIC SAFFLOWER OIL AND/OR OLEIC CANOLA OIL), HOT CHILI & LIME FLAVORED SEASONING (SALT, YEAST, CORNSTARCH, CANE SUGAR, CITRIC ACID [ACIDULANT], YEAST EXTRACT, CORN MALTODEXTRIN, GUM ARABIC, MALIC ACID, LIME JUICE CONCENTRATE, ONION POWDER, VEGETABLE JUICE [COLOR], PAPRIKA EXTRACT [COLOR], TURMERIC EXTRACT [COLOR], NATURAL FLAVOR, BETA CAROTENE [COLOR], TOCOPHEROL [TO PRESERVE], OLEORESIN CAPSICUM), TRACE OF LIME.

DIST. & SOLD EXCLUSIVELY BY:
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SKU# 61420

GLUTEN FREE

Better

INGREDIENTS: Ground Corn, Expeller-Pressed Canola and/or Sunflower Oil, Vinegar Powder (Maltodextrin, White Distilled Vinegar), Sea Salt, Rice Flour, Paprika, Paprika Extract, Yeast Extract, Onion Powder, Cane Sugar, Citric Acid (for flavor), Chile Pepper, Garlic Powder, Chile Pepper Extract, Lime Juice Powder, Lactic Acid (for flavor)

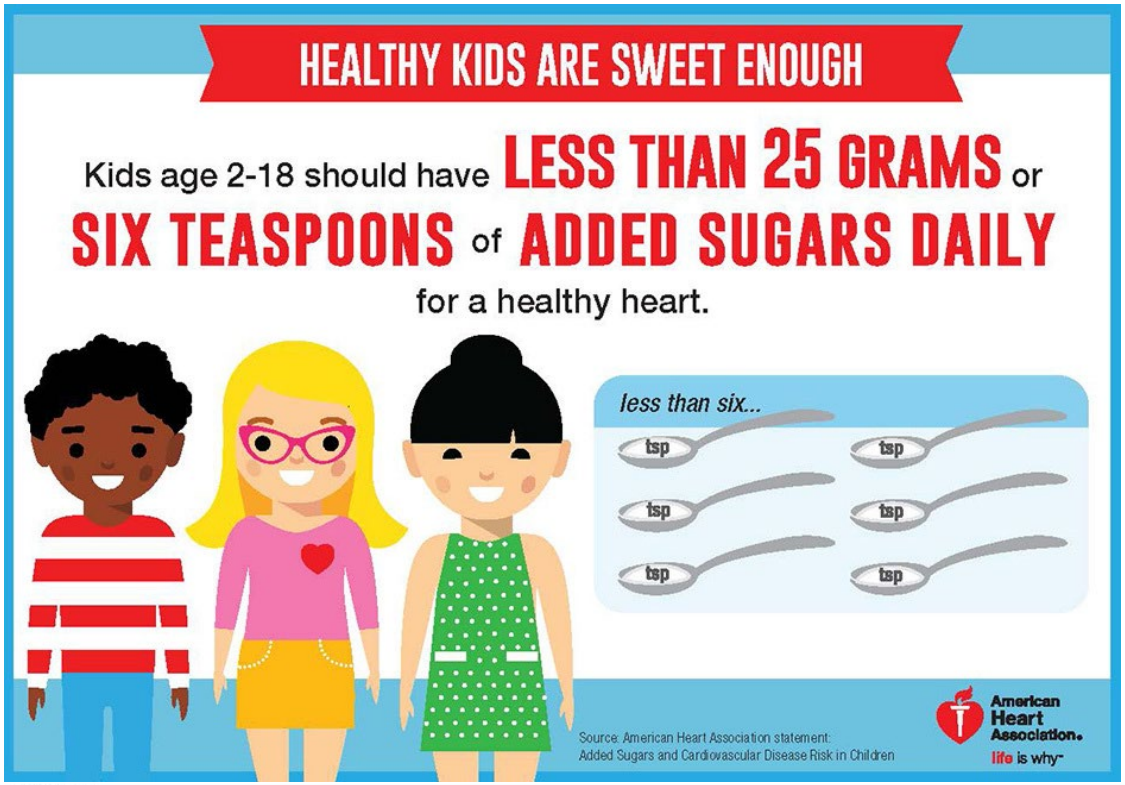
Make gut-friendly swaps

Take out Microbiome Mischief Makers – Added sugar

- High-sugar, high-fat Western diets causes gut dysbiosis and gut inflammation
- Sugar >>> yeast dysbiosis
- Sugar >>> blood sugar dysregulation/diabetes
- Sugar >>> chronic inflammation
- Sugar >>> virtually every chronic disease …
- Sugar >>> reduces our WBC's ability to fight infections by up to 50% within 20 minutes of consumption, and that effect lasts for at least 5 hours!

There is NO nutritional benefit to eating added sugar

How much added sugar is “too” much?



1 tsp = 4.2 grams sugar

The sugar adds up

Nutrition Facts Servings: 1, **Serv. size: 1 cup (150g),**
Amount per serving: **Calories 170**, **Total Fat** 5g (6% DV), Sat. Fat 3.5g (18% DV), Trans Fat 0g, **Cholest.** 20mg (7% DV), **Sodium** 45mg (2% DV), **Total Carb.** 20g (7% DV), Fiber 0g (0% DV), Total Sugars 18g (Incl. 15g Added Sugars 30% DV), **Protein** 11g (22% DV), Vit. D (2% DV), Calcium (10% DV), Iron (0% DV), Potas. (4% DV).

22 Whole Grains & Seeds

27 oz

2 slices =
8g of added sugar

Nutrition Facts
16 Servings Per Container
Serving size 1 slice (48g)

Amount per serving
Calories 140

	% Daily Value*
Total Fat 3g	**4%**
Saturated Fat 0g	**0%**
Trans Fat 0g	
Polyunsaturated Fat 1.5g	
Monounsaturated Fat 1g	
Cholesterol 0mg	**0%**
Sodium 220mg	**10%**
Total Carbohydrate 22g	**8%**
Dietary Fiber 4g	**14%**
Total Sugars 4g	
Includes 4g Added Sugars	**8%**
Protein 6g	**4%**

Vitamin D 0mcg	0%	• Calcium 45mg	4%
Iron 1.2mg	6%	• Potassium 130mg	2%
Vitamin A 0mcg	0%	• Vitamin C 0mg	0%
Vitamin E 0.3mg	2%	• Vitamin K 0mg	0%
Thiamin 0.1 mg	8%	• Riboflavin 0.03mg	2%
Niacin 1.2mg	8%	• Vitamin B6 0mg	0%
Folate 10mcg DFE (0mcg Folic Acid)	2%	• Pantothenic Acid 0.13mg	2%
Phosphorus 70mg	6%	• Magnesium 25mg	6%
Zinc 0.5mg	4%	• Selenium 0mcg	0%
Copper 0.1mg	10%	• Manganese 0.43mg	20%

*The % Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.

By lunchtime, your child could have 29 grams of added sugar or ~ 7 teaspoons of sugar

Take out Microbiome Mischief Makers – Glyphosate

- Glyphosate (“Roundup”) also patented by Monsanto in 2010 as an antibiotic
  - Broad activity against a variety of bacteria and fungi
- Implicated in increasing problem of antibiotic resistance and multi-drug resistant bacteria
- Directly causes gut dysbiosis
  - Kills beneficial Lactobacillus and Bifidobacter species
  - Preserves pathogenic Clostridia and Salmonella species
- Directly injures tight junctions, triggers zonulin release, and causes leaky gut

Choose organic when possible

Get in your Microbiome Champions – Fiber

- Dietary fiber (prebiotics that feed the good bugs) protects against influenza
  - https://www.cell.com/immunity/fulltext/S1074-7613(18)30191-2
- The “Fiber Gap”
  - Most US adults and kids get < HALF the recommended daily fiber intake
  - Only ~5% meet recommended intake
- Tanzania’s Hadza people
  - Average 100-150 grams of daily fiber
  - NO processed foods
  - Some of the richest gut microbial diversity in the world
- The lower the fiber and higher the refined sugar/processed foods → the lower the gut microbial diversity

Age/Gender	Recommended daily fiber intake
Adult males > 50 years	30 grams
Adult females > 50 years	21 grams
Adult males <50 years	38 grams
Adult females <50 years	25 grams
Teen makes 14-18 years	38 grams
Teen females 14-18 years	26 grams
Boys 9-13 years	31 grams
Girls 9-13 years	26 grams
Children 4-8 years	25 grams
Children 1-3 years	19 grams

The colors of fiber

Red	guava, raspberries, strawberries, apples (with skin on), beets, red bell pepper
Orange/Yellow	sweet potatoes, pumpkin, carrots, apricots, persimmon, grapefruit, orange, nectarine
Green	artichoke, avocado, broccoli, kale, collard beans, spinach, cabbage, brussels sprouts, squash (crookneck, summer, zucchini, acorn), okra, green beans, peas, asparagus, kiwifruit
Blue/Purple	blackberries, blueberries, prunes, raisins, passionfruit
Tan/Brown	**seeds** (pumpkin, chia, sunflower, flax), **nuts** (coconut, almonds, chestnuts, pinenuts, pistachios, hazelnuts), legumes (lentil, navy, lima, adzuki, pinto, black, garbanzo, kidney), **whole grains** (whole wheat, barley, bran, quinoa, oat, popcorn, brown rice, bulgur, spelt, teff), potato (with skin), mushrooms
White	parsnips, jicama, cauliflower, kohlrabi, Asian pear, bananas, pears

Let your child choose their rainbow color. Tan/Brown packs the biggest fiber punch!

Fermented foods

- Yogurt (if sensitive to dairy, choose almond, coconut, cashew
- Kefir (dairy, coconut, water)
- Kombucha
- Kvass
- Sauerkraut
- Real pickles & pickled vegetables
- Raw unfiltered apple cider vinegar
- Miso
- Natto
- Tempeh
- Kimchi

Kimchi may kill the H1N1 flu virus!

Get your child's gut microbiome "Crud-ready"!

With Lifestyle as Medicine

A crud-ready microbiome with lifestyle as medicine

- Exercise/Outdoor Time
- Sleep
- Mindfulness

Get in your Microbiome Champions – Movement

- Exercise has beneficial effects on gut microbiome diversity and function
  - Results INDEPENDENT of diet
- Positive effects reversed with return to sedentary lifestyle
  - You've got to move it move it!
- Exercise boosts immune system and lowers rate of respiratory tract infections – including COVID-19
  - Weekly goal: 150 minutes of moderate of 75 minutes of vigorous physical activity
  - 20 minutes/day of moderate or 10 minutes/day of vigorous physical activity

Get in your Microbiome Champions – Sleep

- The gut microbiome affects sleep
  - Probiotics can improve sleep quality
- Sleep affects the gut microbiome
  - Sleep deprivation changes gut microbial composition and metabolites after 48 hours of sleep deprivation → GUT DYSBIOSIS
- Chronic sleep loss alters gut microbiota and induces systemic inflammation
  - Changes are reversible after 1 week of sleep recovery
- Increase in sleep increases the number and ability of your white blood cells to fight viral infections more efficiently

Get in your Microbiome Champions – Mindfulness

- Mindfulness improves Heart Rate Variability
- Optimize HRV = Optimal Vagal Tone
- Optimal HRV lowers cortisol (our stress hormone) AND **increases WBC ability to fight infections**
- Independent of dietary intake
  - Happiness/positive emotions and high HRV)associated with higher gut microbiome diversity in children
  - High stress and low HRV associated with lower gut microbiome diversity in children

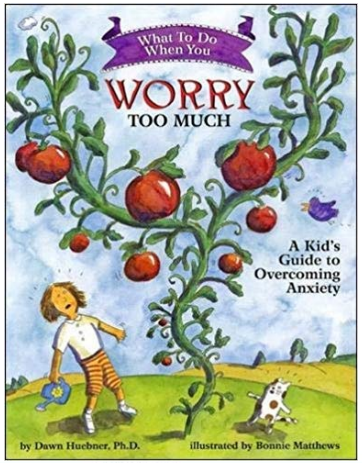
A crud-ready microbiome with mindfulness

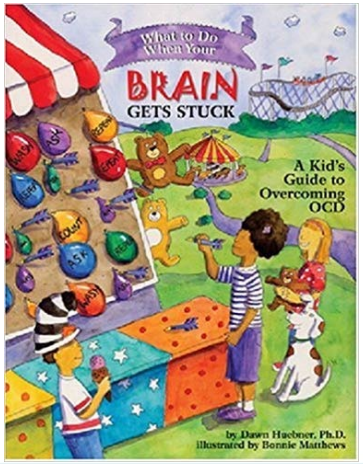
- How to optimize HRV
  - Cognitive Behavioral Therapy
  - Mindfulness/Meditation
  - Heartmath
  - Diaphragmatic breathing
  - Gratitude/Loving Kindness
  - Laughter
  - EFT Tapping

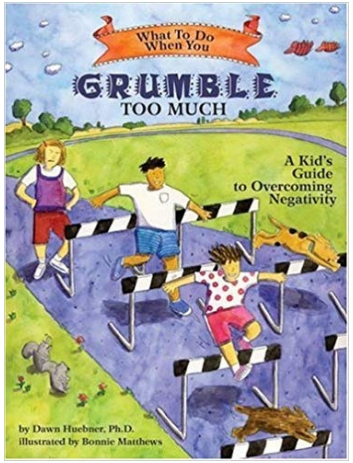
[1] https://www.ncbi.nlm.nih.gov/pubmed/9653763

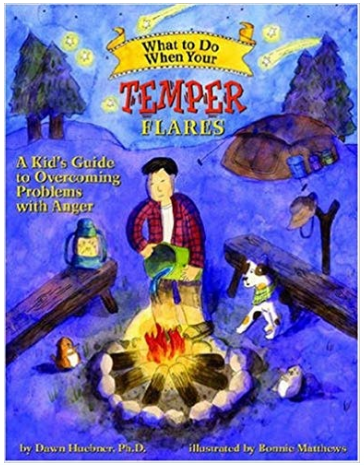
Optimize HRV – Cognitive-behavioral therapy

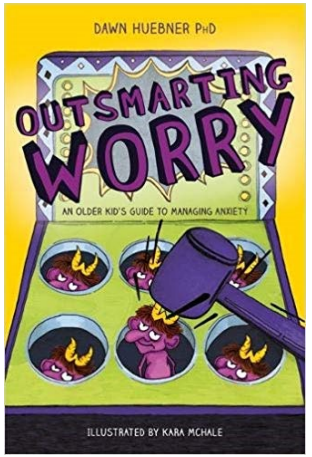
- CBT can increase HRV
- “Gold standard” for anxiety in teens
- Individual or group CBT
- Dawn Huebner, PhD’s kids’ “self-help books”









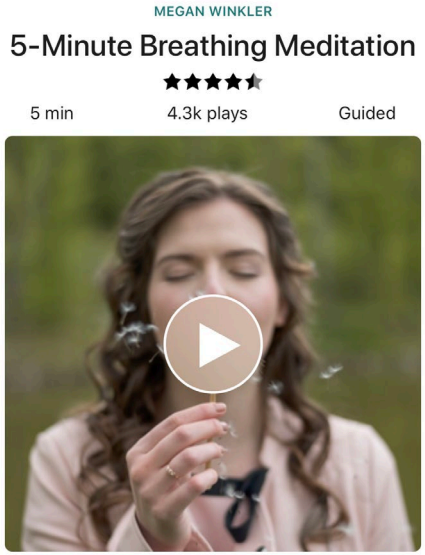


Optimize HRV – Mindfulness/Meditation

Mindfulness/Meditation can be practiced anywhere, anytime…
Stop. Look. Listen.

Optimize HRV – Mindfulness/Meditation

- Mindfulness/meditation apps
  - Insight Timer
  - Headspace app
  - Calm app
  - Oak app
- Inner Balance Heartmath HRV app



Optimize HRV – Loving Kindness Meditation

- “Loving kindness” meditation x 6 weeks
  - Increased HRV, greater sense of connectedness to others, increased positive emotions (joy, interest, amusement, serenity, hope)
    - https://www.ncbi.nlm.nih.gov/pubmed/23649562

May you feel safe
May you feel happy
May you feel healthy
May you live with ease

Optimize HRV – Breathe…

- Diaphragmatic “belly breathing” to activate of the vagus nerve
  - Get out of fight-flight-freeze
  - Get into rest-digest-heal…

- Diaphragmatic breathing benefits:
  - Lower cortisol
  - Increased HRV
  - Increased energy, alertness, relaxation, mood
  - Decreased anxiety, depression, anger, confusion

Zaccar A et al. How Breath-Control Can Change Your Life: A Systematic Review on Psycho-Physiological Correlates of Slow Breathing. Front Hum Neurosci. 2018 Sep 7;12:353. doi: 10.3389/fnhum.2018.00353

Teach your child to belly breathe

- Sit or lie comfortably
- Place one hand on chest
- Place the other hand on belly
- Pretend there's a balloon in their belly that they need to inflate every time you take a deep inhale, and deflate fully with every exhale
- Breathe in through their nose and fill that balloon, noticing the hand on their belly rise, and the hand on their chest staying still
- Breathe out through their mouth, feeling the hand on their belly sink all the way down, while the hand on their chest remains still

Sesame Street: Common and Colbie Caillat – "Belly Breathe" with Elmo
https://www.youtube.com/watch?v=_mZbzDOpylA

Top Superfoods for Immune Resilience

Top Zinc-Rich Foods

- Pumpkin seeds
- Beans
- Grassfed Beef
- Lamb
- Sesame seeds
- Garbanzo beans
- Lentils
- Cashews
- Quinoa
- Eggs
- Organic poultry
- Shellfish
- Raw sprouts
- Liver
- Spinach
- Watermelon seeds
- Garlic
- Peanuts
- (Dairy products)

Top Quercetin-Rich Foods

- Raw onions
- Red apples (with skin on)
- Red grapes
- Kale
- Spinach
- Capers
- Watercress
- Cherries
- Berries
- Broccoli
- Tomatoes
- Asparagus
- Green tea
- Black tea
- Red leaf lettuce
- Chili peppers

Top Vitamin D Sources

- Best source: SUNLIGHT
- Food Sources
  - Cod liver oil
  - Sardines, salmon, fatty fish
  - Cow's milk & Dairy products
    - If you're not sensitive
    - Avoid when sick
  - Eggs
  - Caviar
  - Mushrooms
- Supplementation often needed

Top Vitamin C-Rich Foods

- Papaya
- Citrus fruit
- Berries
- Bell Peppers
- Broccoli
- Brussels Sprouts
- Spinach
- Watercress
- Asparagus
- Tomatoes
- Pineapple
- Cantaloupe
- Mangos
- Guava

Top Glutathione-rich Foods

- Cruciferous veggies
  - Kale
  - Broccoli
  - Cauliflower
  - Cabbage
  - Brussels sprouts
  - Bok choy
  - Swiss chard
  - Arugula
  - Collard greens
  - Mustard greens
  - Watercress
  - Radish
- Mushrooms
- Garlic
- Onions
- Asparagus
- Spinach
- (Epsom salt baths)

Top Omega-3 EFA-Rich Foods

- Fish!
  - Mackerel, Salmon, Herring, Sardines
  - Anchovies
- Oysters
- Caviar
- Seaweed
- Chia seeds
- Hemp seeds
- Flax seeds
- Walnuts
- Soybeans

https://healthykidshappykids.com/food-as-medicine/

Top Supplements for Immune Resilience

Top supplements for immune resilience

- Vitamin D
- Zinc
- Vitamin C
- Omega-3 fatty acids (fish oil)
- Probiotics
- Glutathione

Supplement Facts

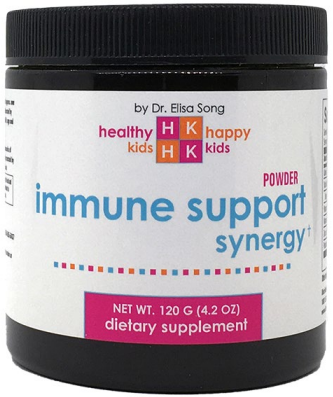
Serving Size 4 grams (approx. one scoop)
Servings Per Container 30

Amount Per Serving		% Daily Value
Calories	15	
Total Carbohydrate	4 g	1%**
Dietary Fiber	less than 1 g	<4%**
Vitamin C (as Ascorbic Acid)	1000 mg	1111%
Vitamin D (as Cholecalciferol)	50 mcg (2000 IU)	250%
Zinc (as Zinc Bisglycinate Chelate)	20 mg	182%
Potassium	130 mg	3%

Amount Per Serving		% Daily Value
Quercetin	500 mg	*
Trans-Resveratrol (*Polygonum cuspidatum*)(root)	100 mg	*
Vitamin E Isomers (as DeltaGold® delta and gamma tocotrienols)	100 mg	*
Trans-Geranylgeraniol (as GG-Gold™)	50 mg	*

**Percent Daily Values are based on a 2,000 calorie diet.
*Daily Value not established.

Other Ingredients: Partially hydrolyzed guar gum, natural flavor, potassium bicarbonate, citric acid, luo han guo extract (fruit).



Immune Support Synergy

https://store.healthykidshappykids.com/

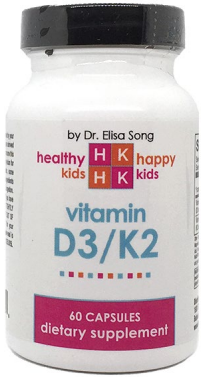
- Suggested dosages by age:

- 1-5 years: 1/8 scoop per day
- 6-12 years: ¼ - ½ scoop per day
- 13-18 years: ½ - 1 scoop per day
- 19+ years: 1 scoop per day

Optimize Vitamin D

- Many kids/adults need more Vitamin D than what's in Immune Support Synergy
- Vitamin D Council recommended daily MAINTENANCE dose:
  - Children: Vitamin D3 1000IU per 25 pounds of body weight up to 125 pounds
  - Adults: 5000IU (including pregnant and BF mothers) with upper limit 10,000IU/day
    - If pregnant/nursing → CHECK LEVELS! If mother's levels are optimal, then nursing baby does not need supplementation)
  - If >10,000IU/day, check 25(OH)D levels q3months

https://store.healthykidshappykids.com/



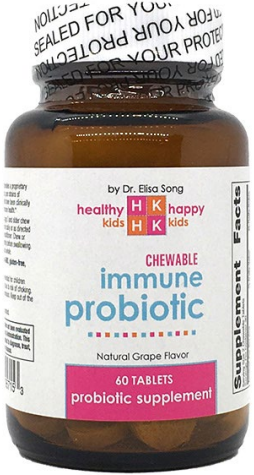
https://healthykidshappykids.com/2020/12/30/why-all-kids-need-vitamin-d/

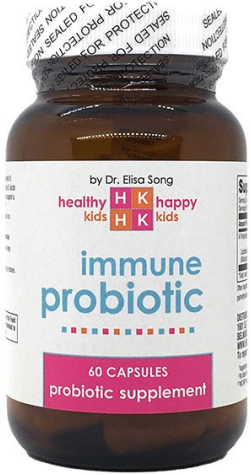
Probiotics & the Winter Crud

- Probiotics optimize gut microbiome, improve host immunity and reduce risk of viral RTIs
- 2015 Cochrane review
  - Probiotics better than placebo at:
    - Reducing duration of acute RTI illness
    - Reducing antibiotic prescription rate
    - Reducing cold-related school absences
  - **Probiotic use could achieve >54 million fewer days of infection, >2 million averted antibiotic courses, and >4 million avoided missed work days" each year!**
    - https://link.springer.com/article/10.1007/s00394-021-02519-x
    - https://www.frontiersin.org/articles/10.3389/fcimb.2020.596166/full
- Probiotics protect against RSV infection and RSV-induced lung
    - https://pubmed.ncbi.nlm.nih.gov/33495515/
- Probiotics reduce risk of influenza infection, reduce lung inflammation and speed up influenza viral clearance
    - https://www.frontiersin.org/articles/10.3389/fcimb.2020.596166/full

Which probiotics?
(look for strain-specific probiotics for winter crud)

- Lactobacillus acidophilus NCFM
- Bifidobacterium lactis Bi-07
- Lactobacillus rhamnosus GG
- Bifidobacterium lactis BB-12
- B. coagulans GandenBC30





https://store.healthykidshappykids.com/

Glutathione for healthy immune response

- Glutathione may inhibit influenza infection
- Conditions that deplete glutathione in upper respiratory tract may increase susceptibility to influenza infection
    - https://pubmed.ncbi.nlm.nih.gov/12654482/
- Ways to increase glutathione
    - Sulfur-rich vegetables
    - Epsom salt baths
    - Glutathione supplementation
        - **Suggested Use:**
        - 1-5 years: 2 sprays per day
        - 6-12 years: 5 sprays per day
        - 13-18 years: 5 pumps up to 2 times per day
        - 19+ years: 5 pumps (100mg) up to 2-4 times per day

https://store.healthykidshappykids.com/

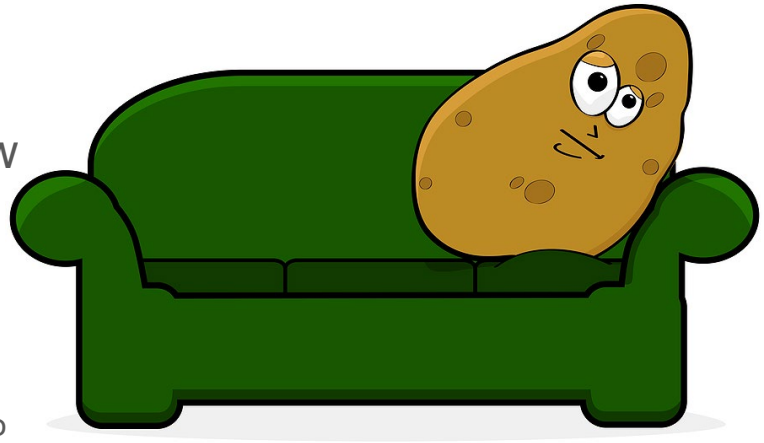
What *NOT* to do if your child gets sick

Mistake #1

Wanting them to act like “normal”

Let them be couch potatoes!

- Infections trigger a natural response in our bodies and brain to HELP us fight infection
  - →“SICKNESS BEHAVIOR”
- Inflammatory chemicals that help us fight infection also tell our bodies and brains to slow down and “act sick”
- Types of sickness behaviors that are ALL a normal response to infection:
  - Feeling tired, sleepy, depressed or anxious, wanting to be left alone, lose our appetite, not wanting to drink, hypersensitive to pain, acting confused



Mistake #2

Having Fever Phobia

Facts about fever

- Fever is your body's natural response to infection – it slows germs down and increases our immune system's ability to fight infections. Fever can help your child get over their illness faster.
- Reducing fevers artificially with acetaminophen (Tylenol) or ibuprofen (Motrin or Advil) may prolong the duration of illness and make you more contagious.
- Reducing fever might worsen nasal symptoms.
- In a neurologically normal child fever CAN'T rise high enough to cause brain damage. Unless your child has a neurologic disorder, fever CAN'T get "too high.
- The height of the fever does not indicate how serious the infection is, or whether it's viral or bacterial. Look at how your child is acting. NOT how high the fever is.

Facts about fever

- Reducing fevers has not been shown to prevent febrile seizures, except for possibly preventing additional seizures during a fever episode if your child has already had 1 febrile seizure.
  - Systematic review and meta-analysis from 2020 of 8 febrile seizure studies
  - “There is clearly no role for antipyretic prophylaxis in preventing febrile seizures during distant fever episodes”
    - https://pubmed.ncbi.nlm.nih.gov/33125519/
- Reducing fevers help our kids feel better so they run around like “normal” when they should be couch potatoes → Rest & Sleep HEAL
- Acetaminophen (Tylenol) is particularly problematic.
  - Depletes glutathione → our “master antioxidant, making it harder to fight infection and feel well

When should I consider giving my child a fever reducer?

- Remember, there's a time and a place for everything
- Consider using fever reducers when:
  - Your child is so uncomfortable that they can't sleep. A good night's rest trumps everything!
  - Your child is so uncomfortable that they don't want to drink anything.
    - Hydration is key to recovery
    - Dehydration itself can worsen fever
  - Fever doesn't have to be reduced to "normal"
- The jury is still out whether round-the-clock fever reducers prevent febrile seizures
- Acetaminophen (Tylenol) vs. ibuprofen (Advil or Motrin)?
  - If using acetaminophen, be sure to give glutathione/Epsom salt baths

Learn how to manage fever naturally!

http://healthykidshappykids.com/promotion/

And Breathe …

We’re all in this together!

Keep in touch!

Find more resources HERE:

healthy kids happy kids

www.healthykidshappykids.com