

## Integrative Medicine: *It's Not Alternative Anymore*



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*Tieraona Low Dog, M.D.* Blog Books Resources Events Study with Tieraona

## Helpful Health Resources

 **Medicine Lodge Ranch**

Dr. Low Dog has created a new **online classroom** called **Medicine Lodge Ranch** to expand the reach of her natural medicine school located at her ranch in the heart of New Mexico's Santa Fe National Forest.

Through our **online courses**, **digital educational tools**, and **hands-on intensive classes** at our ranch, you will have access to the resources to make yourself & your family both healthier and more whole. [Learn more](#)

**Conference Handouts:**

**Star of the South - handouts:**  
[Integrative Approaches to Pain](#)  
[Nutrition for the Dental Team](#)

**The Rendezvous Conference - handouts:**  
[Nutrition and Dietary Supplements](#)  
[Women's Health](#)

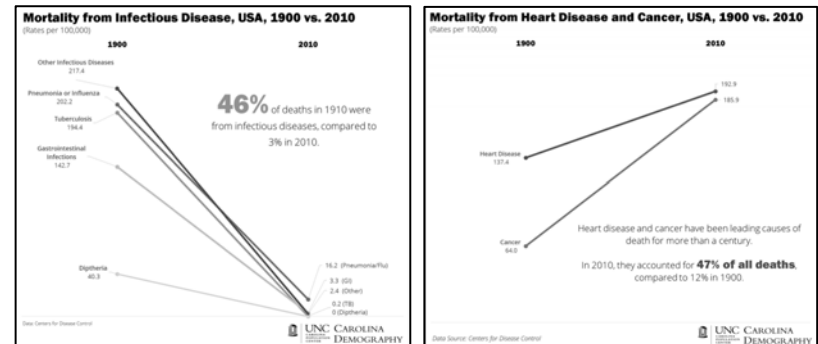
[www.DrLowDog.com](http://www.DrLowDog.com)

Announcing 50% off - Herbal Medicine Making Course!

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## The Times They Are A-Changing



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• If the American public embraced a healthier lifestyle:

- *no smoking*
- *no or moderate alcohol consumption*
- *limited or no exposure to toxic chemicals*
- *healthy nutrition*
- *balance of exercise and rest*
- *stress management*
- *and healthy social networks*

93% of diabetes, 81% of heart attacks, 50% of strokes, and 36% of all cancers could be prevented.

Ford, et al *Arch Intern Med.* 2009; 169(15):1355-62.

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## Epigenetics



- The mapping of **human genome** was one of the greatest scientific undertakings of past century, **detailing with incredible accuracy the blueprint of our species.**
- It also paved the way for field of **epigenetics**, which has shown that when it comes to our genes, *nurture* is **inextricably linked with nature.**
- That it is the *way we live our lives - from the moment of conception to our last breath - that influences the expression of our genes.*

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## The Future

- It is increasingly clear that much of the modern burden of disease stems from lifestyle behaviors.
- Our health care system must expand its focus to incorporate nutrition, exercise, environmental health, stress management, dietary supplements, motivational interviewing and more.



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## Integrative Medicine

- Takes account of the **whole person including lifestyle**
- Emphasizes **relationship between practitioner and patient**
- Is informed by **evidence**
- Makes use of **all appropriate therapies**



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## Nutritional Guidance

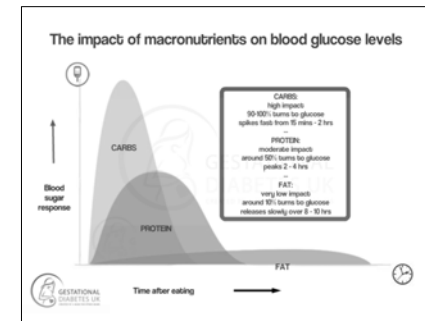


- Despite overwhelming evidence that **relatively small dietary changes** can significantly **improve health**, clinicians **seldom discuss nutrition** with patients.
- Poor nutritional intake and nutrition-related health conditions, such as **cardiovascular disease, diabetes, obesity, hypertension, and many cancers**, are highly prevalent in the United States, yet only **12% of office visits include any counseling about diet**.

Kahan S, et al. Nutrition Counseling in Clinical Practice: How Clinicians Can Do Better. *JAMA*. 2017;318(12):1101-1102.

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## Blood Sugar: Macronutrients



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## Sugar Consumption and Tooth Decay

- **Sugars contribute to dental caries and periodontal disease:** bacteria ferment them and produce acid, demineralizing tooth structure.
- Children who consume sugary drinks and sweets, particularly as snacks, have **higher incidence of dental decay**.
- Canada (2015), average daily total sugars consumption **101 grams (24 teaspoons) for children aged 1-8, 115 grams (27 teaspoons) children aged 9-18, and 85 grams (20 teaspoons) for adults**.

Skafida V, et al. Positive association between sugar consumption and dental decay prevalence independent of oral hygiene in pre-school children: a longitudinal prospective study. *J Public Health* 2018; 40(3): e275-e283.

Langlois K, et al. Change in total sugars consumption among Canadian children and adults. *Health Rep* 2019 Jan 16;30(1):10-19.

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## Sugars



- Table sugar (sucrose): **one glucose + one fructose** molecule
- **High fructose corn syrup:** 55% fructose, 42% glucose and 3% other sugars.
- Every cell in body readily converts glucose into energy. But **liver cells are one of few types of cells that can convert fructose to energy**.
- Large amounts of “free” fructose **taxes the liver and increases risk of non-alcoholic fatty liver disease**.



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## SUGAR COATING

### 43 DIFFERENT NAMES FOR 'ADDED SUGAR'

- |                           |                              |                    |
|---------------------------|------------------------------|--------------------|
| 1. AGAVE NECTAR/SYRUP     | 16. EVAPORATED CANE JUICE    | 29. WHITE SUGAR    |
| 2. BARLEY MALT            | 17. FRUCTOSE                 | 30. MALTOS         |
| 3. BEET SUGAR             | 18. FRUIT JUICE              | 31. MAPLE SYRUP    |
| 4. BLACKSTRAP MOLASSES    | 19. FRUIT JUICE CONCENTRATE  | 32. MOLASSES       |
| 5. BROWN SUGAR            | 20. GLUCOSE                  | 33. MUSCOVADO      |
| 6. CANE SUGAR             | 21. GOLDEN SYRUP             | 34. PALM SUGAR     |
| 7. CAROB SYRUP            | 22. GRAPE SUGAR/SYRUP        | 35. PANELA         |
| 8. CASTER SUGAR           | 23. HONEY                    | 36. POWDERED SUGAR |
| 9. COCONUT SUGAR          | 24. HIGH-FRUCTOSE CORN SYRUP | 37. RAPADURA       |
| 10. COFFEE SUGAR CRYSTALS | 25. ICING SUGAR              | 38. RAW SUGAR      |
| 11. CONFECTIONER'S SUGAR  | 26. INVERT SUGAR             | 39. RICE SYRUP     |
| 12. CORN SYRUP            | 27. LACTOSE                  | 40. SUCROSE        |
| 13. DATE SUGAR/SYRUP      | 28. MALT                     | 41. SUGAR          |
| 14. DEMERARA              |                              | 42. TREACLE        |
| 15. DEXTROSE              |                              | 43. TURBINADO      |

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## Glycemic Index/Load

Low Glycyl Diet  
Calculator

- **Glycemic load** measurement of impact of carbohydrates on blood sugar/insulin.
- International **consensus** conference concluded that given the **consistency of the scientific evidence**, diets **low in glycemic index/load** should be promoted in the **prevention and management of diabetes and coronary heart disease**, and are **particularly important in individuals with insulin resistance**.

Augustin LS, et al. Glycemic index, glycemic load and glycemic response: An International Scientific Consensus Summit from the International Carbohydrate Quality Consortium (ICQC). *Nutr Metab Cardiovasc Dis* 2015 Sep;25(9):795-815.



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## Glycemic Load and Mood

- 82 healthy weight and healthy overweight or obese adults enrolled in randomized, crossover controlled feeding study.
- Compared to a low GL diet, consumption of **high GL diet** resulted in:
  - 38% higher score for **depressive symptoms** ( $P = 0.002$ )
  - 55% higher score for **total mood disorder** ( $P = 0.05$ )
  - 26% higher score for **fatigue/inertia** ( $P = 0.04$ ), compared to low GL diet.



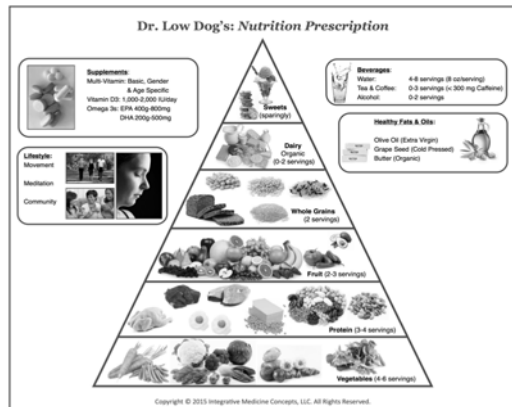
Beymeyer KJ, et al. *Appetite* 2016; Dec 1;107:253-259.

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Food	Serving Size	Glycemic Load
Grapefruit	½ large	3
Apple	1 medium	6
Banana	1 large	14
Raisins	1 small box	20
Watermelon	1 cup	8
Carrots	1 large	5
Orange	1 medium	6
Sweet potato	1 cup	17
Baked potato	1 medium	28
French fries	1 medium serving	26
Snickers	1 bar	35
Reese's cup	1 miniature	2
White table wine	5 ounces	1
Red table wine	5 ounces	1
Grape juice	6 ounces	12

Food	Serving Size	Glycemic Load
Asparagus	½ cup	2
Broccoli	1 cup	4
Green beans	1 cup	3
Tomato	1 medium	2
Subway sandwich Turkey breast	6 inch	17
Butter pecan ice cream	5.5 ounces (small)	22
Vanilla ice cream cone	4.5 ounces (small)	19
Potato chips, fat free	1 bag (8 ounces)	49
Tortilla chips, white corn	3.5 ounces	38
White bread	1 slice	10
White rice	1 cup	33
Brown rice	1 cup	23
Spaghetti	1 cup	38

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## Pain



- Affects **>100 million Americans**, more than those with heart disease, cancer, and diabetes combined.
- **25.3 million adults suffer from daily chronic pain, while 23.4 million report severe pain.**
- Incidence of chronic low **back pain**, **neck pain**, and **arthritic pain** as high as 29%, 15.7%, and 28%, respectively, in adult population.

<http://iom.edu/Reports/2011/20Relieving-Pain-in-America-A-Blueprint-for-Transforming-Prevention-Care-Education-Research/Report-Brief.aspx>

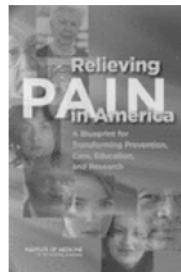
Nahin RL. Estimates of pain prevalence and severity in adults: United States, 2012. *J Pain* 2015 Aug;16(8):769-80.

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## IOM Report

- Cultural transformation is necessary to better prevent, assess, treat, and understand pain of all types.
- Healthcare providers should increasingly aim at **tailoring pain care to each person's experience and self-management** of pain should be promoted

<http://iom.edu/Reports/2011/20Relieving-Pain-in-America-A-Blueprint-for-Transforming-Prevention-Care-Education-Research/Report-Brief.aspx>



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## A Broader Approach

- Truly integrated approach would include treatments that address **mind-body** (e.g., meditation, yoga, tai-chi), **nutrition** (e.g., emphasis on plant based diet to reduce inflammation), **manual medicine** (e.g., massage, chiropractic), **pain modulation** (e.g., acupuncture, massage, botanicals, nutraceuticals), **sleep and mood** (e.g., cognitive behavioral therapy, guided imagery, botanicals, nutraceuticals).



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## Temporomandibular Disorder



Manfredini D, et al. Research diagnostic criteria for temporomandibular disorders: a systematic review of axis I epidemiologic findings. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod*. 2011;112:453-462.

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- Impacts **5-12%** of the population. **Second** most common musculoskeletal condition (after chronic low back pain) resulting in pain and disability.
- Common TMD include **arthralgia, myalgia, local myalgia, myofascial pain, myofascial pain with referral, degenerative joint disease, subluxation, and headache.**

Temporomandibular pain disorder screening instrument	
1. In the last 30 days, on average, how long did any pain in your jaw or temple area on either side last?	a. No pain b. From very brief to more than a week, but it does stop c. Continuous
2. In the last 30 days, have you had pain or stiffness in your jaw on awakening?	a. No b. Yes
3. In the last 30 days, did the following activities change any pain (that is, make it better or make it worse) in your jaw or temple area on either side?	A. Chewing hard or tough food a. No b. Yes B. Opening your mouth or moving your jaw forward or to the side a. No b. Yes C. Jaw habits such as holding teeth together, clenching, grinding or chewing gum a. No b. Yes D. Other jaw activities such as talking, kissing or yawning a. No b. Yes
<small>Items 1 through 3A constitute the short version of the screening instrument, and items 1 through 3D constitute the long version. An a response receives 0 points, a b response 1 point and a c response 2 points.</small>	

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## TMP Pain Screening Tool

- For clinical use, responses from the screener can be used as **part of the diagnostic process for a pain-related TMD diagnosis.**
- Sensitivity 99.1% for both short (3 questions) and long questionnaire (6 questions); specificity was 95-98%.
- **Radiographic imaging confirms TMD diagnosis.**
- Patients **are interested in treatment.**

Genzalez YM, et al. Development of a brief and effective temporomandibular disorder pain screening questionnaire. *J Am Dent Assoc*. 2011 Oct; 142(10): 1183-1191.

## Splint Versus Self Exercise

- 52 people with anterior disc displacement without reduction randomly assigned to **splint** or a joint mobilization **self-exercise** treatment group.
  - Warm-up, small mouth-opening and closing movements several times. Then, individual placed fingertips on edge of mandibular anterior teeth and slowly pulled the mandible down until pain occurred on the TMJ-affected side. 3 cycles of 30 seconds each were done 4 times per day.
  - Participants in the **splint group** wore a maxillary stabilization appliance while sleeping at night. Splint was adjusted to ensure occlusal contact of all mandibular teeth in centric relation and mandibular canine guidance in eccentric movement.
- **All outcome variables significantly improved after 8 weeks of treatment** in both groups (mouth opening range with and without pain, maximum daily pain intensity, limitation of daily functions. In particular, the mouth opening range increased more in the exercise group than in the splint group

Haketa T, et al. Randomized Clinical Trial of Treatment for TMJ Disc Displacement. *Journal of Dent Res* 2010; 89(11):1259-63

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## Acupuncture and Dry Needling



- Dry needling or acupuncture of **lateral pterygoid** and posterior, periarticular connective tissue, **masseter and temporalis muscles** shows improvements in pain and disability in patients with TMD.

Fernandes AC, et al. Acupuncture in Temporomandibular Disorder Myofascial Pain Treatment: A Systematic Review. *J Oral Facial Pain Headache* 2017 Summer;31(3):225-232.

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“The lesson from both our agricultural and medical experience is remarkable for its consistency: Ignoring the evolutionary attributes of biological systems can only be done at the peril of ecological catastrophe.”

*Marc Lappe, When Antibiotics Fail*

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## Antibiotic Prescribing

- At least 30% of antibiotics prescribed in US are unnecessary, according to data published in *Journal of the American Medical Association* by the CDC, in collaboration with Pew Charitable Trusts and other public health and medical experts.
- ~44% outpatient antibiotic prescriptions written to treat acute respiratory conditions (e.g., sinus infections, middle ear infections, pharyngitis, viral upper respiratory infections (i.e., the common cold), bronchitis, asthma, allergies, and influenza. Half are unnecessary.

<https://www.cdc.gov/media/releases/2016/p0503-unnecessary-prescriptions.html>

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## Antibiotic Resistance: Global Problem

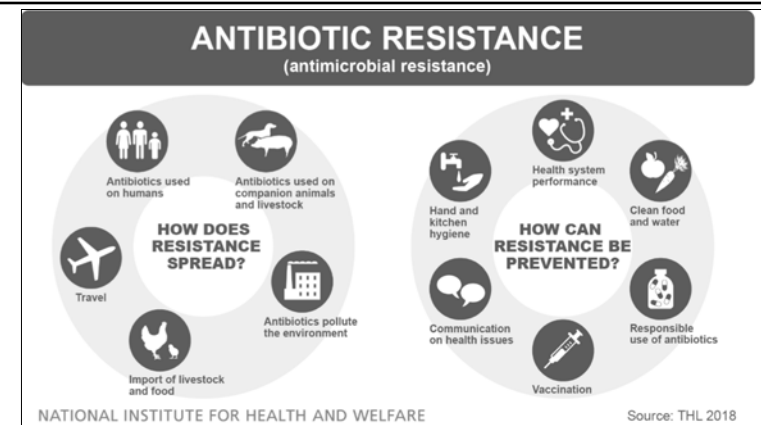
- Emergence and rapid spread of **antibiotic resistant bacteria** has led to **increasing concerns about the potential environmental and public health risks.**
- In US, at **least 2 million people** become infected with **antibiotic resistant organisms** and **23,000 people die each year** as a direct result.
- **33,000 people in Europe die each year** due to infections caused by antibiotic-resistant bacteria..

Bouki C. et al. *Ecotoxicology and Environmental Safety*, Volume 91, 1 May 2013, Pages 1-9.  
Centres for Disease Control and Prevention, *Antibiotic Resistant threats in the United States*, 2013,  
US Department of Health and Human Services.  
Smith R, Coast J. *BMJ*, 2013, 346, f1493

Belinda H, et al. *Science of The Total Environment*, Volumes 456-457, 1 July 2013, Pages 161-170.



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## The Need for Other Solutions

- In addition to **using antibiotics far more judiciously**, removing them from **non-medical use in animals**, and **continuing to expand our pipeline (which is running dry)** - a broader way of thinking is necessary.
- Exploring **natural strategies for enhancing host resistance** should be a high priority for both clinicians and researchers.
- **New rapid testing** to determine when antibiotics are necessary.

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## the burden of flu disease 2017 - 2018

The estimated number of flu **illnesses** during the 2017-2018 season:

**49 million**

More than the combined populations of Texas and Florida



The estimated number of flu **hospitalizations** during the 2017-2018 season:

**960,000**

More than the number of staffed hospital beds in the U.S.



The estimated number of flu **deaths** during the 2017-2018 season:

**79,000**

More than the average number of people who attend the Super Bowl each year



DATA: Influenza Division program impact report 2017-2018. <https://www.cdc.gov/flu/about/burden/index.html>



get vaccinated  
[www.cdc.gov/flu](http://www.cdc.gov/flu)

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## CDC Guidance for Influenza

- Caused by RNA viruses **resulting in fever/myalgia in infected people.**
- Seasonal influenza leads to **three to five million severe illness cases and around 250,000 to 500,000 deaths in world yearly.**
- Most common in US during **fall/winter months**, increasing in Oct/Nov, **peaking between December and February** and can last until May.
- CDC recommends **annual flu vaccine for everyone 6 months and older. Optimal timing is October** but recommend through end of January. ~2 weeks for antibodies to develop.

<https://www.cdc.gov/flu/about/season/flu-season-2017-2018.htm>. Accessed January 2, 2018

Wei Te Lei, et al. Nutrients 2017 Nov; 9(11):1175

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- **Most people with the flu have mild illness and do not need medical care or antiviral drugs.** “If you get sick with flu symptoms, in most cases, you should stay home and avoid contact with other people except to get medical care.”
- Antiviral drugs can be used for those at risk for serious flu complications (i.e., children younger than 5, adults 65 and older, pregnant women, people with long-term medical conditions, residents of nursing homes/long-term care facilities) and people who are hospitalized for flu.
- Three FDA approved antivirals: oseltamivir (generic and Tamiflu®), zanamivir (Relenza®), and peramivir (Rapivab®).

<https://www.cdc.gov/flu/about/season/flu-season-2017-2018.htm>, Accessed January 2, 2018

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## 2016 Meta-Analysis: Flu Drugs

- Oseltamivir and zanamivir cause small reductions in time to first alleviation of influenza symptoms in adults (8-12 hours)
- Oseltamivir increases risk of nausea, vomiting, psychiatric events in adults and vomiting in children and has no protective effect on mortality among patients with 2009A/H1N1 influenza.
- Prophylaxis with either drug may reduce symptomatic influenza in individuals and in households.
- The balance between benefits and harms should be considered when making decisions about use of antiviral for either prophylaxis or treatment of influenza.

Heneghan CJ, et al. *Health Technol Assess* 2016; 20(42):1-242.

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## Echinacea and Elderberry

- *Echinacea purpurea* has demonstrated strong activity against influenza virus strains.
- 473 patients with flu symptoms less than 48 hours randomized to 240 mg echinacea herb/root extract + elderberry fruit (Vogel Bioforce) or tamiflu.
- No difference between recovery rates, antibiotic use, intermediate doctor visits, use of over-the-counter medications for symptoms, “ability to return to normal daily activities,” or physician- and patient-reported efficacy of the treatments.



Ramli K, et al. *Curr Ther Res*. 2015 Dec; 77: 66-72.

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Table 3. Human clinical studies on the effects of various *Sambucus nigra* treatments against influenza

Study	Treatment	dosage	n	Results	p
Zakay-Rones et al., 1995	Sambucol®	4 tsp (all adults) once daily for 2 days 4 tsp (adults) or 2 tsp (children) once daily for 2 days	25 27	Absence of side-effects in healthy adults Recovery from fever in 4 days instead of 6 or more days Symptomatic improvement in 2 days instead of 5 or more days Complete recovery in 2-3 days instead of 5 or more days	<0.01 <0.001 <0.001 <0.001
Korlee, 1998 Zakay-Rones et al., 2004	Sambucol® Sambucol®	15 mL four times daily for 5 days	60	Lessened duration of illness All individual symptoms relieved in 2-4 days instead of 7-8 days Global assessment showed pronounced improvement after 3 days instead of 7 days Less use of rescue medication than control Absence of side-effects in patients	<0.001 <0.001 <0.001 <0.001
Kong, 2009	Elderberry extract lozenge from HerbalScience Singapore Pte. Ltd.	4 lozenges daily for 2 days	64	24 h: significant improvement in all symptoms except coughing and mucus discharge 48 h: significant improvement in all symptoms 48 h: complete eradication of all symptoms in 28% of treatment group and 0% of control group	<0.0001 <0.0001 <0.0001
Tiralongo et al., 2016	Rubini capsules	2 capsules/day priming (9 days), then 3 capsules/day (6 days)	29 312	Absence of side effects in patients Lessened symptom severity Lessened illness duration No significant difference in use of rescue medications Less occurrence of illness in treatment group (not significant)	0.05 0.02 0.9 0.2

All studies were randomized, double-blinded, and placebo-controlled, with acceptable patient compliance.


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*Phytoster. Res.* 31: 533-554 (2017)

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Supplement Facts		
Serving Size: 2 teaspoons (10 ml)		
Servings Per Container: 23		
	Amount Per Serving	%Daily Value
Calories	30	
Total Carbohydrate	8 g	3%†
Sugars	8 g	**
Elderberry Extract (berry)	3.8 g	**

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



**Sambucol**  
BLACK ELDERBERRY

BLACK ELDERBERRY

GLUTEN FREE

Great Tasting Syrup


Scientifically Tested  
Supports Immunity\*  
High antioxidant levels

7.5 FL oz  
230ml  
Syrup

Dietary Supplement

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## Probiotics and Prebiotics



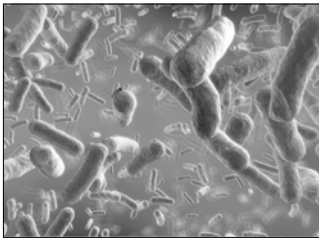
- Review: 12 studies with children, adults, and elders not at high risk for URTI.
- Moderate-quality evidence shows fewer people develop URTI when taking probiotics
- Moderate quality evidence probiotics probably reduces duration of a URTI by approximately 2 days.

Hao Q, Dong BR, Wu T. Probiotics for preventing acute upper respiratory tract infections. *Cochrane Database Syst Rev.* 2015 Feb 3;(2):CD006895.

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## Vaccine Adjuvant

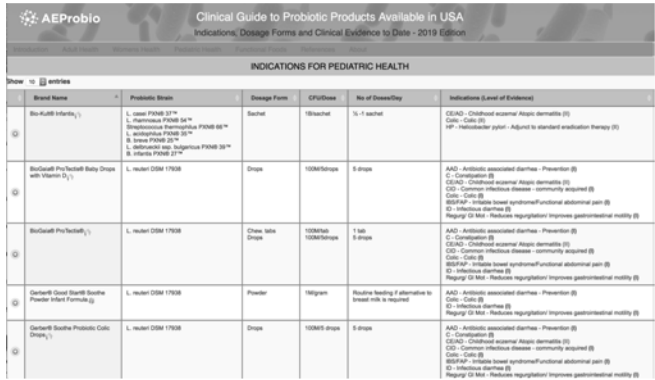


Lei WT, et al. Effect of Probiotics and Prebiotics on Immune Response to Influenza Vaccination in Adults: A Systematic Review and Meta-Analysis of Randomized Controlled Trials. *Nutrients.* 2017 Oct 27;9(11).

- 20 studies found “supplementation of influenza vaccines with **probiotics or prebiotics before vaccination** increased the immunogenicity to specific influenza viral strains, including the H1N1, H3N2, and B strains.”
- Longer duration of pre-supplementation, the greater the response. The older the adult, the more protection offered.
- Strains most active were *L. casei*, *L. paracasei*, and *B. longum*.

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## Clinical Resource Tool: [www.usprobioticguide.com](http://www.usprobioticguide.com)



AEProBio Clinical Guide to Probiotic Products Available in USA  
Indications, Dosage Forms and Clinical Evidence to Date - 2019 Edition

INDICATIONS FOR PEDIATRIC HEALTH

Brand Name	Probiotic Strain	Dosage Form	CFU/Strain	No. of Doses/Day	Indications (Level of Evidence)
Bio-Kult Infant (1)	L. casei P288 3.7x10 <sup>10</sup> L. rhamnosus P288 3.7x10 <sup>10</sup> Bifidobacterium longum P288 3.7x10 <sup>10</sup> L. acidophilus P288 3.7x10 <sup>10</sup> L. reuteri P288 3.7x10 <sup>10</sup> B. infantis P288 3.7x10 <sup>10</sup>	Sachet	100billion	1x-4 sachets	CEAD - Childhood atopic allergic dermatitis (1) Colic - Cuts (1) HPI - Infantile colic - Adjusted to standardised antibiotic therapy (1)
BioCult Pro-Tectall Baby Drops with Vitamin D3 (2)	L. reuteri DSM 17638	Drops	100M/drops	5 drops	AAD - Antibiotic associated diarrhea - Prevention (2) C - Clostridium (2) CEAD - Childhood atopic allergic dermatitis (2) CDI - Common infectious disease - community acquired (2) Colic - Cuts (2) BSFAP - Irritable bowel syndrome/functional abdominal pain (2) ID - Infectious diarrhea (2) Regurg (2) - Reduces regurgitation improves gastrointestinal motility (2)
BioCult Pro-Tectall (2)	L. reuteri DSM 17638	Chewable Drops	100M/drop 100M/drop	1 tab 5 drops	AAD - Antibiotic associated diarrhea - Prevention (2) C - Clostridium (2) CEAD - Childhood atopic allergic dermatitis (2) CDI - Common infectious disease - community acquired (2) Colic - Cuts (2) BSFAP - Irritable bowel syndrome/functional abdominal pain (2) ID - Infectious diarrhea (2) Regurg (2) - Reduces regurgitation improves gastrointestinal motility (2)
CartaLife Oral Sterile Bacteria Powder Infant Formula (2)	L. reuteri DSM 17638	Powder	100billion	Routine feeding if alternative to breast milk is required	AAD - Antibiotic associated diarrhea - Prevention (2) C - Clostridium (2) ID - Infectious diarrhea (2) Regurg (2) - Reduces regurgitation improves gastrointestinal motility (2)
CartaLife Bacteria Probiotic Cuts (2)	L. reuteri DSM 17638	Drops	100M/drop	5 drops	AAD - Antibiotic associated diarrhea - Prevention (2) C - Clostridium (2) CEAD - Childhood atopic allergic dermatitis (2) CDI - Common infectious disease - community acquired (2) Colic - Cuts (2) BSFAP - Irritable bowel syndrome/functional abdominal pain (2) ID - Infectious diarrhea (2) Regurg (2) - Reduces regurgitation improves gastrointestinal motility (2)

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Click next to brand name to see evidence.....

Colic - Colic	I	82. Savino, F., E. Pella, E. Palumieri, R. Oggero, and R. Miniero. "Lactobacillus reuteri (American Type Culture Collection Strain 55730) versus simethicone in the treatment of infantile colic: a prospective randomized study." <i>Pediatrics</i> 119.1 (2007): e124-e130. 85. Chau, K., E. Lau, S. Greenberg, S. Jacobson, P. Yazdani-Bajani, N. Venna, and G. Koren. "Probiotics for infantile colic: a randomized, double-blind, placebo-controlled trial investigating Lactobacillus reuteri DSM 17938." <i>The Journal of pediatrics</i> 166.1 (2015): 74-79. 84. Sung, V., H. Hascock, M.L.K. Tang, F.K. Mensah, M.L. Naton, C. Szotek, R.G. Heine, A. Stock, R.G. Barr, and M. Wake. "Treating infant colic with the probiotic Lactobacillus reuteri: double blind, placebo controlled randomised trial." <i>BMJ</i> 348 (2014): g2107. 83. Savino, F., L. Cordaro, V. Tassaro, E. Palumieri, R. Calabrese, R. Oggero, S. Roca, and D. Malfavazzi. "Lactobacillus reuteri DSM 17938 in infantile colic: a randomized, double-blind, placebo-controlled trial." <i>Pediatrics</i> 126.3 (2010): e526-e533.
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Evidence is ranked using grading system of I, II, III. You can then see the references for your review.

[http://www.usprobioticguide.com/PBCPediatricHealth.html?utm\\_source=pediatric\\_ind&utm\\_medium=civ&utm\\_campaign=USA\\_CHART](http://www.usprobioticguide.com/PBCPediatricHealth.html?utm_source=pediatric_ind&utm_medium=civ&utm_campaign=USA_CHART) Accessed January 17, 2019

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## Vitamin D and Respiratory Infection



Martineau AR, et al. Vitamin D supplementation to prevent acute respiratory tract infections: systematic review and meta-analysis of individual participant data. *BMJ* 2017; 356:e6853.

- Acute respiratory infection kills ~2.65 million people/year.
- 25 randomized controlled trials (n=10,933, aged 0-95 years).
- Vitamin D supplementation **reduced risk of acute respiratory infection among all participants and those who were vitamin D deficient experienced the most benefit (NNT=4)**

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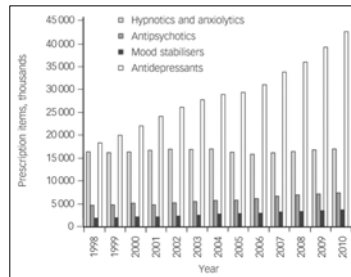
**High levels of stress hormones** linked to high blood pressure, high cholesterol, high blood sugar, insulin resistance, insomnia, weight gain, headaches, mood swings, depression, and increased risk of infections.

*Scientists believe that prolonged elevation of stress hormones may shorten our lifespan by 15 years.*



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### Trends in prescriptions of major classes of psychiatric drugs 1998–2010.



Stephen Ilyas, and Joanna Moncrieff BJP  
2012;200:393-398

THE BRITISH JOURNAL  
OF PSYCHIATRY

Fournier, et al. JAMA. 2010;303(1):47-53

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### Many Factors at Play..... All Must be Addressed...



- Processed, **nutrient depleted** diet
- **Poor sleep** and inadequate rest
- Lack of **physical activity**
- Increased exposure to **environmental toxins**
- **Social isolation** and soul pain
- Strong focus on **image**, money, high achievement, having “stuff”
- Weaker personal and **community networks**

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### Real State of Our Nutrition

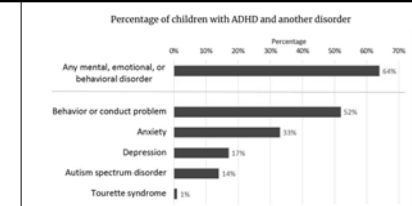
- **90 million** Americans are **vitamin D deficient** (using the Endocrine Society guidelines < 20ng/mL)
- **30 million** are **deficient in vitamin B6**
- **18 million** people have **B12 deficiency**
- **16 million** have **vitamin C deficiency**
- 13% of Latinas and 16% of African American women (ages 12-49) are **iron deficient**
- Women **25-39** overall have **borderline iodine insufficiency**



CDC: 2nd National Report on the Biochemical  
Indicators of Diet and Nutrition in the U.S.  
population

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### ADHD



- Number of children diagnosed with ADHD according to CDC:
- Ages 2-5: ~388,000 children
- Ages 6-11: ~2.4 million children
- Ages 12-17: ~3.3 million children
- 5.2% of all children 2-17 years of age take ADHD medication

<https://www.cdc.gov/ncbddd/adhd/data.html> Accessed January 18, 2019

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## Bisphenol A

- Prenatal exposure to BPA associated **higher levels of anxiety, depression, aggression, and hyperactivity** in children.
- BPA exposure in childhood = **higher levels of anxiety, depression, hyperactivity, inattention, and conduct problems.**
- 132 mother-infant pairs in **Alberta Pregnancy Outcomes and Nutrition study**: higher maternal BPA increased baseline cortisol in females and increased reactivity in males.
- Changes in **HPA axis function consistent with animal models.**



Fijander M, et al. Bisphenol A exposure and children's behavior: A systematic review. *J Expo Sci Environ Epidemiol* 2017 Mar;27(2):175-183.  
Giesbrecht GF, et al. Prenatal bisphenol a exposure and dysregulation of infant hypothalamic-pituitary-adrenal axis function: findings from the APON cohort study. *Environ Health* 2017; May 19;16(1):47. doi: 10.1186/s12940-017-0259-8.

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## Pesticide Exposure and ADHD



- Pound for pound, children **drink 2.5 times more water, eat 3-4 times more food, and breathe 2 times more air.** They are exposed to more pesticide.
- Studies have found **significant association between urinary pesticide levels and hyperactive-impulsive symptoms.**
- Using data from NHANES – children with typical levels of pesticide exposure from eating pesticide-treated fruits/vegetables, have higher risk of developing ADHD.
- Children ages 8-15 with **higher urinary levels of pesticide residues had twice the odds of ADHD** when compared with children with low or undetectable levels.

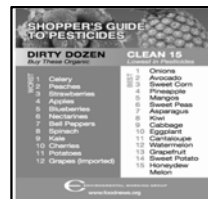
Kuehn BM. *JAMA*. 2010 Jul 7;304(1):27-8.

Bouchard, et al. *Pediatrics*. 2010 Jun;125(6):e1270-7.

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## Organophosphates

- Systematic review: most studies evaluating prenatal OP exposure **observed negative effect on mental development and increase in attention problems in preschool and school children.**
- Consumption of organic diet for one week significantly reduced OP pesticide exposure in adults as measured by urinary metabolites.
- *Mean total OP metabolites in organic phase 89% lower than when participants were eating conventional foods.*
- **EWG** has useful handouts ([www.ewg.org](http://www.ewg.org))



Kuehn BM. *JAMA*. 2010 Jul 7;304(1):27-8.  
Bouchard, et al. *Pediatrics*. 2010 Jun;125(6):e1270-7.  
Gonzalez-Alzaga B, et al. *Toxicol Lett* 2014; 230(2):104-21.  
Wagner-Schuman M, et al. *Environ Health* 2015; May 28;14:44.  
Oates L, et al. *Environ Res* 2014; 132:105-11.  
Bradman A, et al. *Environ Health Perspect* 2015; 123(10):1086-93.

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## Movement is Life.....

- **80 million** Americans 6 years and older are **entirely inactive**
- Relationship between physical activity and **cardiovascular, metabolic, neurological, immunological and bone health well-established.**
- **Shown to reduce the harmful effects of stressors** when performed at moderate intensities.
- Meta-analysis of **398 studies** consistently shows **exercise benefits mood, depression and anxiety.**

DeLands, et al. *Neuropsychobiology* 2009; 59(4):191-8

Rebar AL, et al. *Health Psychol Rev* 2015; Mar 5:1-78

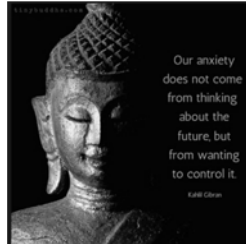


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## Meditation

- Excellent for **reducing stress perception and pain intensity**, while elevating mood.
- Long-time meditators have greater activation of areas responsible for **sustaining attention, processing empathy, integrating emotion and cognition**.
- Review **47 trials**: meditation improves
  - Anxiety
  - Depression
  - Pain



Goyal M, et al. *JAMA Intern Med* 2014; 174(3):357-68

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## Meditation Resources

- **Guided Mindfulness Meditation: A Complete Guided Mindfulness Meditation Program** from Jon Kabat-Zinn
- **Insight Timer** - ~4,000 guided meditations from more than 1,000 teachers (self-compassion, nature, stress, podcasts and more). More than 750 meditation music tracks. Free.
- **Headspace** – very good for beginners with 10 minute meditations. Free.
- **The Mindfulness App** – nice 5 day guided meditation program to get you started. Can be personalized and integrated into other health apps. Free.

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## Loneliness, Social Isolation & Your Health

- Poor social relationships associated with **29% increase in risk of heart disease and 32% increased risk of stroke**.
- **148 studies** on the effects of social isolation on health found it is:
  - As bad as **smoking** 15 cigarettes a day
  - As dangerous as being an **alcoholic**
  - As harmful as **never exercising**
  - Twice as dangerous as being **obese**



- Valtorta NK, et al Loneliness and social isolation as risk factors for coronary heart disease and stroke: systematic review and meta-analysis of longitudinal observational studies. *Heart*. 2016 Jul 1;102(13):1009-16.
- Cacioppo JT, et al. *Ann NY Acad Sci* 2011; 1231:17-22

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*"But until a person can say deeply and honestly, 'I am what I am today because of the choices I made yesterday,' that person cannot say, 'I choose otherwise.'"*

*Stephen Covey*



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1. **Move more.** Whether it's the 7 minute workout, cycling, yoga, or taking long walks - one of the surest ways to maintain heart, brain, bone and muscle health is daily exercise. It's not optional. ***Just do it.***
2. Eat food. Minimally processed, **low glycemic load**, diverse, and largely **plant based** diet. **Organic, local, and/or humanely raised** when possible.
3. **Meditate.** Meditation widens the gap between trigger and response, allowing you to feel a greater calm and awareness. It's a **game changer** for almost anyone.
4. **Stay connected.** Social isolation and loneliness is as dangerous as being an alcoholic or being obese. **Invest in your friends and family.**
5. **Take a multi.** Many lack when it comes to key micronutrients. A food based multi can be insurance against the gaps. **Age and gender** appropriate.
6. Be tech smart. Technology makes life easier and more complex. Use **blue light blocking glasses** at night, make one day each week **tech free** or tech "light", and **limit work email in the evening.**
7. **Nurture spirit.** The search for meaning and purpose is a fundamental part of being human. A **richly nourished inner life** is a source of strength during hard times. **Look inward. Honor mystery.**

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Patient: Doctor, I don't feel well and I'm not sure why.



Doctor: I want you to meditate for 20 minutes, twice a day, exercise for at least 30 minutes a day, avoid processed foods, eat plenty of organic fruit and veg, spend more time in nature and less indoors, stop worrying about things you can't control and ditch your T.V. Come back in 3 weeks.

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