

Integrative Medicine: *It's Not Alternative Anymore*



Tieraona Low Dog, M.D.

Chair: US Pharmacopeia
Dietary Supplements Admissions Joint
Standard Setting Sub-Committee

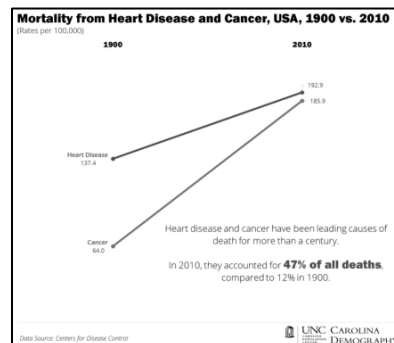
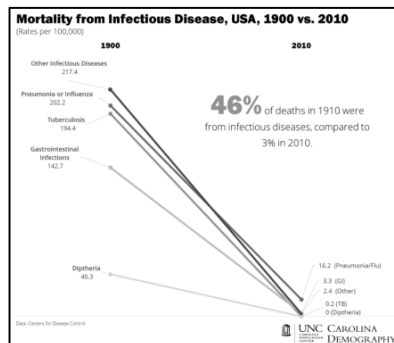
Author of National Geographic's "*Fortify Your Life*" "*Healthy At Home*" and "*Life Is Your Best Medicine*"

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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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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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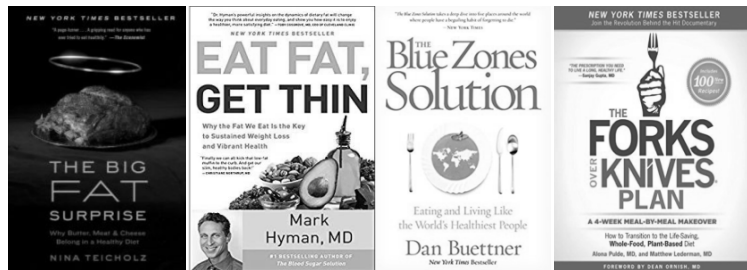
Nutritional Guidance



- 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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Is it any wonder that people are confused?

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Dietary Inflammatory Index (DII)

- Inflammation often driven by dietary patterns. An anti-inflammatory diet may reduce **sub-chronic inflammation** and improve **cardiovascular, metabolic, and neurologic parameters**.
- The **Dietary Inflammatory Index** is based on measuring inflammation in the body in response to specific foods (many clinical trials).
- You can take the test by **downloading the app for Dietary Inflammatory Index** (iTunes: DII Screener)

Question #2
What was your average intake of bananas over the last year?

Small serving Medium serving Large serving

Never
1 Per Month
2-3 Per Month
1 Per Week
1 Per Week
3-4 Per Week
5-6 Per Week
1 Per Day
2+ Per Day

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Inflammatory Food Ratings

200 or higher	Strongly anti-inflammatory
101 to 200	Moderately anti-inflammatory
0 to 100	Mildly anti-inflammatory
-1 to -100	Mildly inflammatory
-101 to 200	Moderately inflammatory
-201 or lower	Strongly inflammatory

FOOD	SERVING SIZE	SERVING SIZE (GRAMS)	IF RATING
AGAVE NECTAR	1 TBSP	21	-74
ALMOND BUTTER	¼ CUP	64	100
CHEESE, CHEDDAR	1 OUNCE	28.35	-20
CHICKEN BREAST, RSTD	3 OUNCES	85	-19
MILK, WHOLE	1 CUP	246	-46
OLIVE OIL	1 TBSP	14	74
ONIONS, COOKED	½ CUP	105	240
RICE, WHITE	1 CUP	158	-153
SPINACH	1 CUP	30	75
SALMON, SOHO BAKED	3 OUNCES	85	450
TURMERIC	½ TSP	1.5	338

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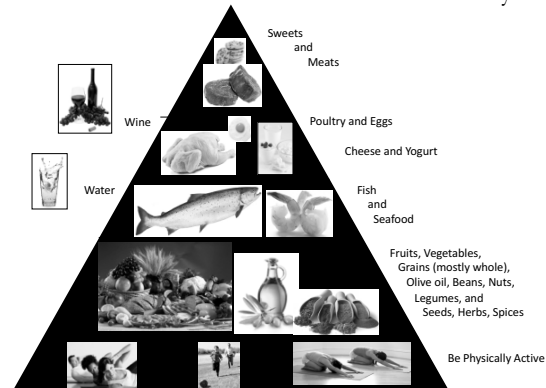
Mediterranean Dietary Pattern and Memory

- Mediterranean and DASH diets** have been associated with **lower dementia risk**. Researchers evaluated the **inflammatory potential** of these diets in relation to mild cognitive impairment/dementia risk **using the DII during an average follow up of 9.7 years during Women's Health Initiative Memory Study**.
- Higher inflammatory scores were significantly associated with **greater cognitive decline and earlier onset of cognitive impairment**.

Hayden KM, et al. The association between an inflammatory diet and global cognitive function and incident dementia in older women: The Women's Health Initiative Memory Study. *Alzheimers Dement* 2017 May 19. pii: S1552-5260(17)30185-1.

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Mediterranean Diet Pattern: Anti-Inflammatory



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Mediterranean Dietary Pattern

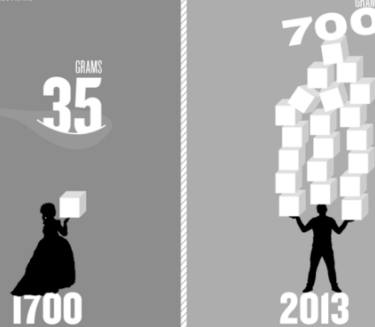
- 13 meta-analyses of observational studies and 16 meta-analyses of randomized controlled trials investigating association between adherence to Mediterranean diet and 37 different health outcomes, for a total population of over than **12,800,000 subjects**, were reviewed.
- Robust evidence (P -value<0.001) and large simple sizes show that greater adherence to the Mediterranean diet is associated with **reduced risk** of overall mortality, cardiovascular disease, heart attack, overall cancer incidence, diabetes, neuro-degenerative diseases and lower inflammatory markers.

Dinu M, et al. Mediterranean diet and multiple health outcomes: an umbrella review of meta-analyses of observational studies and randomized trials. *Eur J Clin Nutr* 2017; May 10. doi: 10.1038/ejcn.2017.58.

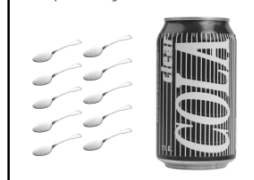
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ONE LUMP OR 20: HOW WEEKLY SUGAR CONSUMPTION HAS GROWN

SOURCES: ELIZABETH ABBOTT, NMS



10 teaspoons of sugar = 1 can of non-diet soda



This equals 32 pounds of sugar per year simply from soda

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November 2016

Sugar Industry and Coronary Heart Disease Research

A Historical Analysis of Internal Industry Documents

Cristin E. Kearns, DDS, MBA^{1,2}; Laura A. Schmidt, PhD, MSW, MPH^{3,4}; Stanton A. Glantz, PhD^{1,5,6,7,8}

> Author Affiliations

JAMA Intern Med. 2016;176(11):1680-1685. doi:10.1001/jamainternmed.2016.5394

Editorial Comment

Related Articles

Author Interview

Abstract

Early warning signals of the coronary heart disease (CHD) risk of sugar (sucrose) emerged in the 1950s. We examined Sugar Research Foundation (SRF) internal documents, historical reports, and statements relevant to early debates about the dietary causes of CHD and assembled findings chronologically into a narrative case study. The SRF sponsored its first CHD research project in 1965, a literature review published in the *New England Journal of Medicine*, which singled out fat and cholesterol as the dietary causes of CHD and downplayed evidence that sucrose consumption was also a risk factor. The SRF set the review's objective, contributed articles for inclusion, and received drafts. The SRF's funding and role was not disclosed. Together with other recent analyses of sugar industry documents, our findings suggest the industry sponsored a research program in the 1960s and 1970s that successfully cast doubt about the hazards of sucrose while promoting fat as the dietary culprit in CHD. Policy-

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Sugars



- Americans consume primarily: **table sugar and high-fructose corn syrup**.
- Table sugar (sucrose): bond between **one glucose and one fructose** molecule
- High fructose corn syrup: **55% fructose, 42% glucose** and 3% other sugars.
- Every cell in our body readily converts **glucose into energy**.
- Liver cells** are one of few types of cells that **can convert fructose to energy**.
- Soda floods liver with large amounts of **free floating fructose** versus the **fiber in an apple** slows down digestion, making the **fructose slowly enter the liver**.
- Large amounts of **“free” fructose taxes the liver** and increases fatty liver disease.
- Fructose raises levels of the hormone **ghrelin, which stimulates hunger, and suppresses leptin, the hormone that makes you feel full**.

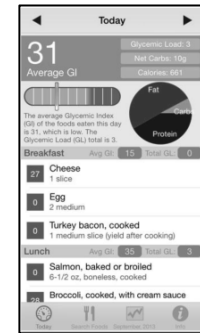
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Glycemic Index/Load

Low GI Diet Tracker
App: \$3.99

- 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.

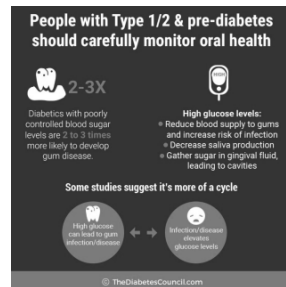


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Diabetes Matters to Us All

- “There is strong evidence that **people with periodontitis have elevated risk for dysglycemia and insulin resistance**.”
- Periodontitis** is also associated with an **increased risk** of type 2 diabetes.”
- “The European Federation of Periodontology and the International Diabetes Federation report consensus guidelines for **physicians, oral healthcare professionals and patients to improve early diagnosis, prevention and co-management of diabetes and periodontitis**.”



Sanz M, et al. Scientific evidence on the links between periodontal diseases and diabetes: Consensus report and guidelines of the joint workshop on periodontal diseases and diabetes by the International Diabetes Federation and the European Federation of Periodontology. *J Clin Periodontol* 2017 Aug 24. doi: 10.1111/jcpe.12808.

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Glycemic Load and Mood

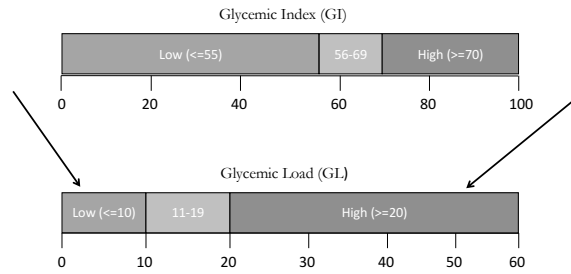
- 82 healthy weight and healthy overweight or obese, adults enrolled in randomized, crossover controlled feeding study.
- Compared to a low GL diet, consumption of **high GL diet** resulted in:
 - 38% higher score for **depressive symptoms** ($P = 0.002$)
 - 55% higher score for **total mood disorder**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



Breymeyer KL, et al. *Appetite* 2016; Dec 1;107:253-259.

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Glycemic Index & Glycemic Load Rating Chart



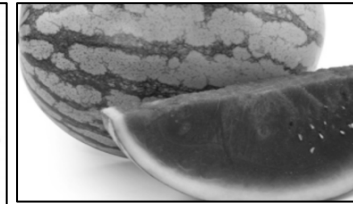
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Which One Would You Choose?

Banana
 Glycemic Index = 52
 Available Carbs = 24 grams
 Glycemic Load = 14



Watermelon
 Glycemic Index = 72
 Available Carbs = 10 grams
 Glycemic Load = 8



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Glycemic Load

Individual Food Portion

Low	0-10
Moderate	11-19
High	20+

Whole Day

Low	< 80
Moderate	80-120
High	>120

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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
Asparagus	½ cup	2
Broccoli	1 cup	4
Green beans	1 cup	3
Tomato	1 medium	2
Subway sandwich	6 inch	17
Turkey breast		
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
Spaghetti	1 cup	38
Brown rice	1 cup	23
White rice	1 cup	33
Macaroni and cheese	1 cup prepared	31

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Low/High GI Meals

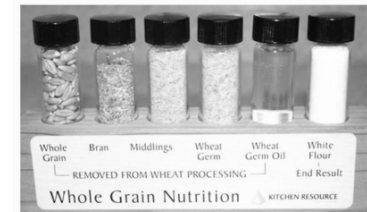
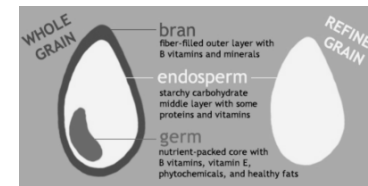


GI = 80 GL = 32



GI = 61 GL = 12

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Tips on Whole Grains

- **100% Whole Wheat** (first ingredient!)
- **Oats** (skip the instant)
- **Brown Rice** (white has bran/germ removed, LOW in nutrients)
- **Whole Rye** (four times the fiber of whole wheat, most nutritious)
- **Whole Grain Barley** (not pearled: bran and germ have been removed)
- **Buckwheat** (loaded in magnesium, gluten-free)
- **Quinoa** (not a grain, it's a seed loaded in protein and omega 3)
- **Whole Wheat Couscous** (delicious and high in fiber)
- **Corn** (organic, non-GMO – increases healthy gut flora)

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Gluten

- Autoimmune condition **celiac disease**, where immune system interacts negatively with **gluten**, a storage protein in cereal grains. **ONLY** treatment is complete avoidance of gluten. Note: *In children, celiac disease is associated with both enamel defects and aphthous stomatitis.**
 - Celiac symptom checklist: (celiac.org/celiac-disease/resources/checklist/)
- Other individuals may be **allergic to wheat**, not all grains. Symptoms can include GI (indigestion, cramps, diarrhea, nausea), respiratory (stuffy/runny nose) and/or skin (hives or rash). Necessary to **AVOID** wheat.
- And still others appear to have a **gluten sensitivity**, where “symptoms” improve when they eliminate gluten from their diet. This is less clear....

*Nieri M, et al. Enamel defects and aphthous stomatitis in celiac and healthy subjects: Systematic review and meta-analysis of controlled studies. *J Dent* 2017; Oct;65:1-10.

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www.celiac.org

Lots of info. Recipes provided for 7 day meal plan.

Get an app!

The Gluten-Free Scanner (free, more than 500,000 products)



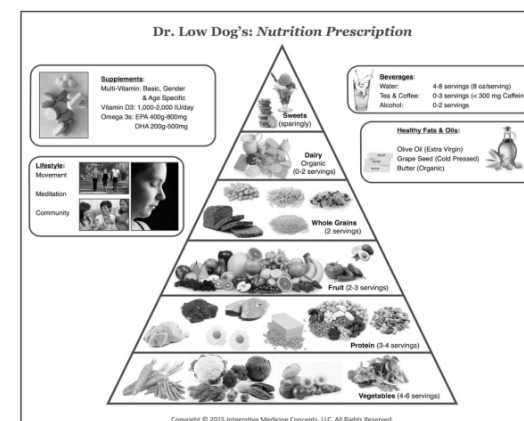
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Non Celiac Gluten Sensitivity

- Multicenter study of **1,114 children (negative for celiac and wheat allergy)** with **chronic functional GI symptoms** associated with **gluten ingestion** using a **double-blind placebo controlled gluten challenge and crossover**.
- Patients were randomized to gluten (10 g/daily) and placebo (rice starch) for 2 weeks each, separated by a washout week. Out of 1,114 children, **96.7% did not exhibit any correlation with gluten ingestion**.
- Eleven of 36 children** who did react tested posted for gluten challenge.

Francavilla R, et al. Randomized Double-Blind Placebo-Controlled Crossover Trial for the Diagnosis of Non-Celiac Gluten Sensitivity in Children. *Am J Gastroenterol* 2018 Jan 30. doi: 10.1038/sig.2017.483

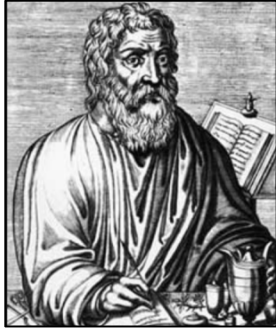
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Eating alone will not keep a man well. He must also take exercise.

Hippocrates



- Higher risk for **heart disease**, **type 2 diabetes**, **certain cancers**, **Alzheimer's disease** and **increase lower back pain**, **depression** and **anxiety**.
- **Half of baby boomers** in the US report having **NO** exercise.
- **80 million Americans** over the age of 6 years of age are **entirely inactive**

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FITT Prescription

- **Frequency** – how **often** you exercise
- **Intensity** – how **hard** you exercise
- **Time** – how **long** you spend exercising
- **Type** – what **kind** of exercise

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Cardiorespiratory Endurance

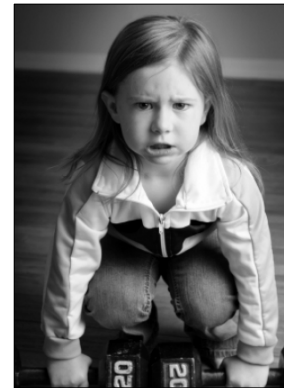
- **Frequency:** at least **3 days** per week
- **Intensity:** **60% of your max heart rate**
 - $220 - \text{your age} = \text{maximum beats per minute}$
 - $\text{Maximum heart rate} \times 0.6$
 - $220 - 50 = 170 \times 0.6 = 102 \text{ bpm}$
- **Time:** minimum of **30 minutes**
- **Type:** any exercise **that keeps your heart rate up continuously**.



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Muscle Strength and Endurance

- **Frequency:** **2-3 days** per week
- **Intensity:** **3 sets of 8 repetitions** (these should be hard, if going for endurance do the repetitions until you can't.)
- **Time:** **no time** requirement for strength training
- **Type:** mix it up – those that use **weight, resistance, jumping** all develop muscular strength. Can use machines or pushups, abdominal curls, planks, etc.



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Flexibility

- **Frequency:** at least **3 days per week** should stretch all major muscles
- **Intensity:** should **feel slight muscular discomfort** but **NOT** pain
- **Time:** hold each **static stretch for 5-10 seconds**, do a couple repetitions, **dynamic stretching for 5-10 minutes**
- **Type:** **static or dynamic** (side shuffle, walking knee to chest, etc.).



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Motivation

- Use a fitness tracker – assess your baseline (normal activity 3 days) and see where you can improve.
- Use an app, join a class, grab a friend
- Make it a habit. Just *do* it.
- Do something you enjoy
- Focus on the *immediate* benefits you will feel once you start exercising regularly



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Pain



- Affects at **>100 million Americans**, more than those with heart disease, cancer, and diabetes combined.
- Pain costs **US >\$500 billion annually** in medical treatment and lost productivity.
- US accounts for **~100% of hydrocodone** (e.g., Vicodin) and **81% for oxycodone** (e.g., Percocet) used globally.
- In 2012, **over 5% of U.S. population 12 yrs or older used opioid pain relievers non-medically**

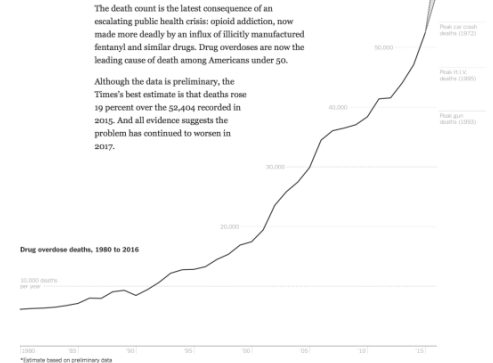
<http://som.edu/Reports/2011/%20Relieving-Pain-in-America-A-Blueprint-for-Transforming-Prevention-Care-Education-Research/Report-Brief.aspx>

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AKRON, Ohio – Drug overdose deaths in 2016 most likely exceeded 59,000, the largest annual jump ever recorded in the United States, according to preliminary data compiled by The New York Times.

The death count is the latest consequence of an escalating public health crisis: opioid addiction, now made more deadly by an influx of illicitly manufactured fentanyl and similar drugs. Drug overdoses are now the leading cause of death among Americans under 50.

Although the data is preliminary, the Times's best estimate is that deaths rose 19 percent over the 52,404 recorded in 2015. And all evidence suggests the problem has continued to worsen in 2017.



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“Drug Deaths in America Are Rising Faster Than Ever”
Josh Katz, *NY Times*
June 5, 2017

Chronic Low Back Pain Guidelines

- For patients with chronic low back pain, clinicians and patients should **initially** select non-pharmacologic treatment with **exercise, multidisciplinary rehabilitation, acupuncture, mindfulness-based stress reduction, tai chi, yoga, progressive relaxation, cognitive behavioral therapy, spinal manipulation...**

(Grade: **strong** recommendation)

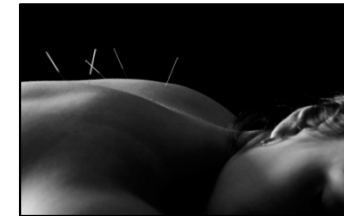


Qaseem A, et al. Noninvasive Treatments for Acute, Subacute, and Chronic Low Back Pain: A Clinical Practice Guideline From the American College of Physicians. *Annals of Internal Medicine* 2017;166(7):514-530.

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Acupuncture for Migraine

- Cochrane review 22 trials (n=4985) concluded that adding acupuncture to symptomatic treatment of attacks reduces the frequency of headaches AND that *acupuncture may be at least as effective as treatment with prophylactic drugs.*
- "Acupuncture can be considered a treatment option for patients willing to undergo this treatment."



Linde K, et al. Acupuncture for the prevention of episodic migraine. *Cochrane Database Syst Rev* 2016; Jun 28; (6):CD001218

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Magnesium for Migraines



Sun-Edelein C, Mouskop A. *Clin J Pain*. 2009 Jun;25(5):446-52.
Pringsheim T, et al. *Cas J Neurol Sci* 2012; 39(2Suppl) S1-S9
Chiu HY, et al. *Pain Physician* 2016; 19(1):197-112.

- Studies show **migraineurs have low brain Mg** during migraine and low systemic mag.
- Reduces **pediatric migraine** and **tension headaches**.
- Canadian Headache Society: **strong recommendation** for prophylaxis with **600 mg magnesium citrate**.
- Diarrhea** most common side effect (**mag oxide > citrate > glycinate**). Caution in poor kidney function.

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Mindfulness Meditation

- Long-time meditators have greater activation of areas responsible for sustaining **attention**, processing **empathy**, **integrating emotion and cognition**, and **perceiving** the mental and emotional state of **others**.
- Review of **47 trials** found **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 days guided meditation program to get you started. Can be personalized and integrated into other health apps. Free.
- *Aura* – multiple teachers, from 3-10 minute daily meditations. Customizable. #1 new app on Apple in 2017. \$29 for 6 months.

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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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