Food for the Heart

Royce L. Bargas, DO – Integrative Cardiology and Functional Medicine

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Disclosures

- I have no disclosures pertaining to this talk
- "Wellness and AF: Food for the Heart"
  - One disclaimer is that this will not really be a talk about Atrial Fib but rather how to support overall cardiovascular health with food.
  - If we can decrease CV disease, HTN, DM and HLD then inevitably we will decrease Afib.

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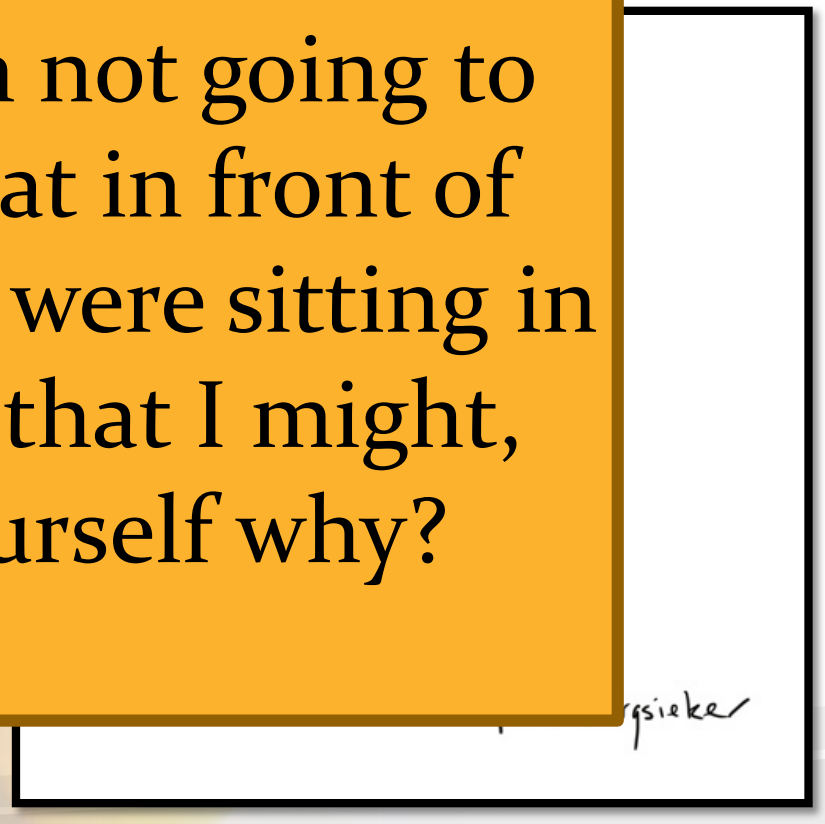
First Question…

- As a healthcar
  example for m
  how to mainta
  lifestyle to def
  cardiometabol
- My Body Mass
  - A <18.5
  - B 18.5-25
  - C 26-30
  - D 31-39
  - E > 40

I'm just kidding. I'm not going to make you answer that in front of everybody. But if you were sitting in your chair horrified that I might, you should ask yourself why?



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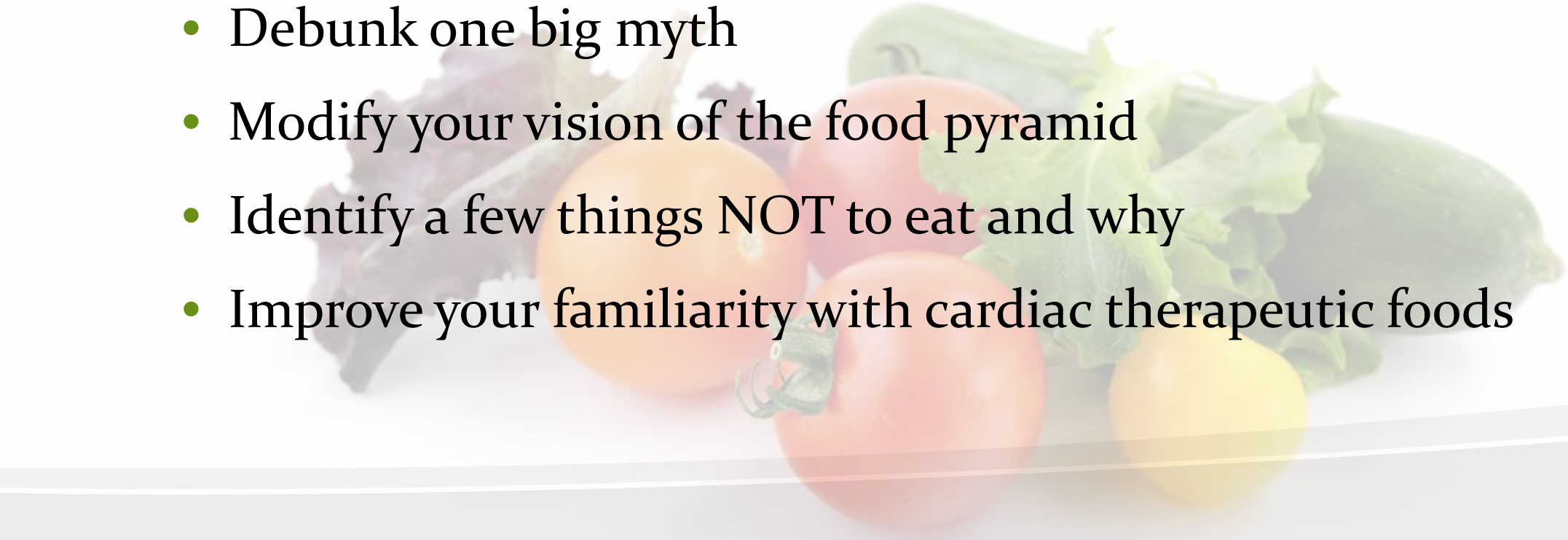
Objectives – This talk should…

- Help you nderstand that obesity is a global concern and how food has contributed to this problem
- Debunk one big myth
- Modify your vision of the food pyramid
- Identify a few things NOT to eat and why
- Improve your familiarity with cardiac therapeutic foods



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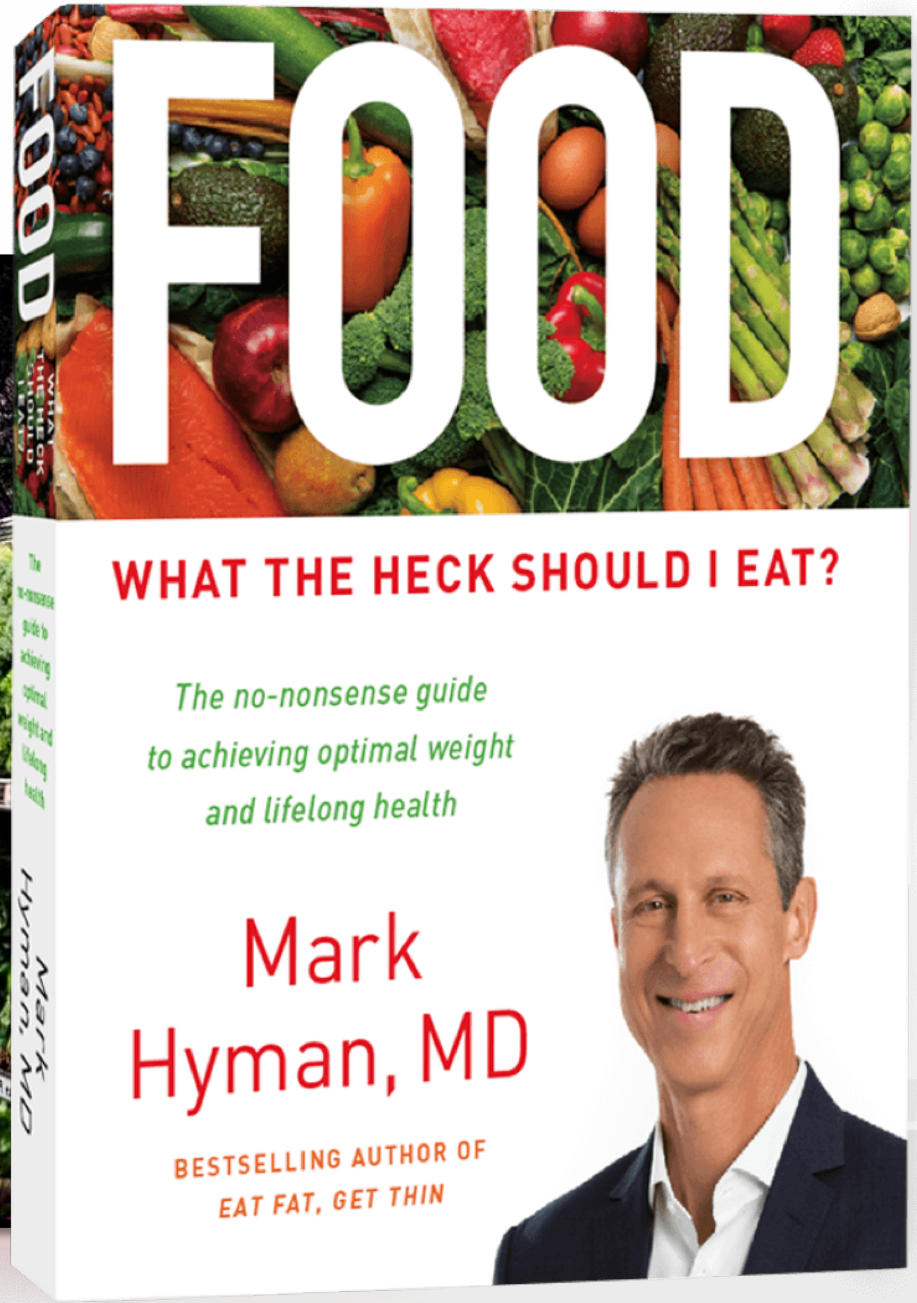
Just memorize this book...



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Shop the Perimeter…

Dairy/
Eggs

Meat/Poultry/Seafood

Deli

Frozen
Fruits &
Veggies

Fresh Fruit
& Veggies

Fresh
Breads

Cash Registers

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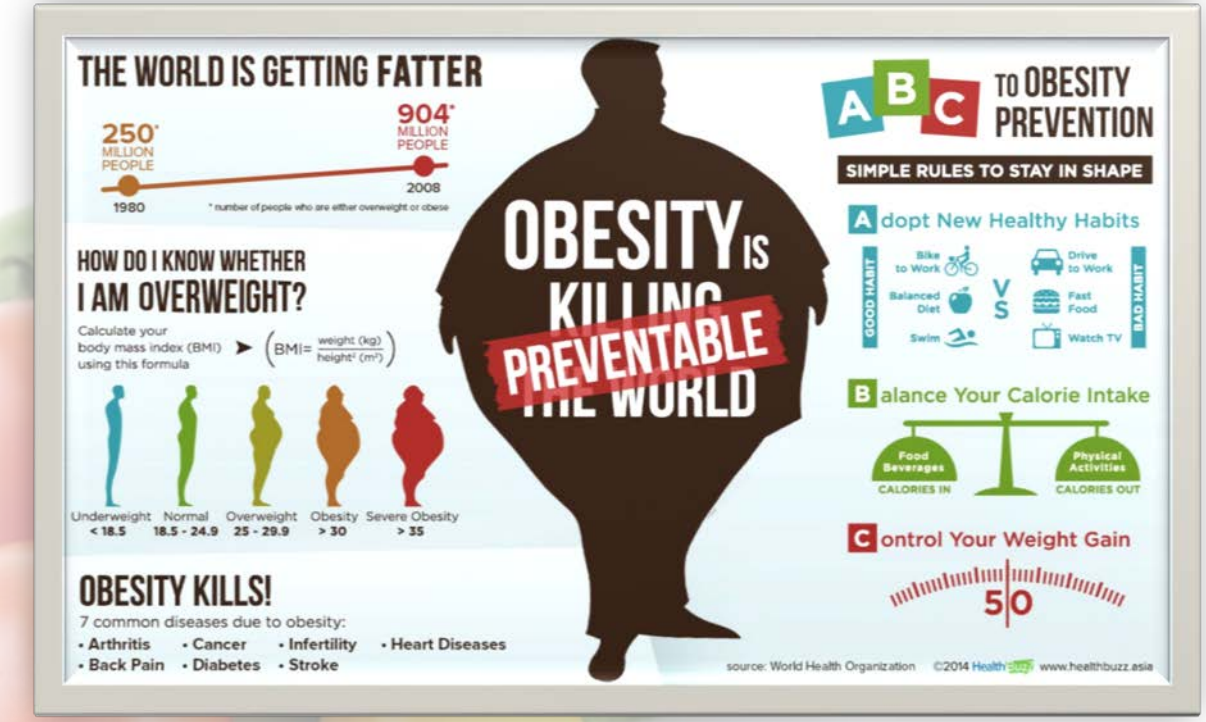
Why does food matter?

- Obesity is an epidemic that has created a global health crisis
- Food, or substances that the food industry wants us to believe are food, cause obesity



https://www.who.int/news-room/fact-sheets/detail/obesity-and-overweight

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WHO - **Urgent health challenges for the next decade**

- Making health care more fair
- Expanding access to medicine
- Preparing for epidemics
- Protecting people from dangerous products
  - "unsafe food and unhealthy diets are responsible for almost one-third of today's global disease burden. As people consume foods and drinks high in sugar, trans fat and salt, overweight, obesity and diet-related diseases are on the rise globally"
- Investing in people who defend our health
- Keeping adolescents safe
- Earning public trust
- Harnessing new technology
- Protecting the medicines that protect us
- Keeping health care clean
- Elevating health in the climate debate
- Delivering health in conflict and crisis
- Stopping infectious disease

https://www.who.int/news-room/photo-story/photo-story-detail/urgent-health-challenges-for-the-next-decade: World Health Organization - From the Newsroom, January 13, 2020

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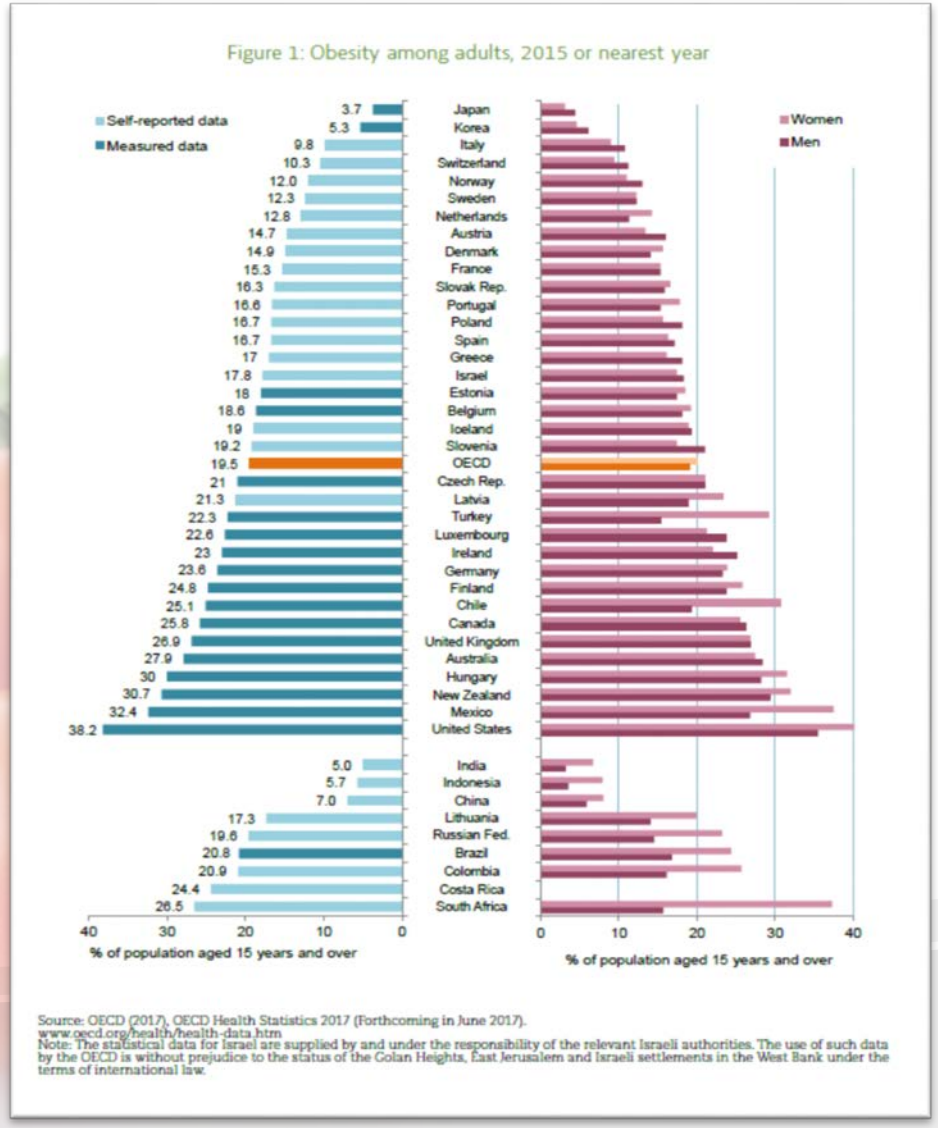
According to the WHO 2017 Update on Obesity…

- **Worldwide obesity** has nearly tripled since 1975.
- In 2016,
  - 39% of adults were overweight
    - 1.9 billion
  - 13% were **obese**
    - 650 million



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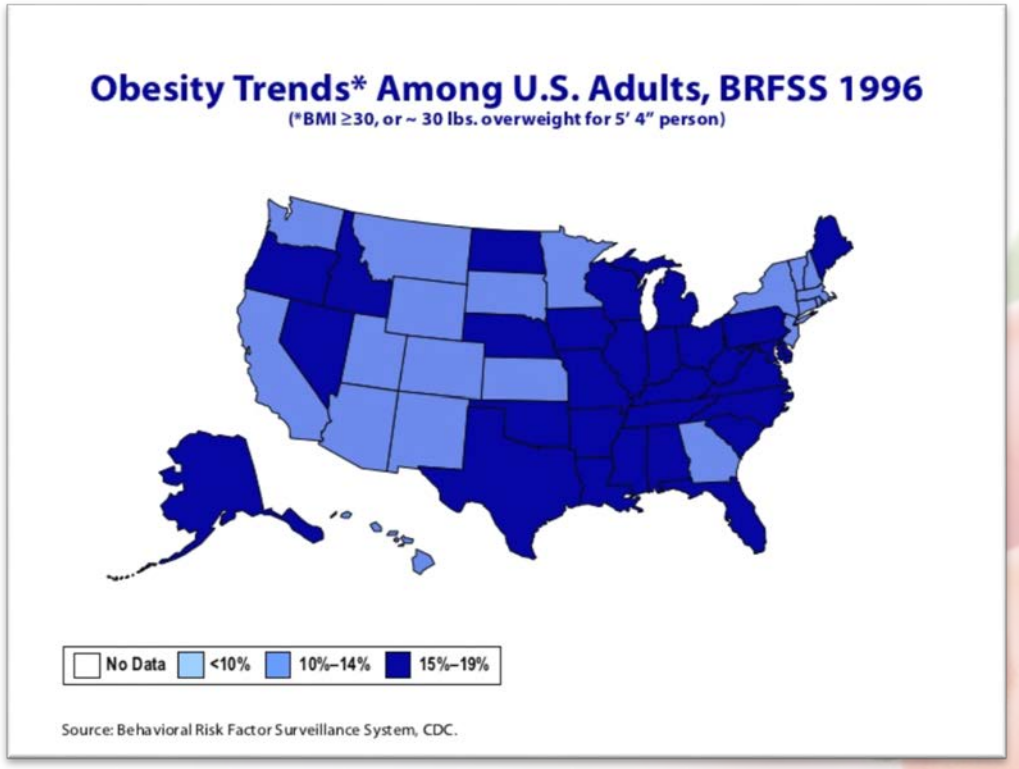
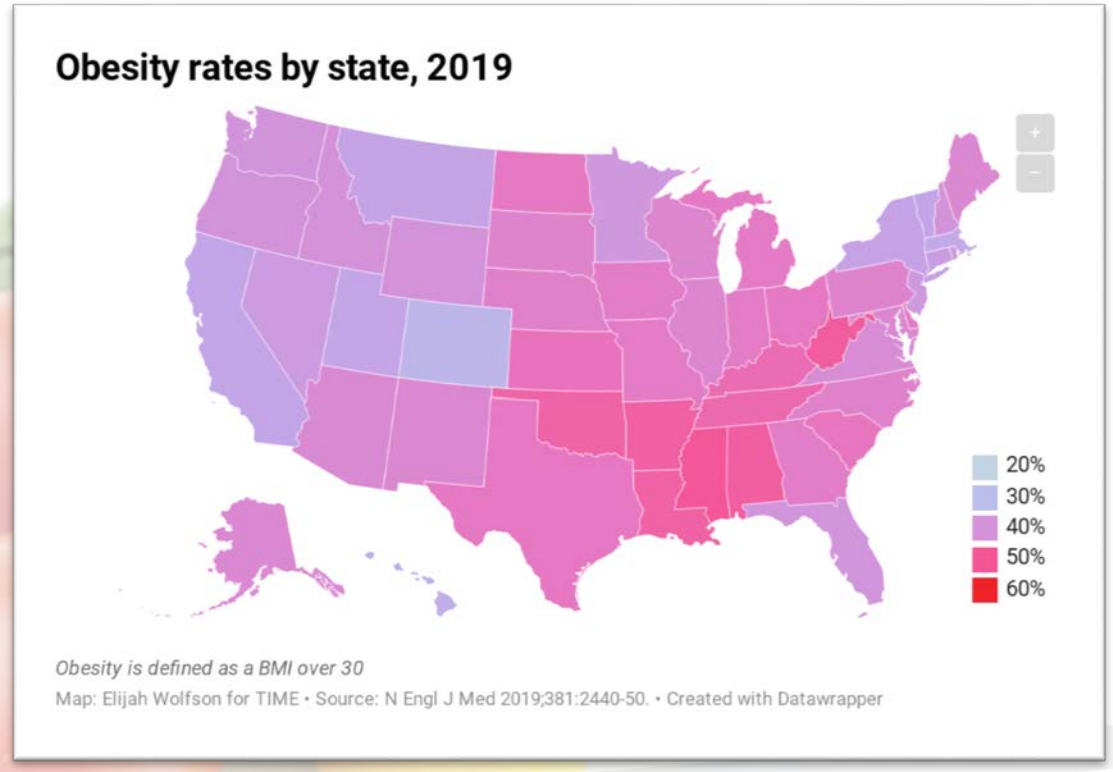
Here in the US, we are the winner!





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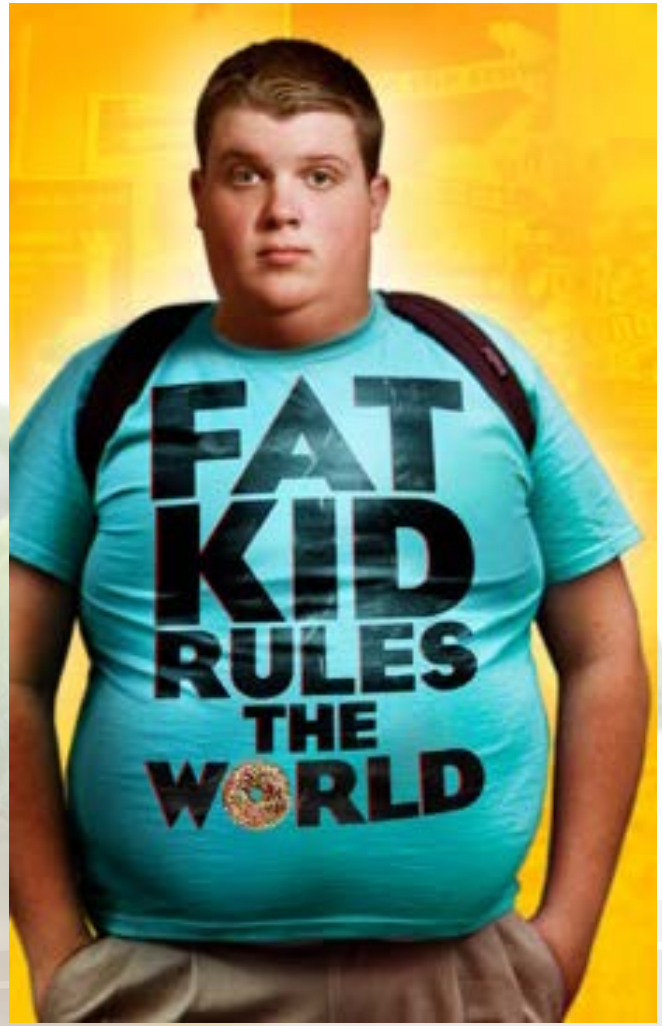
It's not just the adults!

- One in six children are obese
- In a 2016 report:
  - 41 million children under the age of 5 were overweight or obese.
  - Over 340 million children over the age of 5 were overweight or obese.
- In Africa, the number of overweight children under age 5 has increased by nearly 50% since 2000.



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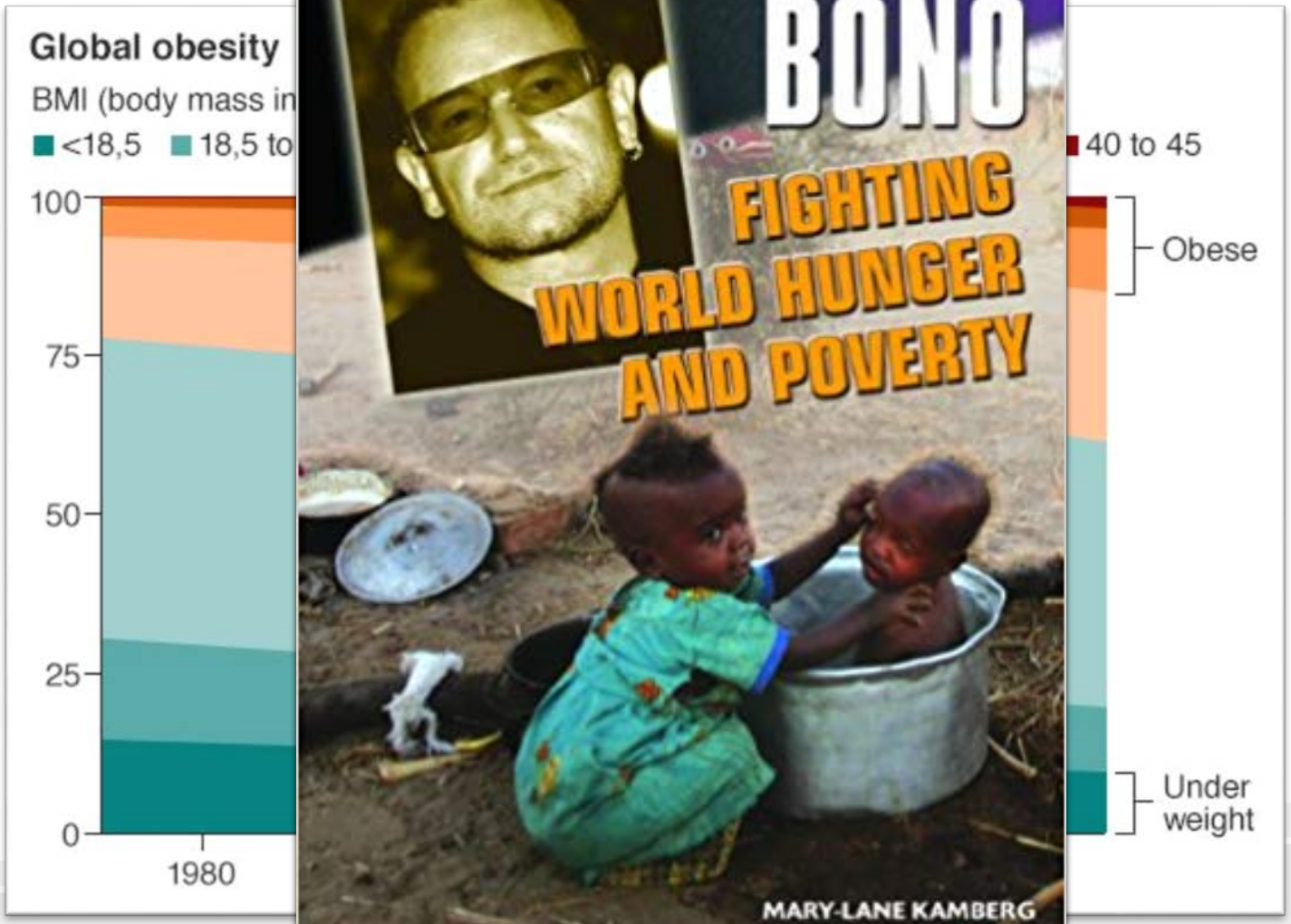
It's Official…



NCD Risk Factor Collaboration. Trends in adult body-mass index in 200 countries from 1975 to 2014. Lancet. 2016 Vol. 387:1377-96.

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So what does that have to do with the Heart?

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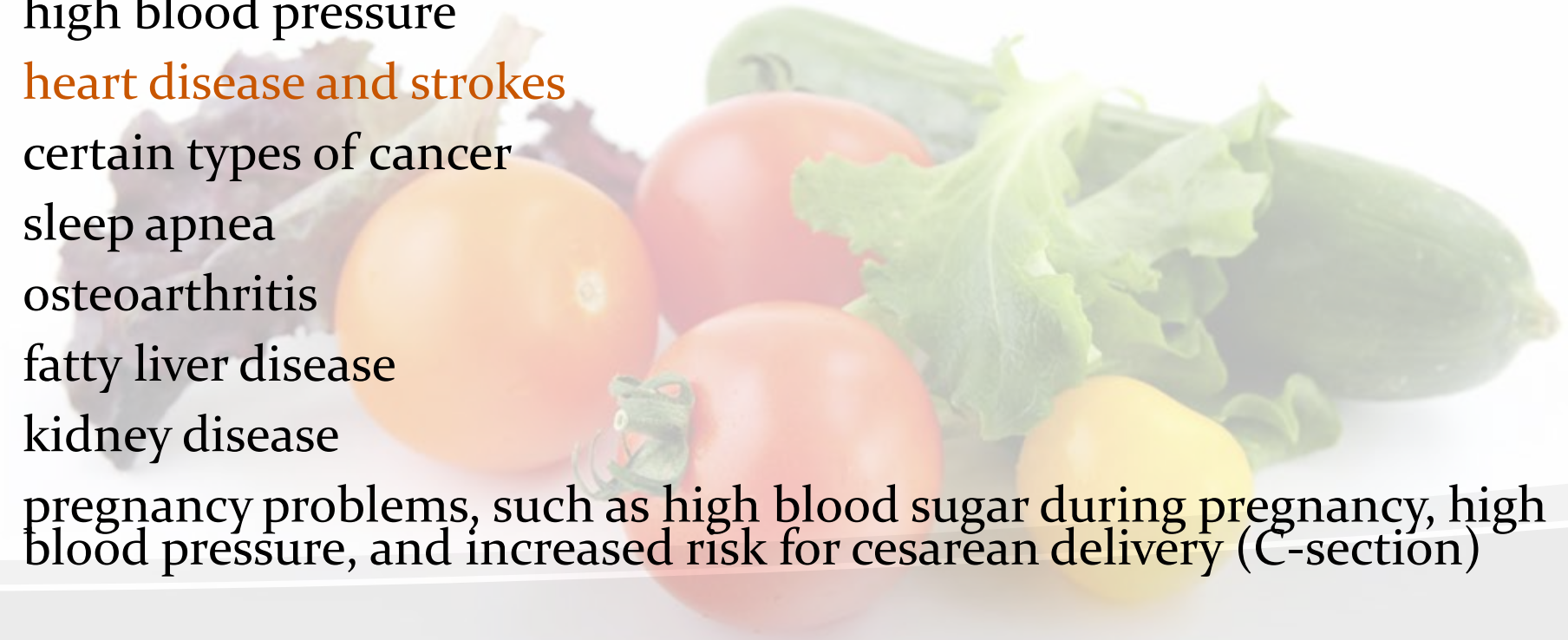
- Excess weight increases the risk for many health problems, including…
  - type 2 diabetes
  - high blood pressure
  - heart disease and strokes
  - certain types of cancer
  - sleep apnea
  - osteoarthritis
  - fatty liver disease
  - kidney disease
  - pregnancy problems, such as high blood sugar during pregnancy, high blood pressure, and increased risk for cesarean delivery (C-section)



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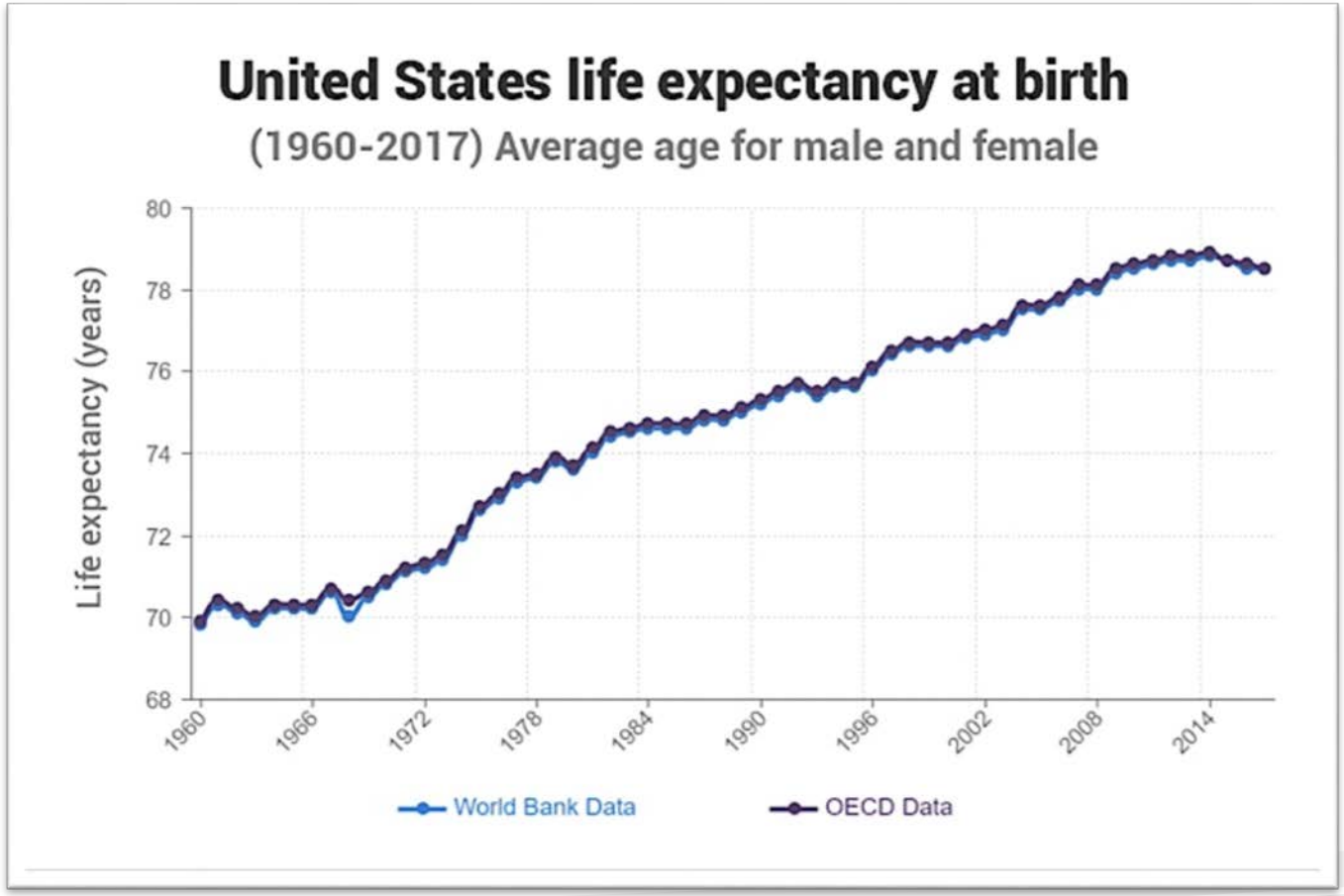
We are living shorter lives!



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National Center for Health Statistics. NCHS Data Brief No. 328, November 2018.
Woolf et al. Life Expectancy and Mortality Rates in the United States, 1959-2017. JAMA Nov 2019;322(0):1996-2016

Technology simply cannot compete with the Standard American Diet – S.A.D.

Do NOT eat the S.A.D.

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Let Food be thy Medicine and Medicine be thy Food

- Hippocrates

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A Real Question…

- What percentage of your patients want to discuss various diets, nutrition and what foods they should or should not eat during their visits with you?
  - A <10%
  - B 10-25%
  - C 25-50%
  - D 50-75%
  - E > 75%

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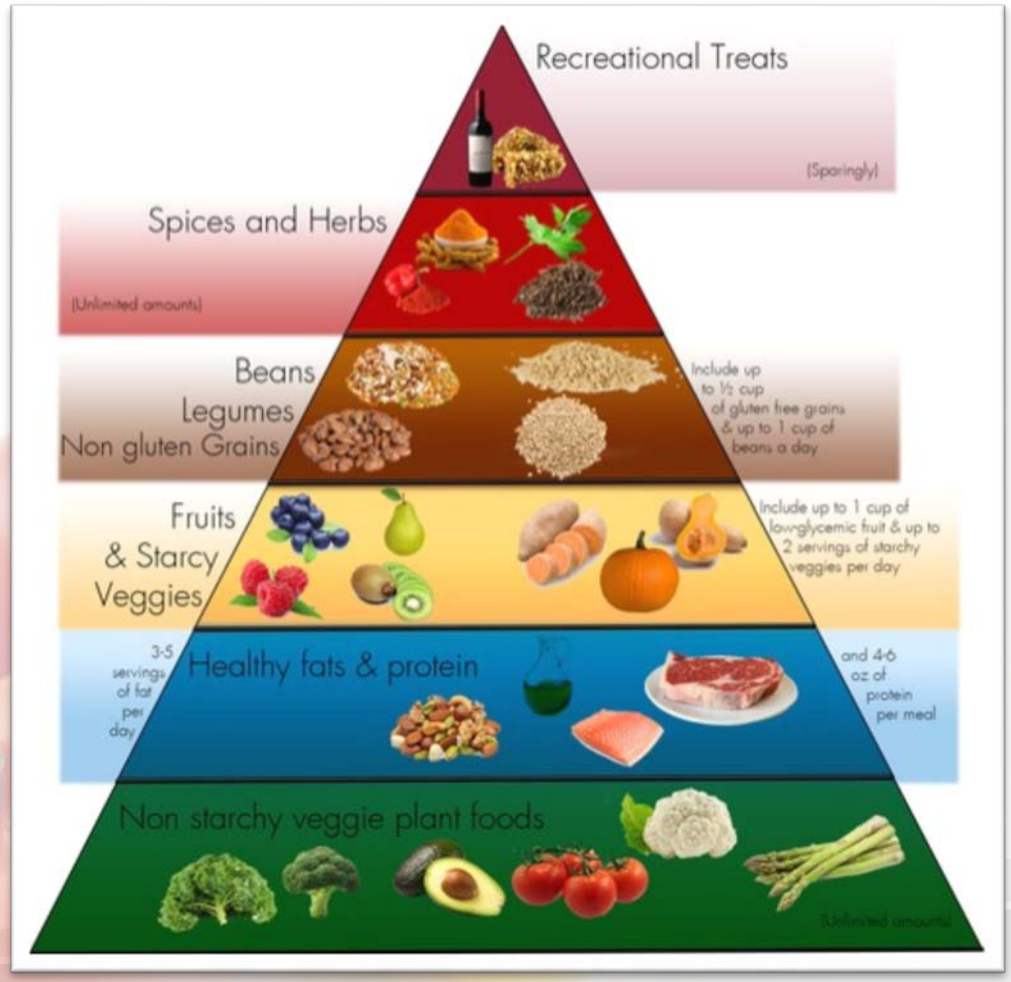
Remember the Food Pyramid?



North Carolina Department of Agriculture and Consumer Services: https://www.ncagr.gov/agscool/nutrition/pyramid.htm

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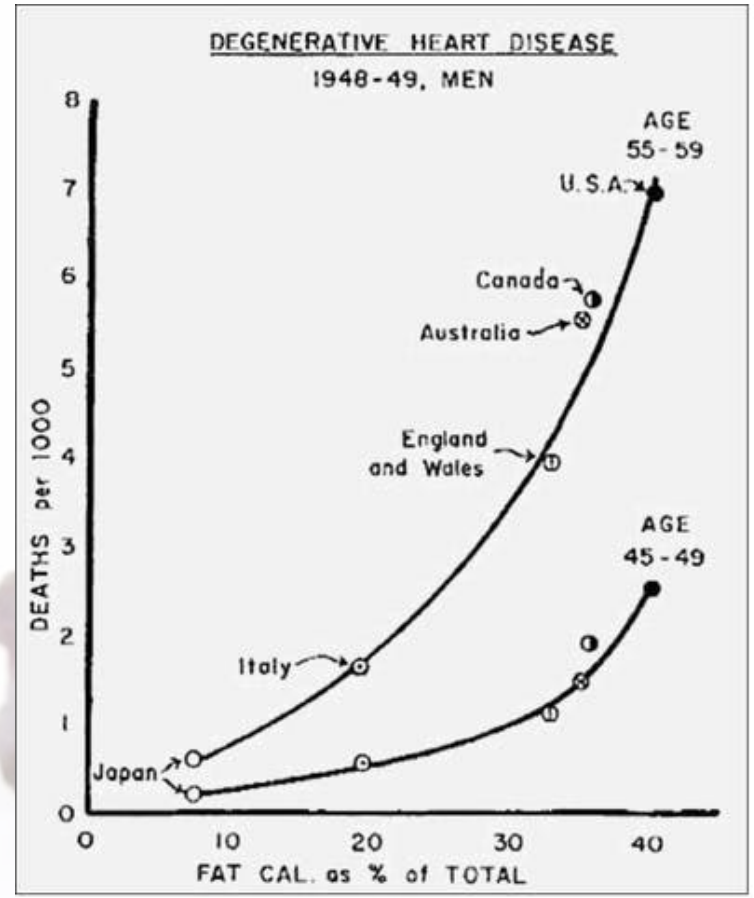
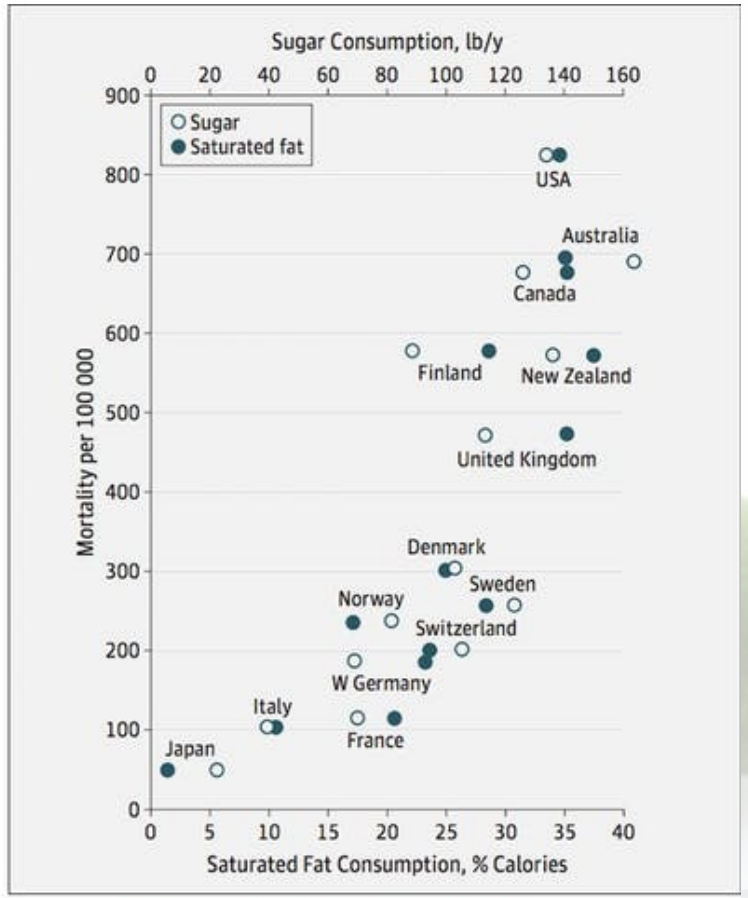
The hidden truth behind Ancel Keys' famous fat graph?



What Ancel Keys said.



What Ancel Keys didn't say.

Keys, A. Coronary heart disease in seven countries. *Circulation*. 1970; 41: 1–211

Eenfeldt A." The hidden truth behind Ancel Keys' famous fat graph?" *Failed low-fad diets, Saturated fat, Sugar/fructose*. September 2016.

Chowdhury R et al. Association of dietary, circulating and supplement fatty acids with coronary risk: a systematic review and meta-analysis. Ann Intern Med. 2014. 18;160(6):398-406.

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Misguided Guidelines?

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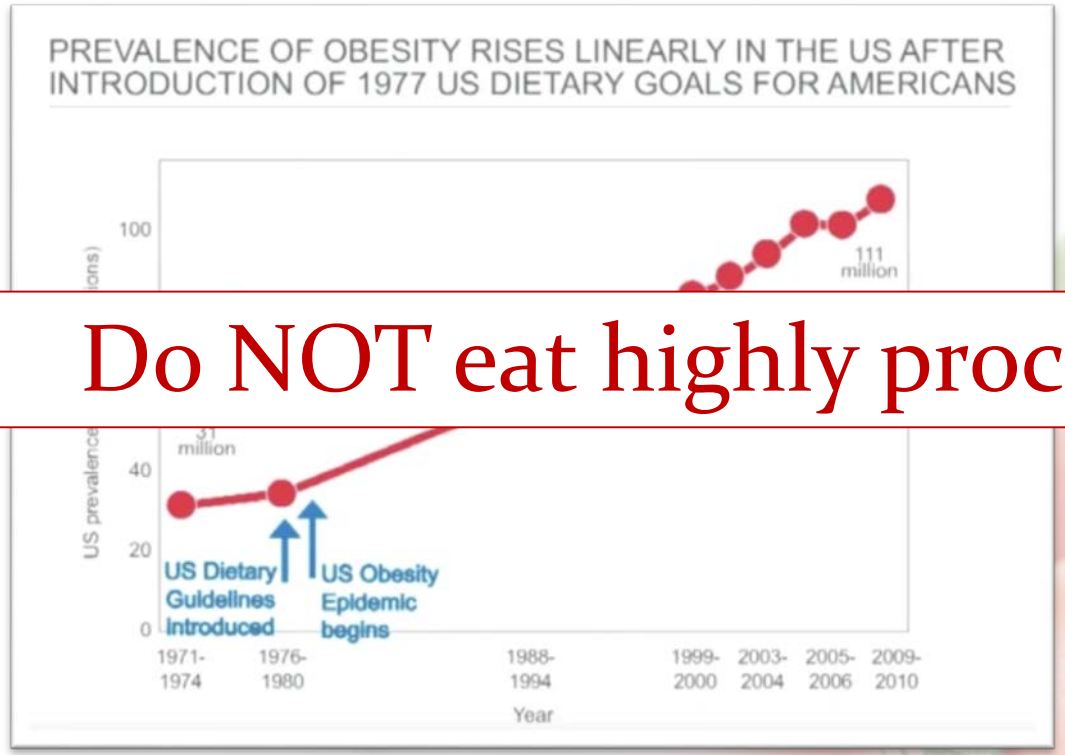

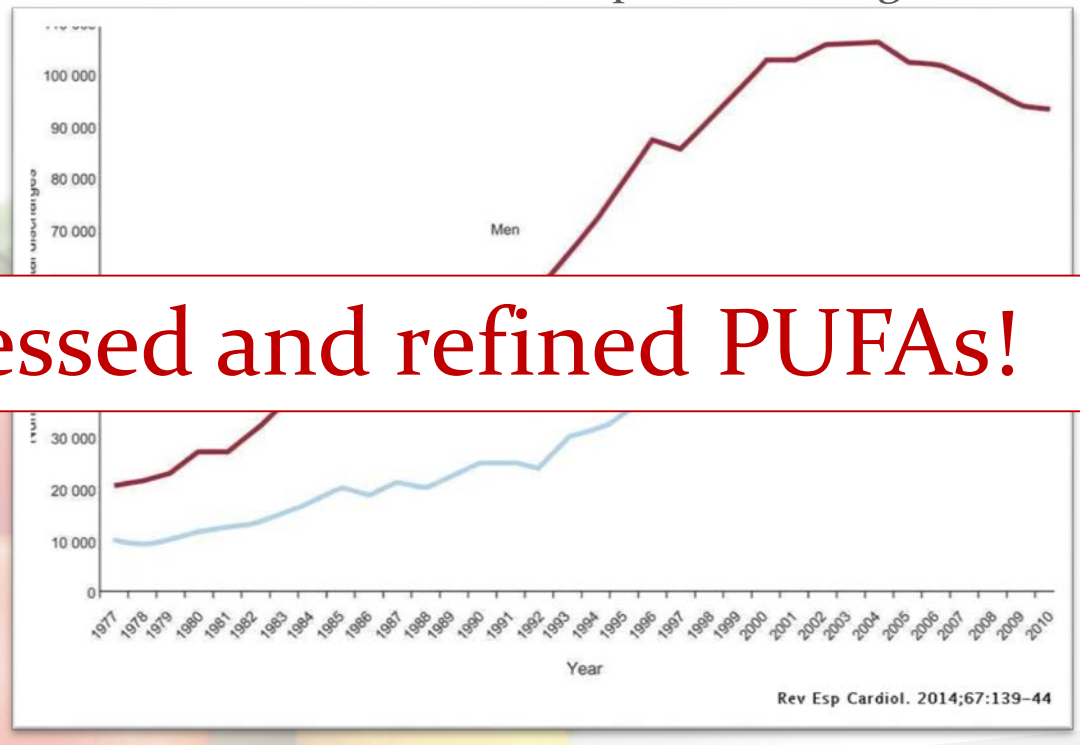

Do NOT eat highly processed and refined PUFAs!

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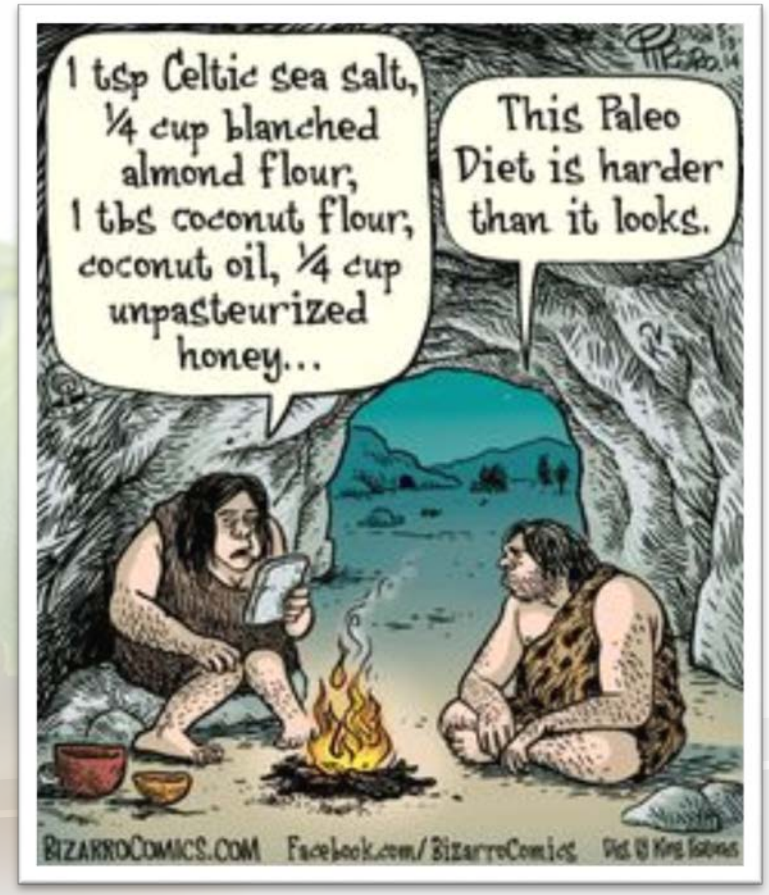
Sigurdsson AF. From Low-Fat, High Carb to Insulin Resistance, Fatty Liver and Heart Disease. *Doc's Opinion.* June 13, 2017
Ferreira-Gonzalez I." The Epidemiology of Coronary Heart Disease. Revista Espanola de *Cardiologia;* 67(2):139-144.

So what the heck should we eat?

- So Many Diets…
  - Mediterranean
  - Paleo
  - Keto
  - Pescatarian
  - Plant based, vegan, vegetarian
  - Gluten Free
  - Dairy Free
  - Next up… Food FREE



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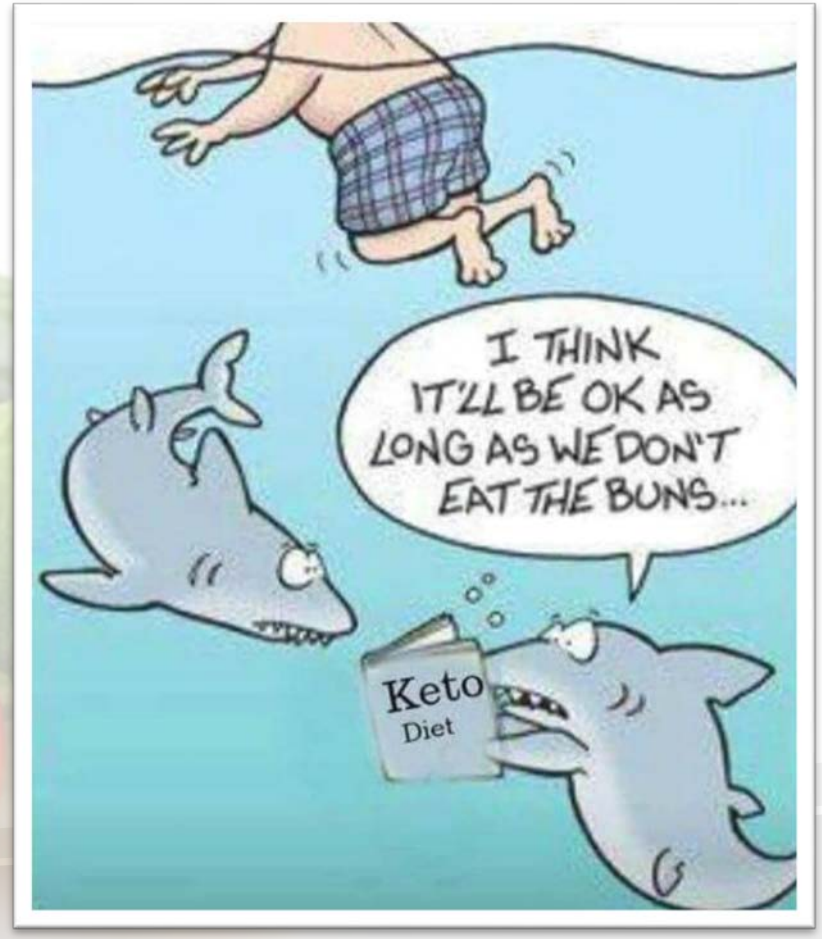
Another Question…

- Which diet do you believe to be best to prevent cardiometabolic disease?
  - A. Mediterranean
  - B. Paleo
  - C. Keto
  - D. Pescatarian
  - E. Plant based



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But isn't there some DATA?

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I hear you all saying

- Com'on Dr. Bargas, this is a cardiac electrophysiology conference for Pete's sake.
- Please, in the name of all things holy, show us at least ONE Kaplan-Meier curve!

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I would be remiss to not discuss this study…

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Mediterranean Diet, Traditional Risk Factors, and the Rate of Cardiovascular Complications After Myocardial Infarction

Final Report of the Lyon Diet Heart Study

Michel de Lorgeril, MD; Patricia Salen, BSc; Jean-Louis Martin, PhD; Isabelle Monjaud, BSc; Jacques Delaye, MD; Nicole Mamelle, PhD

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de Lorgeril M et al. Mediterranean Diet, Traditional Risk Factors, and the Rate of Cardiovascular Complications After Myocardial Infarction. Final Report of the Lyon Diet Herat Study. *Circulation*. 1999;99:779-785.

The Lyon Diet Heart Study

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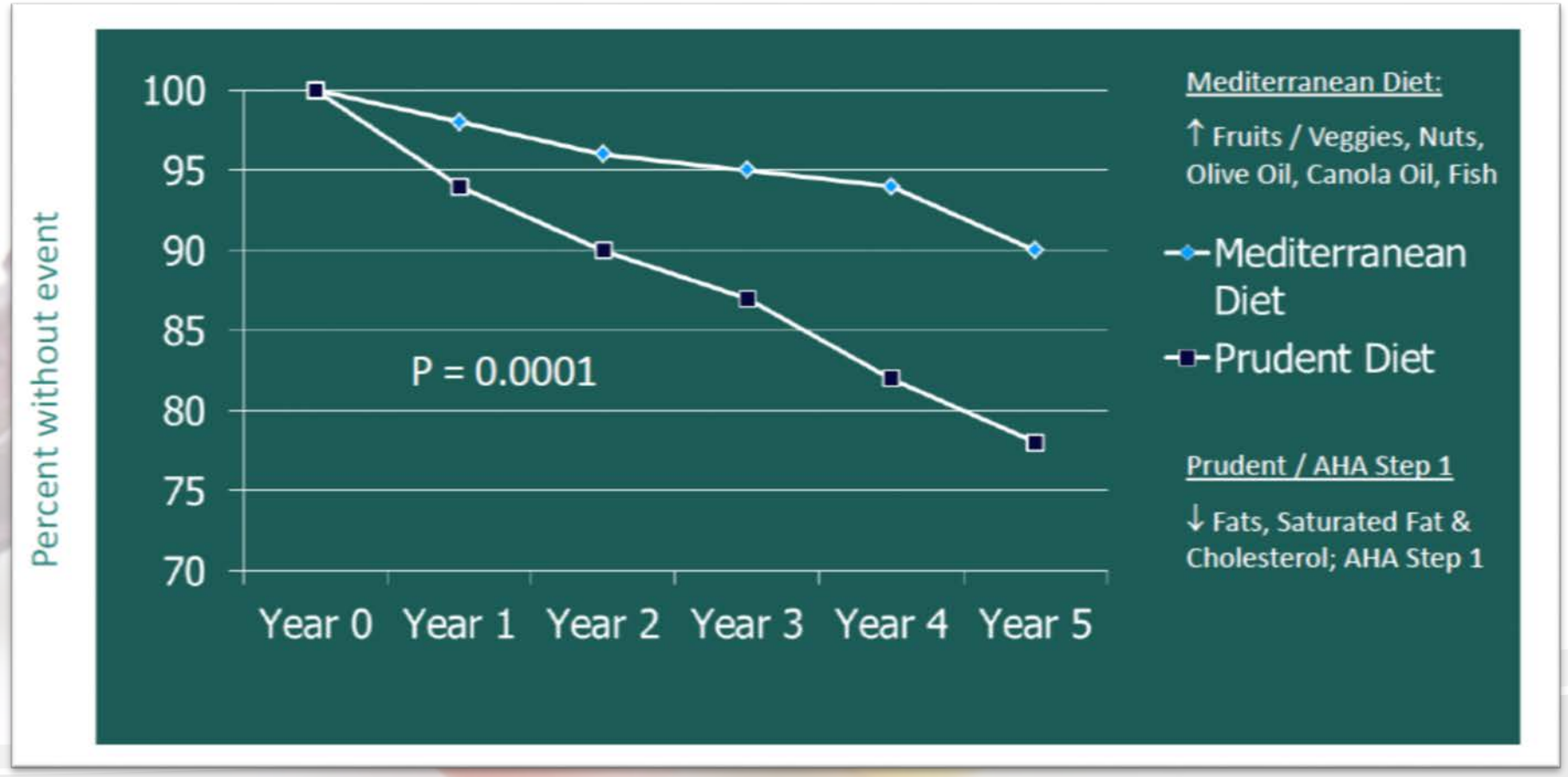
- Randomized secondary prevention trial aiming to test if the Mediterranean diet may reduce the rate of recurrence after the first myocardial infarction.

Rate of CV complications after myocardial infarction



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de Lorgeril M et al. Mediterranean Diet, Traditional Risk Factors, and the Rate of Cardiovascular Complications After Myocardial Infarction. Final Report of the Lyon Diet Herat Study. *Circulation*. 1999;99:779-785.
Modified chart borrowed from Dr. Elizabeth Boham, Dietary Choices and Cardiac Disease at IFM Cardiometabolic Advanced Practice Module, Feb 2019.

Primary Prevention of Cardiovascular Disease with a Mediterranean Diet Supplemented with Extra-Virgin Olive Oil or Nuts

- 7447 participants (55 to 80 years of age, 57% women) who were at high cardiovascular risk, but with no cardiovascular disease at enrollment, to one of three diets:
  - Mediterranean diet supplemented with extra-virgin olive oil
  - Mediterranean diet supplemented with mixed nuts
  - Control diet (advice to reduce dietary fat)
- Median follow-up of 4.8 years
- Primary end point was a major cardiovascular event (myocardial infarction, stroke, or death from cardiovascular causes)

Table 1. Summary of Dietary Recommendations to Participants in the Mediterranean-Diet Groups and the Control-Diet Group.

Food	Goal
Mediterranean diet	
Recommended	
Olive oil*	≥4 tbsp/day
Tree nuts and peanuts†	≥3 servings/wk
Fresh fruits	≥3 servings/day
Vegetables	≥2 servings/day
Fish (especially fatty fish), seafood	≥3 servings/wk
Legumes	≥3 servings/wk
Sofrito‡	≥2 servings/wk
White meat	Instead of red meat
Wine with meals (optionally, only for habitual drinkers)	≥7 glasses/wk
Discouraged	
Soda drinks	<1 drink/day
Commercial bakery goods, sweets, and pastries§	<3 servings/wk
Spread fats	<1 serving/day
Red and processed meats	<1 serving/day
Low-fat diet (control)	
Recommended	
Low-fat dairy products	≥3 servings/day
Bread, potatoes, pasta, rice	≥3 servings/day
Fresh fruits	≥3 servings/day
Vegetables	≥2 servings/wk
Lean fish and seafood	≥3 servings/wk
Discouraged	
Vegetable oils (including olive oil)	≤2 tbsp/day
Commercial bakery goods, sweets, and pastries§	≤1 serving/wk
Nuts and fried snacks	≤1 serving /wk
Red and processed fatty meats	≤1 serving/wk
Visible fat in meats and soups¶	Always remove
Fatty fish, seafood canned in oil	≤1 serving/wk
Spread fats	≤1 serving/wk
Sofrito‡	≤2 servings/wk

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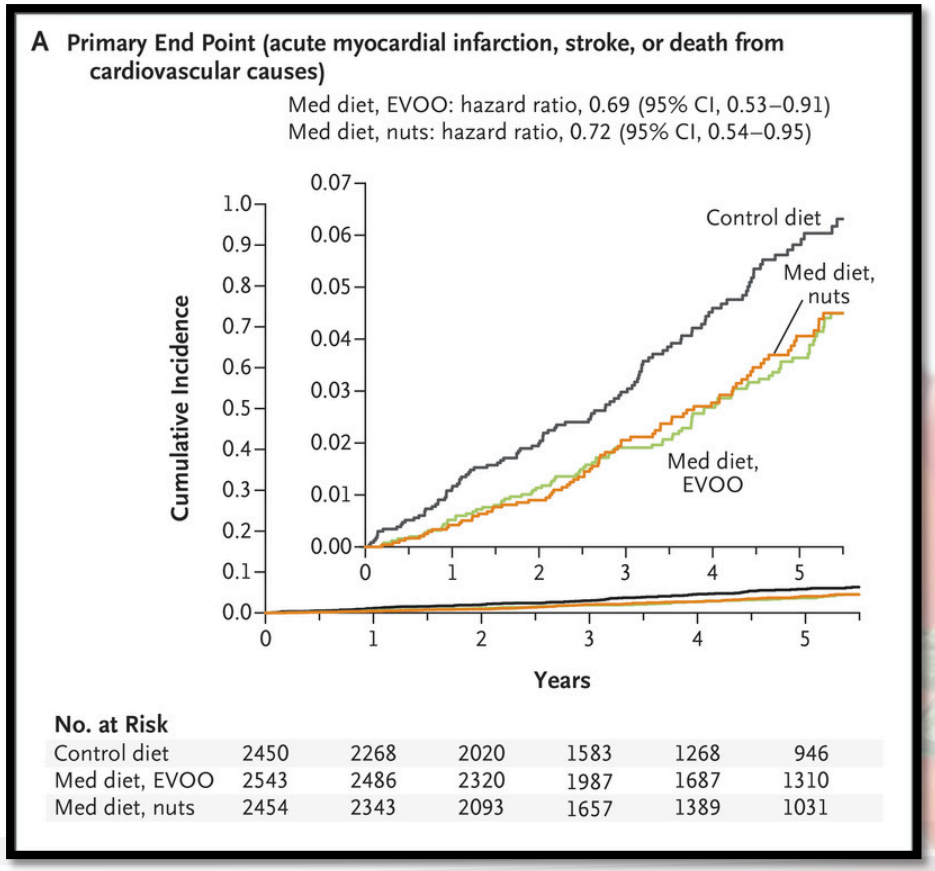
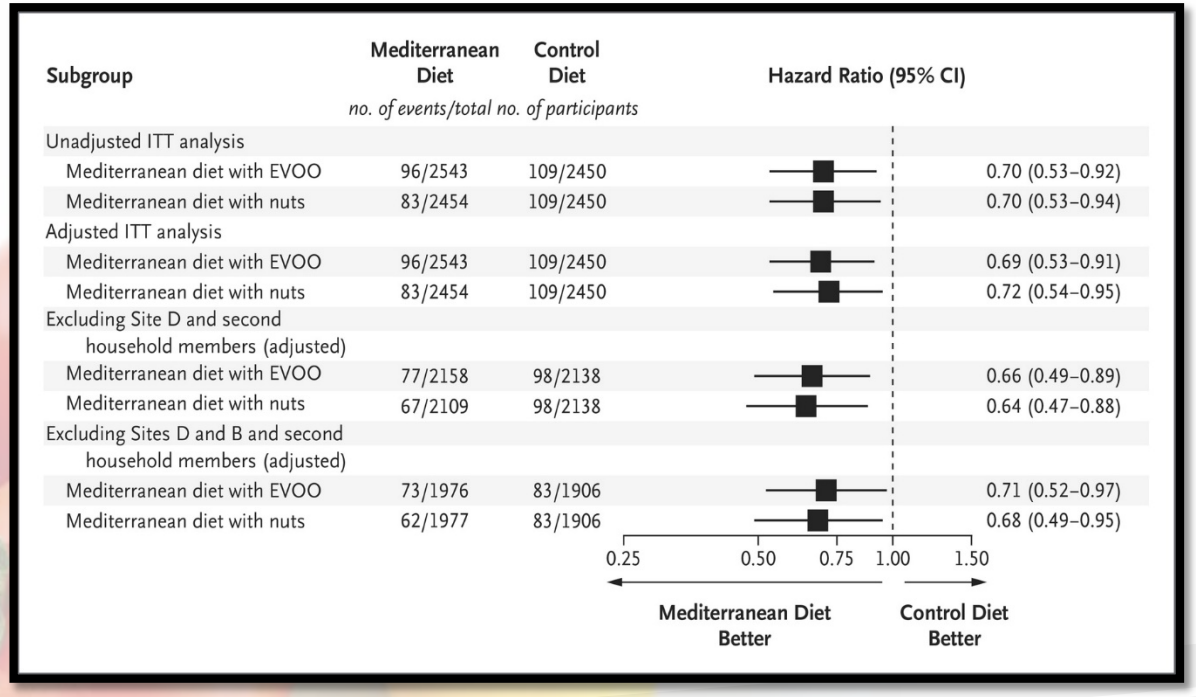
Estruch R. **Primary prevention of cardiovascular disease with a Mediterranean diet.** N Engl J Med. 2013 Apr 4;368(14):1279-90.
Estruch R. **Primary prevention of cardiovascular disease with a Mediterranean diet supplemented with EVOO or Nuts.** N Engl J Med. 2018 Jun 378:e34.

Primary Prevention of Cardiovascular Disease with a Mediterranean Diet Supplemented with Extra-Virgin Olive Oil or Nuts





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Estruch R. **Primary prevention of cardiovascular disease with a Mediterranean diet supplemented with EVOO or Nuts.** N Engl J Med. 2018 Jun 378:e34.

Studies Supporting Mediterranean Diet

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Reference list borrowed from Dr. Elizabeth Boham, Dietary Choices and Cardiac Disease at IFM Cardiometabolic Advanced Practice Module, Feb 2019.

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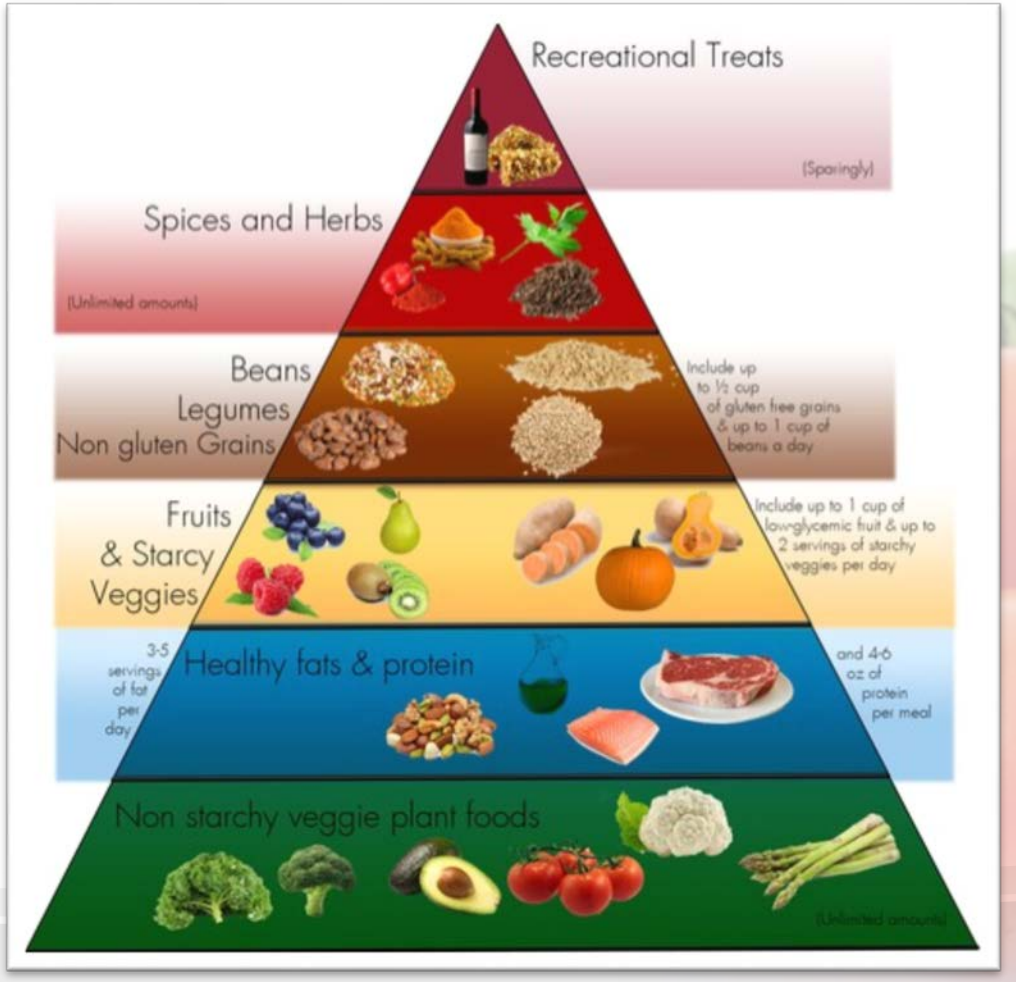
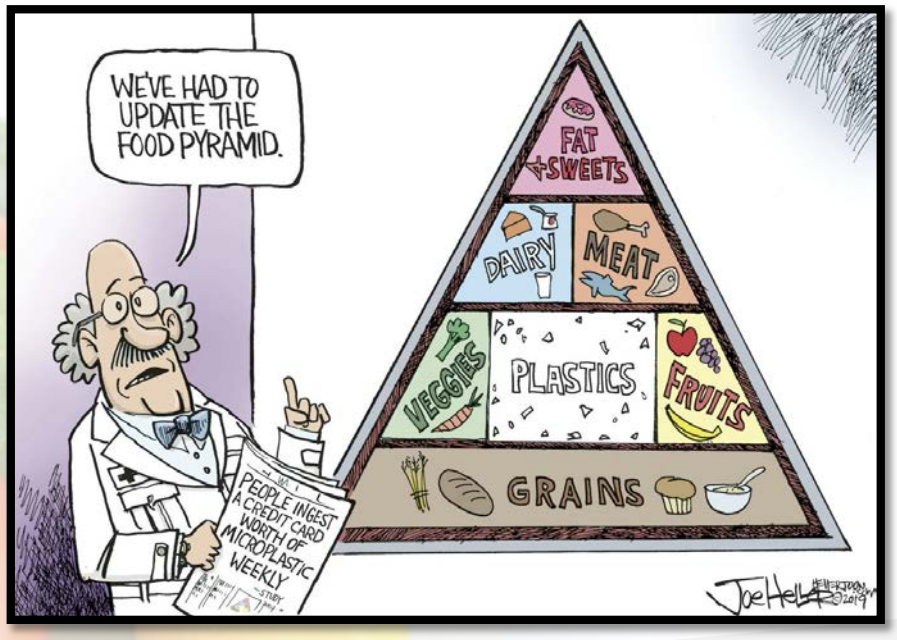
Let us Explore this Food Pyramid…





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Glycemic Index and Load

- **Glycemic index (GI)** - a way to measure the impact of a food on blood glucose levels.
  - Ranks carbohydrate-containing foods on a scale of 0 to 100 based on how quickly the foods raise blood sugar levels.
  - Glucose (sugar) is calibrated to 100 as the highest GI value, because it has the strongest effect on blood sugar.
  - Low ≤55. Medium 56-69. High ≥70
  - Refers to the increase in blood sugar for a defined portion of all foods not taking into account the portion of these foods eaten in a typical setting.
- **Glycemic load (GL)** – a more comprehensive picture of the glycemic impact of the diet as a whole.
  - Calculated by multiplying a food's GI (as a percentage) by the number of net carbohydrates (total carbohydrates minus fiber) in a given serving.
  - The result is a relative indication of how much that serving of food is likely to increase blood sugar levels.
  - Low ≤10. Medium 11-19. High ≥20.

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Eating for Cardiometabolic Health

- Goal is to keep blood glucose stable and avoid spikes that cause insulin surges which lead to insulin insensitivity and carb craving
- Eat mostly Low GI foods
- When eating medium GI foods, eat some protein or fat with it
  - blunts the glycemic effect reducing the overall glycemic impact of the meal.
- Avoid High GI food
- Foods containing refined sugars, artificial sweeteners, and refined grains are considered to be high-GI, because they lead to sharp increases in blood sugar levels.
  - Cakes, cookies, pies, white bread, and other processed foods.
- Eat more fiber!

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Fiber

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- Average SAD eating American gets only 1/3 of the recommended fiber
- Found in plant-based foods like whole grains, nuts, legumes, vegetables, and fruits, this form of carbohydrate is undigestable, giving the sensation of fullness without many calories.
  - Insoluble fiber - acts like a bulky “inner broom,” sweeping out debris from the intestine and creating more motility and movement.
  - Soluble fiber - attracts water and swells, creating a gel-like mass slowing digestion.
- Slows the release of glucose from food into the blood warding off the spikes in blood sugar.
- Traps toxins and other undesirables helping to carry them to excretion
  - Lowers cholesterol
- Feeds the microbiome
- Aim for 25–35 grams fiber per day or even more

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Moving our way through the food groups…

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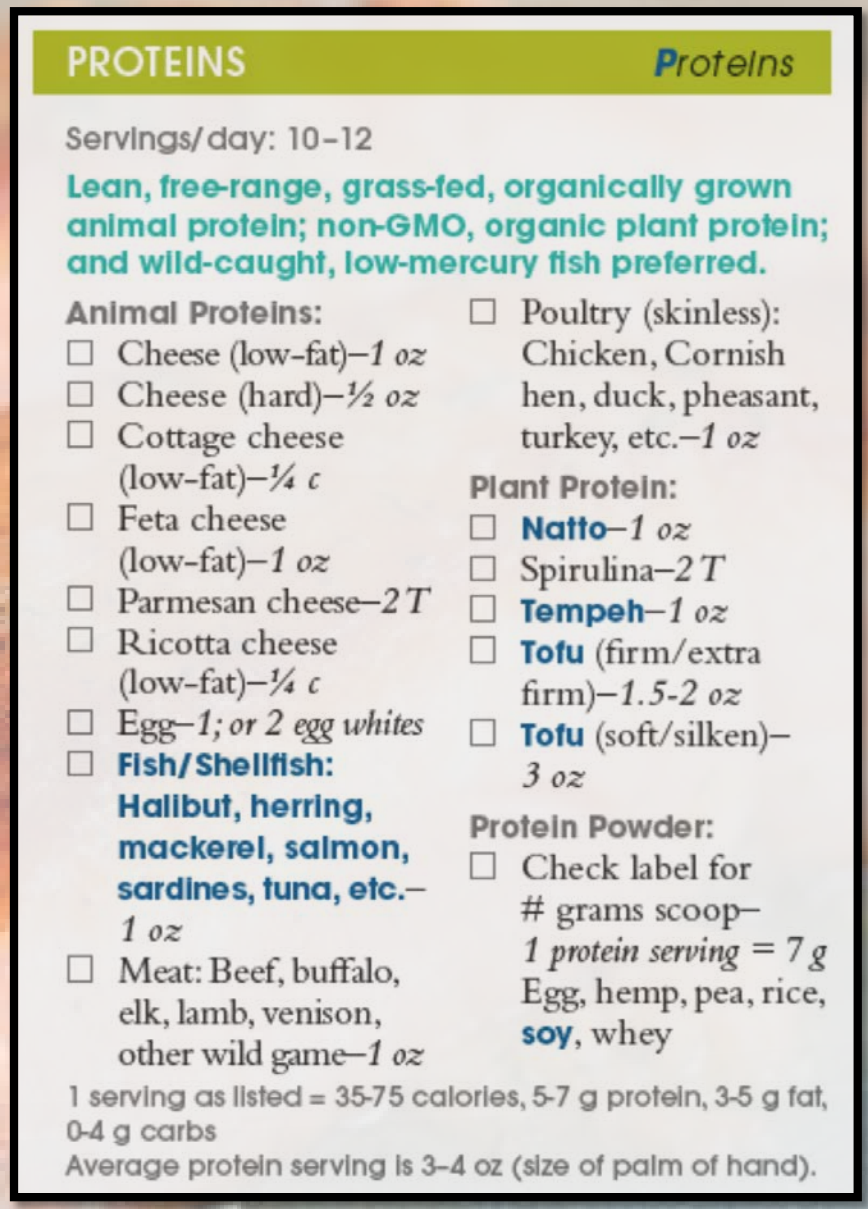
Protein

- One-third of the daily calories.
- Stabilizes blood sugar.
- Choose lean, free-range, grass fed, organically grown, non-GMO animal or plant protein
- Free-range eggs
- ***Therapeutic Foods:***
  - ***Omega-3 rich fish.***



PROTEINS *Proteins*

Servings/day: 10–12

Lean, free-range, grass-fed, organically grown animal protein; non-GMO, organic plant protein; and wild-caught, low-mercury fish preferred.

Animal Proteins:

- ☐ Cheese (low-fat)–*1 oz*
- ☐ Cheese (hard)–*½ oz*
- ☐ Cottage cheese (low-fat)–*¼ c*
- ☐ Feta cheese (low-fat)–*1 oz*
- ☐ Parmesan cheese–*2 T*
- ☐ Ricotta cheese (low-fat)–*¼ c*
- ☐ Egg–*1; or 2 egg whites*
- ☐ **Fish/Shellfish: Halibut, herring, mackerel, salmon, sardines, tuna, etc.**–*1 oz*
- ☐ Meat: Beef, buffalo, elk, lamb, venison, other wild game–*1 oz*
- ☐ Poultry (skinless): Chicken, Cornish hen, duck, pheasant, turkey, etc.–*1 oz*

Plant Protein:

- ☐ **Natto**–*1 oz*
- ☐ Spirulina–*2 T*
- ☐ **Tempeh**–*1 oz*
- ☐ **Tofu** (firm/extra firm)–*1.5-2 oz*
- ☐ **Tofu** (soft/silken)–*3 oz*

Protein Powder:

- ☐ Check label for # grams scoop–*1 protein serving = 7 g* Egg, hemp, pea, rice, **soy**, whey

1 serving as listed = 35-75 calories, 5-7 g protein, 3-5 g fat, 0-4 g carbs

Average protein serving is 3–4 oz (size of palm of hand).

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Therapeutic Foods: Omega-3 rich fish.

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- Multiple studies support fish consumption for cardiovascular health.
- 1 to 2 servings each week of higher omega-3 fatty acid containing fish such as wild salmon, reduces a person's risk of coronary death by 36%.
- Consuming some fish, such as bonito, tuna, and sardines, has been shown to reduce blood pressure.
- Those who eat 5 or more servings of fish a week should eat a variety of seafood, limiting their intake of high mercury-containing fish.

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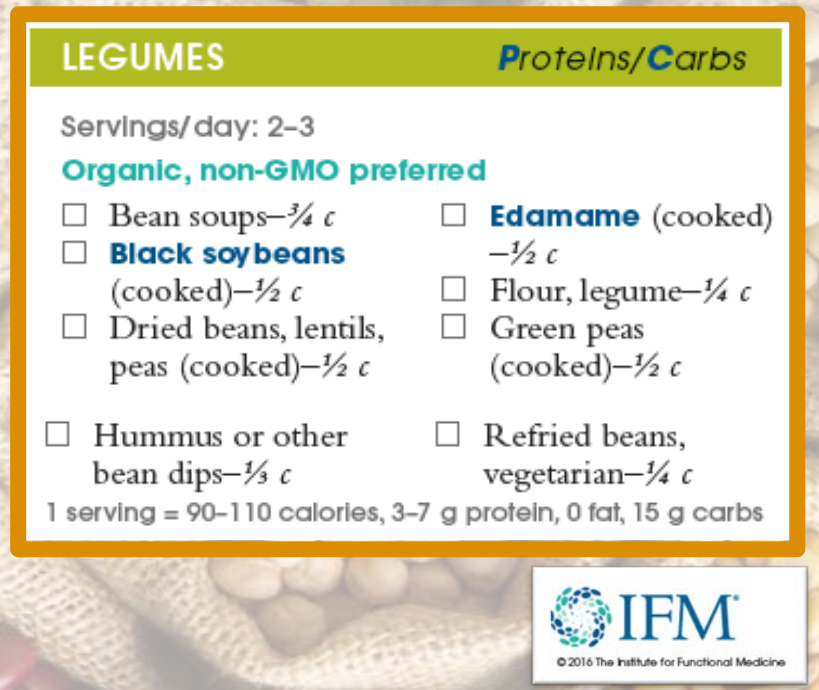
Legumes

- Quality protein and complex carbohydrates
- Create a feeling of fullness and help keep blood sugar in a healthy range.
- Eat 2-3 serving each day
  - Soup, cooked beans, dips, or hummus.
- ***Therapeutic Foods: Edamame (green soybeans), black soybeans, soy nuts.***



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Therapeutic Foods: Edamame (green soybeans), black soybeans, soy nuts.

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- Contain polyunsaturated fat, fiber, vitamins, minerals and isoflavones.
- Ideal food for cardiovascular health.
  - Studies indicate that eating soy is associated with a significant decrease in blood pressure and reduced thickness of the carotid artery.
- Choose organically grown high-quality, non-GMO soy
- Soy nuts - tasty and nutritious
  - One-quarter of a cup
    - 100 calories
    - 9 grams of protein
    - 2 grams of fiber
    - Almost 35 milligrams of soy isoflavones

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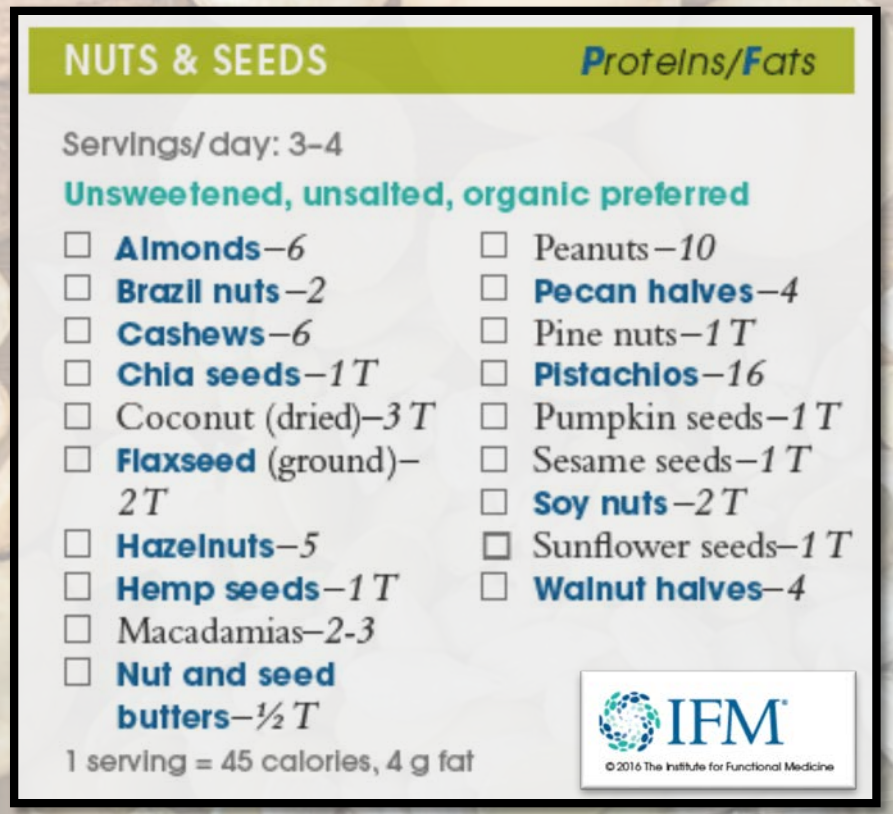
Nuts & Seeds

- Excellent source of healthy fats and fiber
- Try for at least 3 to 4 servings on a daily basis.
- Aim for a mixed blend of unsalted nuts that are not roasted in oil.
  - Tahini (sesame seed butter) can be drizzled over vegetables;
  - Almond butter can be spread on an apple slice or cashew nut butter on a sliver of pear.
- ***Therapeutic Foods: Flaxseed, and unsalted mixed nuts.***



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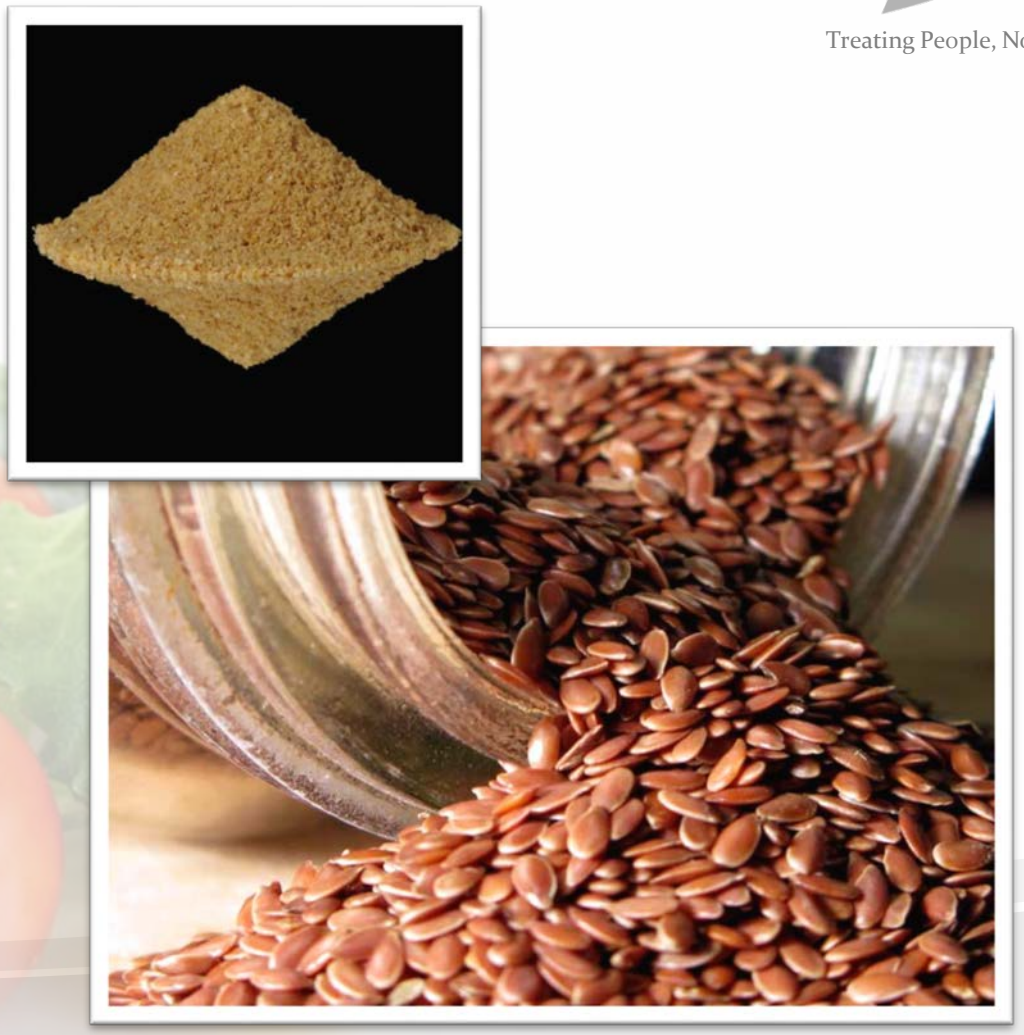
Therapeutic Foods: Flaxseed

- One of the richest plant sources of anti-inflammatory omega-3 fats
- Excellent source of fiber
- Best known food source of lignans.
  - Phytonutrients that are antioxidant, provide fiber, and contain phytoestrogens which help with the prevention of CVD and insulin resistance.
- One study showed that 30 grams of ground flaxseed (1 ounce) consumed each day reduced the incidence of metabolic syndrome by 20% after 12 weeks by lowering blood pressure, lowering blood sugar, and reducing belly fat.
- Must be broken open to create flaxseed meal for proper digestion.



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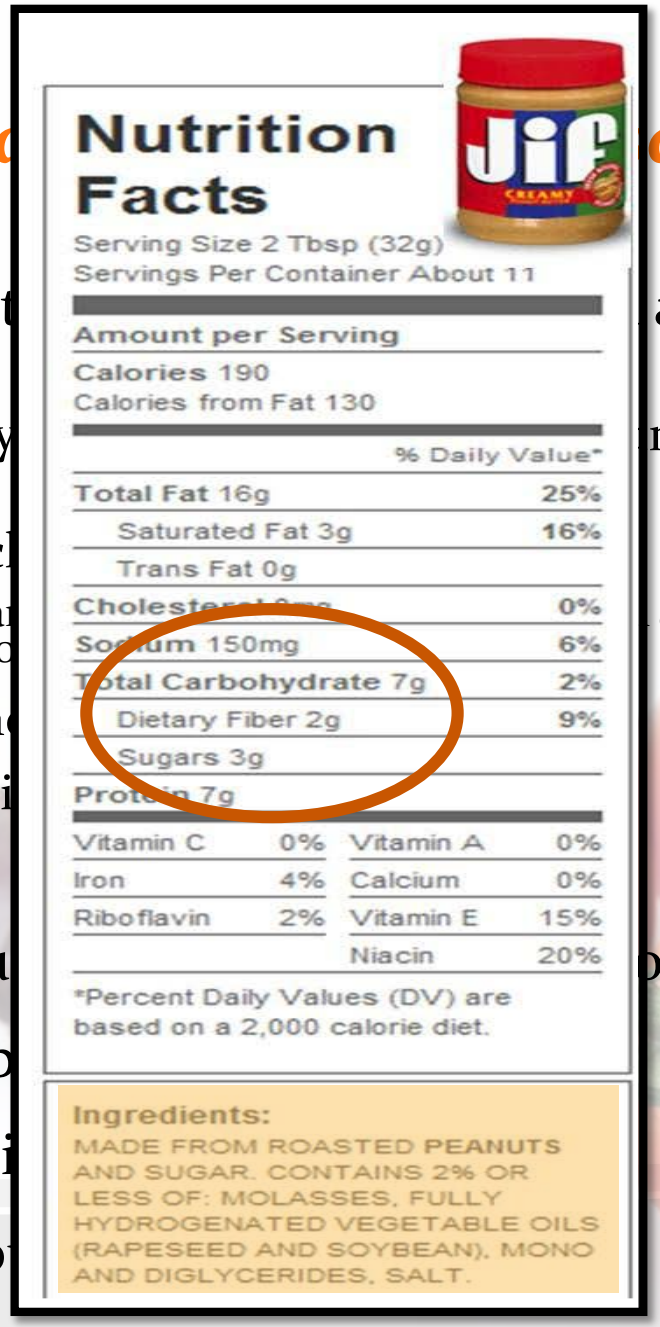

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Fats & Oils

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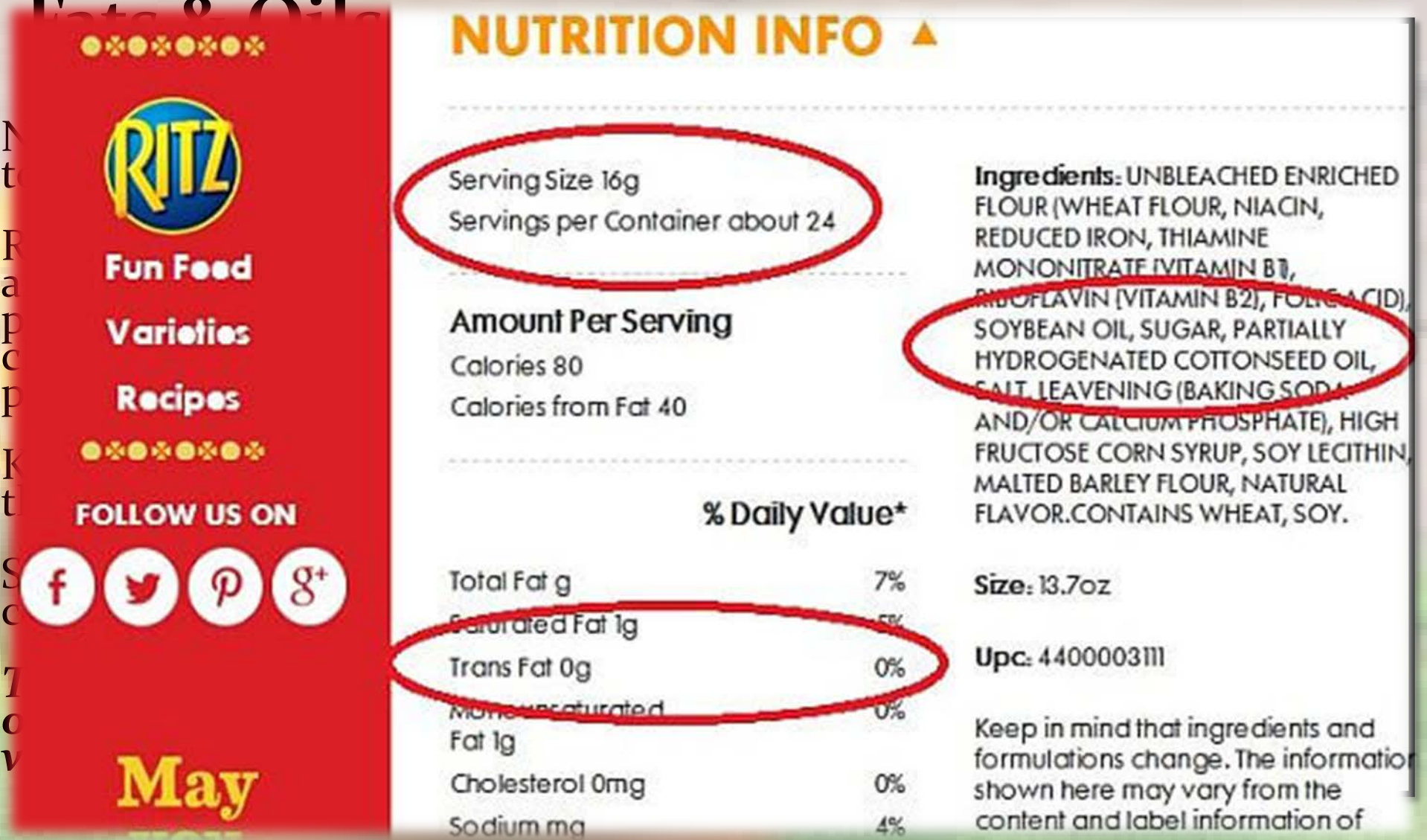

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Therapeutic Foods: Olives (black or green) and extra-virgin olive oil.

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- **EVOO:**
  - Improves the ability of blood vessels to expand
  - Reduces inflammation.
  - Research indicates that consuming close to 50 grams per day (about 10 teaspoons) did not result in weight gain.
  - Unfiltered and Unrefined EVOO is preferable (first cold press)
    - Contains more polyphenols and antioxidants that may help prevent CVD and lower blood pressure.
- **Olives:**
  - Several protective phenolic compounds in the olive
  - Hydroxytyrosol can prevent CVD by improving platelet function making them less sticky
  - Helps prevent the oxidation of LDL cholesterol

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Therapeutic Food: Avocado

- Perfect food for cardiovascular health
  - Contain Oleic Acid; lowers LDL
- One medium avocado contains:
  - 9 grams of fiber
  - 2.7 grams protein
  - 14g Monounsaturated fat
  - 700mg Potassium
- A study comparing markers of inflammation in individuals who ate a plain hamburger with those who ate a hamburger with half an avocado found that the avocado-laden burger prevented much of the inflammation that occurred compared with eating the hamburger alone!

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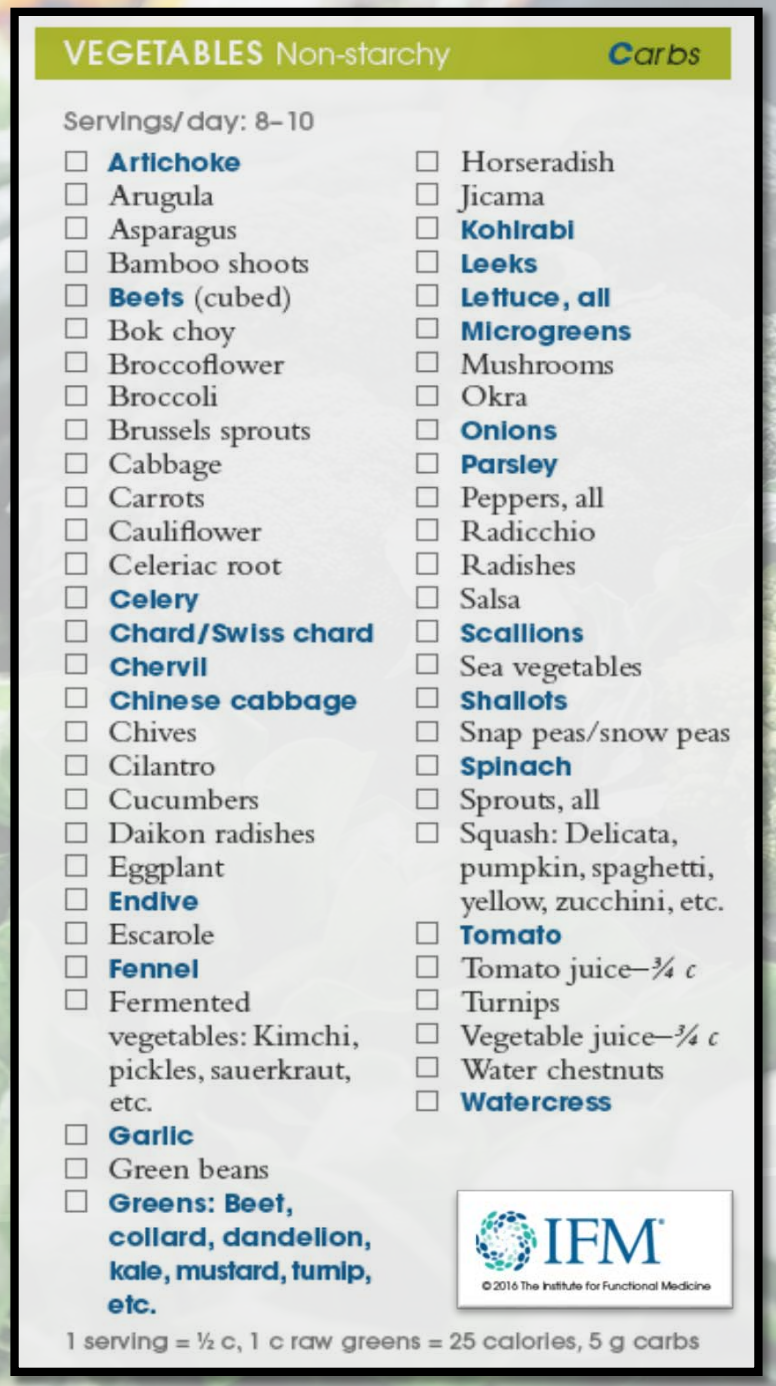
Non-Starchy Vegetables

- Provide medicinal compounds that reduce inflammation and lessen oxidative stress.
- Try for 8 to 10 servings per day.
  - A serving is 1/2 cup of cooked vegetable or 1 cup of raw, leafy greens.
  - You cannot actually eat too much!
- ***Therapeutic Foods: All greens such as beet, collard, dandelion, kale, mustard, turnip, chard/Swiss chard, and spinach, plus garlic, onions, and tomatoes.***



VEGETABLES Non-starchy — *Carbs*

Servings/day: 8–10

- ☐ **Artichoke**
- ☐ Arugula
- ☐ Asparagus
- ☐ Bamboo shoots
- ☐ **Beets** (cubed)
- ☐ Bok choy
- ☐ Broccoflower
- ☐ Broccoli
- ☐ Brussels sprouts
- ☐ Cabbage
- ☐ Carrots
- ☐ Cauliflower
- ☐ Celeriac root
- ☐ **Celery**
- ☐ **Chard/Swiss chard**
- ☐ **Chervil**
- ☐ **Chinese cabbage**
- ☐ Chives
- ☐ Cilantro
- ☐ Cucumbers
- ☐ Daikon radishes
- ☐ Eggplant
- ☐ **Endive**
- ☐ Escarole
- ☐ **Fennel**
- ☐ Fermented vegetables: Kimchi, pickles, sauerkraut, etc.
- ☐ **Garlic**
- ☐ Green beans
- ☐ **Greens: Beet, collard, dandelion, kale, mustard, turnip, etc.**
- ☐ Horseradish
- ☐ Jicama
- ☐ **Kohlrabi**
- ☐ **Leeks**
- ☐ **Lettuce, all**
- ☐ **Microgreens**
- ☐ Mushrooms
- ☐ Okra
- ☐ **Onions**
- ☐ **Parsley**
- ☐ Peppers, all
- ☐ Radicchio
- ☐ Radishes
- ☐ Salsa
- ☐ **Scallions**
- ☐ Sea vegetables
- ☐ **Shallots**
- ☐ Snap peas/snow peas
- ☐ **Spinach**
- ☐ Sprouts, all
- ☐ Squash: Delicata, pumpkin, spaghetti, yellow, zucchini, etc.
- ☐ **Tomato**
- ☐ Tomato juice—¾ *c*
- ☐ Turnips
- ☐ Vegetable juice—¾ *c*
- ☐ Water chestnuts
- ☐ **Watercress**

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1 serving = ½ c, 1 c raw greens = 25 calories, 5 g carbs

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Therapeutic Foods: All leafy greens such as beet, collard, dandelion, kale, mustard, turnip, chard/Swiss chard, and spinach, plus garlic and onions.

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- **Greens:**
  - Supply a plant source of nitrates that vasodilate.
  - One serving of a high-nitrate vegetable, like spinach, results in more nitric oxide production than what is naturally produced in the body in an entire day!
  - Other foods that are particularity high in dietary nitrate include celery, celeriac, chervil, Chinese cabbage, cress, endive, fennel, kohlrabi, leek, lettuce, parsley, red beetroot, spinach, and arugula.
    - Choose lettuce that is darker green or magenta in color; rather than the iceberg varieties.
- **Onions:**
  - One of the best sources of anti-inflammatory and antioxidant flavonoids, particularly quercetin.
  - Contain detoxifying sulfur-containing compounds, which enable the body to excrete toxins more effectively.
  - Animal studies show that onions may help to reduce both blood clotting and levels of cholesterol and blood fats (triglycerides).
  - They are also an excellent prebiotic (food for the microbiome)

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Therapeutic Food: Tomatoes.

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- Staple of the Mediterranean diet
- Excellent source of **lycopene**, a free radical-quenching carotenoid.
  - Large human studies have indicated that greater intake of lycopene in the diet is associated with better cardiovascular health.
- They also contain other heart-protective carotenoids like **beta-carotene** and -**tocopherol**.
  - Carotenoids in tomatoes help prevent the oxidation of LDL-cholesterol
- Those who are sensitive to the nightshade family of plants should avoid eating tomatoes.

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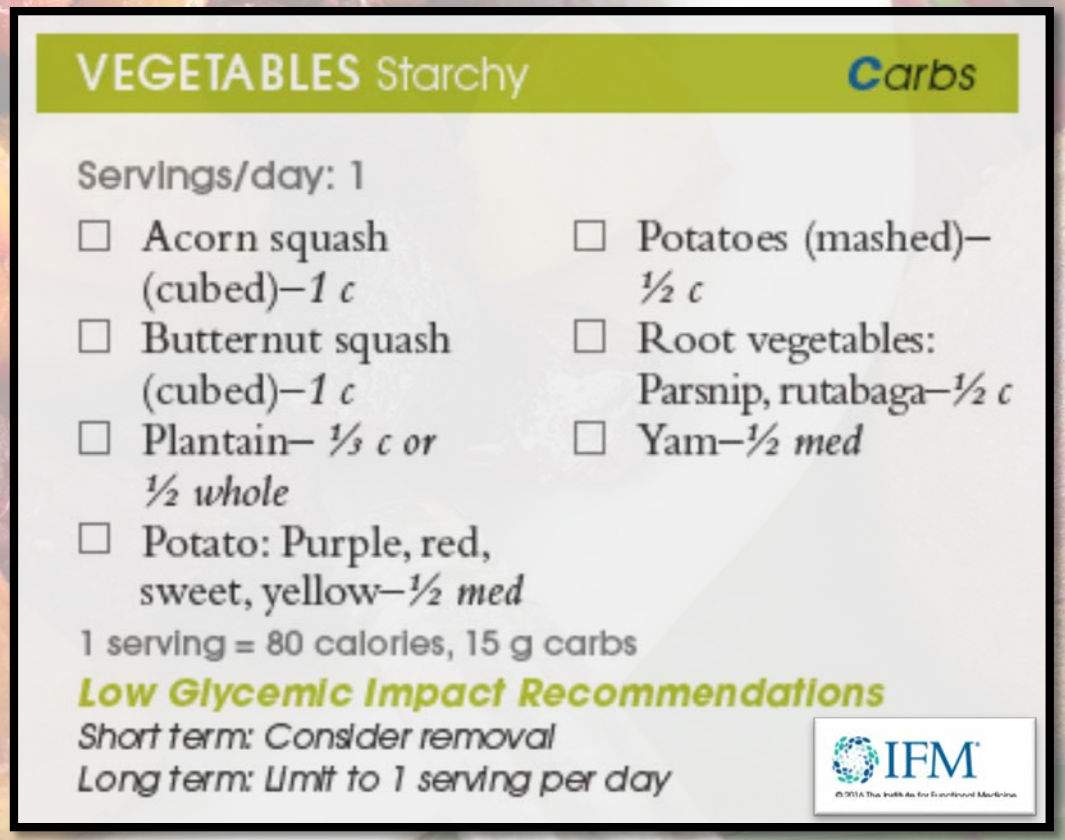
Starchy Vegetables

- Limit to 1 serving per day as they are moderate-GI
- Avoid High-GI vegetables like white potatoes
  - Can cause a spike in blood sugar.
- ***Therapeutic Foods: Beets.***
  - Rich in phytonutrients



VEGETABLES Starchy — **Carbs**

Servings/day: 1

- ☐ Acorn squash (cubed)–*1 c*
- ☐ Butternut squash (cubed)–*1 c*
- ☐ Plantain– *⅓ c or ½ whole*
- ☐ Potato: Purple, red, sweet, yellow–*½ med*
- ☐ Potatoes (mashed)–*½ c*
- ☐ Root vegetables: Parsnip, rutabaga–*½ c*
- ☐ Yam–*½ med*

1 serving = 80 calories, 15 g carbs

Low Glycemic Impact Recommendations

Short term: Consider removal

Long term: Limit to 1 serving per day

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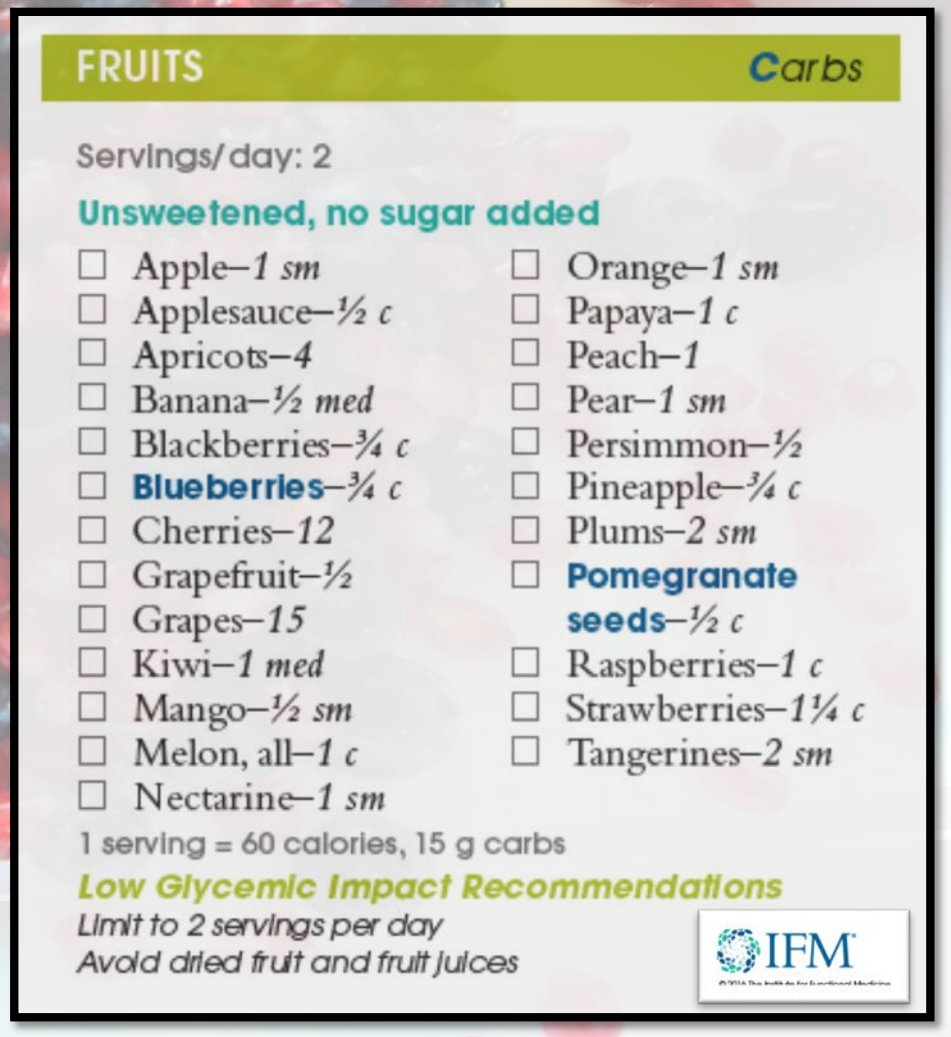
Fruits

- Two servings per day.
  - One should be therapeutic.
- Satisfy the sweet craving.
- Couple fruit with a little bit of protein or fat to offset a rise in blood sugar.
- ***Therapeutic Foods: Blueberries, pomegranate.***



FRUITS *Carbs*

Servings/day: 2

Unsweetened, no sugar added

- ☐ Apple–*1 sm*
- ☐ Applesauce–*½ c*
- ☐ Apricots–*4*
- ☐ Banana–*½ med*
- ☐ Blackberries–*¾ c*
- ☐ **Blueberries**–*¾ c*
- ☐ Cherries–*12*
- ☐ Grapefruit–*½*
- ☐ Grapes–*15*
- ☐ Kiwi–*1 med*
- ☐ Mango–*½ sm*
- ☐ Melon, all–*1 c*
- ☐ Nectarine–*1 sm*
- ☐ Orange–*1 sm*
- ☐ Papaya–*1 c*
- ☐ Peach–*1*
- ☐ Pear–*1 sm*
- ☐ Persimmon–*½*
- ☐ Pineapple–*¾ c*
- ☐ Plums–*2 sm*
- ☐ **Pomegranate seeds**–*½ c*
- ☐ Raspberries–*1 c*
- ☐ Strawberries–*1¼ c*
- ☐ Tangerines–*2 sm*

1 serving = 60 calories, 15 g carbs

Low Glycemic Impact Recommendations

Limit to 2 servings per day

Avoid dried fruit and fruit juices

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Therapeutic Foods: Blueberries, pomegranate.

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- **Blueberries:**
  - Low GI and packed with healthy phytonutrients
  - Blueberries have one of the highest antioxidant levels among all fruits, vegetables, spices, and seasonings.
  - In a study of more than 90,000 women, greater intakes of anthocyanin were shown to reduce heart attack risk.
  - They have also been shown to help with blood sugar control in those with diabetes.
- **Pomegranate:**
  - 50 milliliters, or a little over 1.5 ounces daily, has been shown to help reduce blood pressure, cholesterol and plaque buildup in arteries.

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Eat the RAINBOW!

RED - Anthocyanidins, Astaxanthin, Carotenoids, Ellagic Acid, Ellagitannins, Fisetin, Flavones, Flavonols, Flavan-3-ols, Flavanones, Luteolin, Lycopene, Proanthocyanidins, Quercetin

ORANGE - Alpha-carotene, Beta carotene, Beta-cryptoxanthin, Bioflavonoids, Carotenoids, Curcuminoids, Naringenin

YELLOW - Lutein, Rutin, Zeaxanthin

GREEN - Catechins, Chlorogenic acid, Chlorophyll, Epigallocatechin gallate, Flavolignans, Folates, Glucosinolates, Hydroxytyrosol, Indole-3-carbinol, Isoflavones, Isothiocyanate, Oleocanthal, Oleuropein, Phenolic diterpenes, Phytosterols, Phenols, Tannins, Tyrosol, Phenylethylisothiocyanate, Silymarin Sulforaphane, Theaflavins, Thearubigins

PURPLE - Anthocyanidins, Resveratrol Hydroxystilbenes, Procyanidins, Pterostilbene

WHITE / BROWN - Allicin, Allyl sulfides, Cellulose (fiber), Lignans, Lignins, Sesamin, Sesamol, Tannins, Terpenoids, Theobromine

Phytonutrient Spectrum Foods

RED

Foods				Benefits	
Apples	Cranberries	Pomegranate	Rhubarb	Anti-cancer	Gastrointestinal health
Beans *(adzuki, kidney, red)*	Cherries	Potatoes	Rooibos tea	Anti-inflammatory	Heart health
Beets	Grapefruit *(pink)*	Radicchio	Tomato	Cell protection	Hormone health
Bell peppers	Goji berries	Radishes	Watermelon		Liver health
Blood oranges	Grapes	Raspberries			
	Onions	Strawberries			
	Plums	Sweet red peppers			

ORANGE

Foods				Benefits	
Apricots	Mango	Pumpkin	Tangerines	Anti-cancer	Reduced mortality
Bell peppers	Nectarine	Squash *(acorn, buttercup, butternut, winter)*	Tumeric root	Anti-bacterial	Reproductive health
Cantaloupe	Orange		Yams	Immune health	Skin health
Carrots	Papaya	Sweet potato		Cell protection	Source of vitamin A
	Persimmons				

YELLOW

Foods				Benefits	
Apple	Bell peppers	Lemon	Starfruit	Anti-cancer	Eye health
Asian pears	Corn	Millet	Succotash	Anti-inflammatory	Heart health
Banana	Corn-on-the-cob	Pineapple	Summer squash	Cell protection	Skin health
	Ginger root			Cognition	Vascular health

GREEN

Foods				Benefits	
Apples	Bok choy	Green peas	Okra	Anti-cancer	Skin health
Artichoke	Broccoli	Green tea	Olives	Anti-inflammatory	Hormone balance
Asparagus	Broccolini	Greens *(arugula, beet, chard/swiss chard, collard, dandelion, kale, lettuce, mustard, spinach, turnip)*	Pears	Brain health	Heart health
Avocado	Brussels sprouts		Snow peas	Cell protection	Liver health
Bamboo sprouts	Cabbage		Watercress		
Bean sprouts	Celery	Limes	Zucchini		
Bell peppers	Cucumbers				
Bitter melon	Edamame/Soy beans				
	Green beans				

BLUE/PURPLE/BLACK

Foods				Benefits	
Bell peppers	Cabbage	Grapes	Prunes	Anti-cancer	Cognitive health
Berries *(blue, black, boysenberries, huckleberries, marionberries)*	Carrots	Kale	Raisins	Anti-inflammator	Heart health
	Cauliflower	Olives	Rice *(black or purple)*	Cell protection	Liver health
	Eggplant	Plums			
	Figs	Potatoes			

WHITE/TAN/BROWN

Foods				Benefits	
Apples	Dates	Mushrooms	Shallots	Anti-cancer	Heart health
Applesauce	Garlic	Nuts *(almonds, cashews, pecans, walnuts)*	Soy	Anti-microbial	Hormone health
Bean dips	Ginger	Onions	Tahini	Cell protection	Liver health
Cauliflower	Jicama	Pears	Tea *(black, white)*	Gastrointestinal health	
Cocoa	Legumes *(chickpeas, dried beans or peas, hummus, lentils, peanuts, refried beans / low-fat)*	Sauerkraut	Whole grains *(barley, brown, rice, oat, quinoa, rye, spelt, wheat)*		
Coconut		Seeds *(flax, hemp, pumpkin, sesame, sunflower)*			
Coffee					

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Phytonutrient Spectrum Checklist

RED

Foods

Apples, Applesauce, Cherries, Kidney beans, Pomegranate, Radishes, Strawberries, Sweet red bell peppers, Tomato

Weekly Servings — SUN MON TUES WED THURS FRI SAT

ORANGE

Foods

Apricots, Bell peppers, Butternut squash, Cantaloupe, Carrots, Mango, Nectarine, Orange, Sweet potato

Weekly Servings — SUN MON TUES WED THURS FRI SAT

YELLOW

Foods

Bell peppers, Corn, Lemon, Popcorn, Spaghetti squash, Starfruit, Succotash, Yellow squash

Weekly Servings — SUN MON TUES WED THURS FRI SAT

GREEN

Foods

Asparagus, Avocado, Bean sprouts, Bell peppers, Broccoli, Brussels sprouts, Cabbage, Celery, Chard, Cucumbers, Green beans, Green peas, Greens *(beet, dandelion, collard, mustard, turnip)*, Kale, Lettuce, Olives, Snow peas

Weekly Servings — SUN MON TUES WED THURS FRI SAT

BLUE/PURPLE

Foods

Blackberries, Blueberries, Cabbage *(purple)*, Carrots *(purple)*, Dates, Eggplant, Grapes *(purple)*, Kale *(purple)*, Plums, Potatoes *(purple)*, Raisins, Rice *(black or purple)*

Weekly Servings — SUN MON TUES WED THURS FRI SAT

WHITE/TAN

Foods

Bean dips, Garlic, Hummus, Legumes, Nuts, Onions, Refried beans, Seeds, Shallots, Tahini

Weekly Servings — SUN MON TUES WED THURS FRI SAT

Aim to eat at least 1-2 servings of every color everyday.

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Version 4

What about organic?

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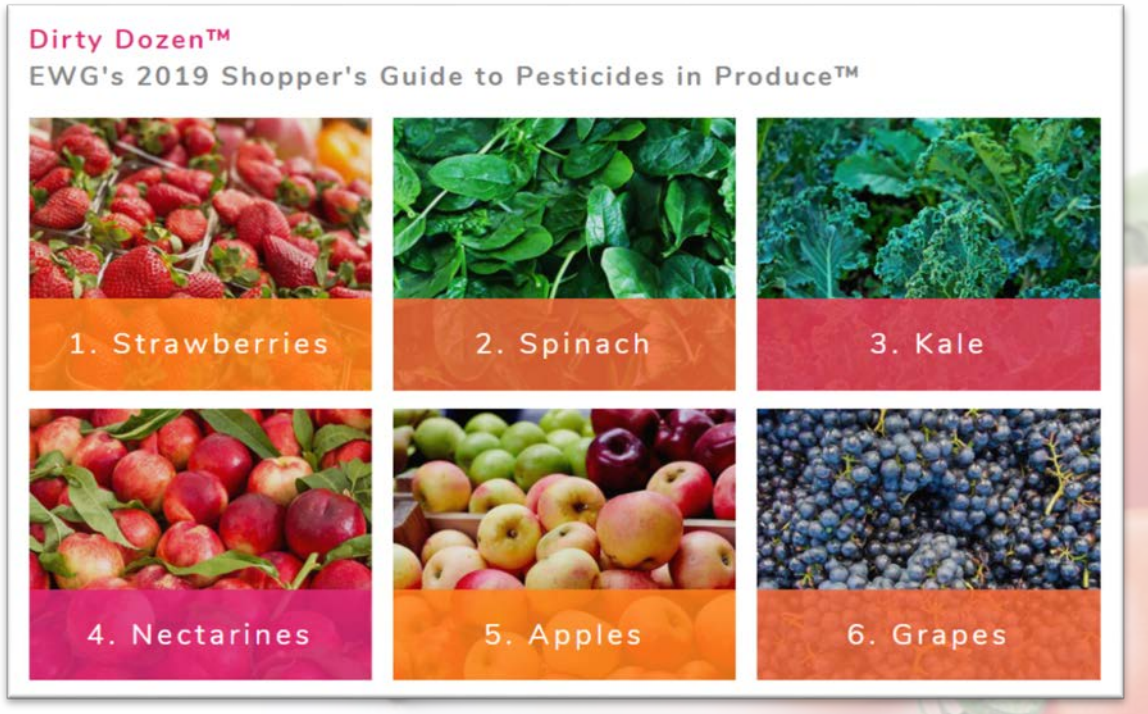
The Dirty Dozen



https://www.ewg.org/foodnews/dirty-dozen.php

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The Clean Fifteen?

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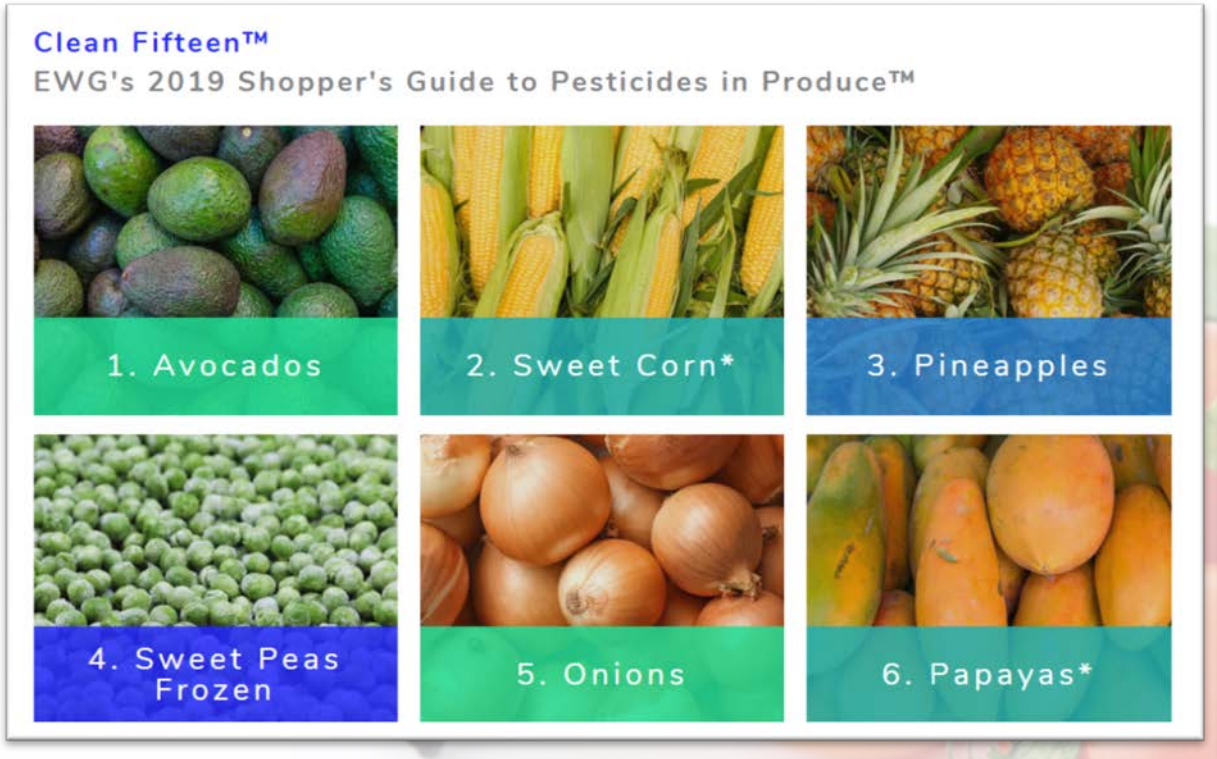

https://www.ewg.org/foodnews/clean-fifteen.php

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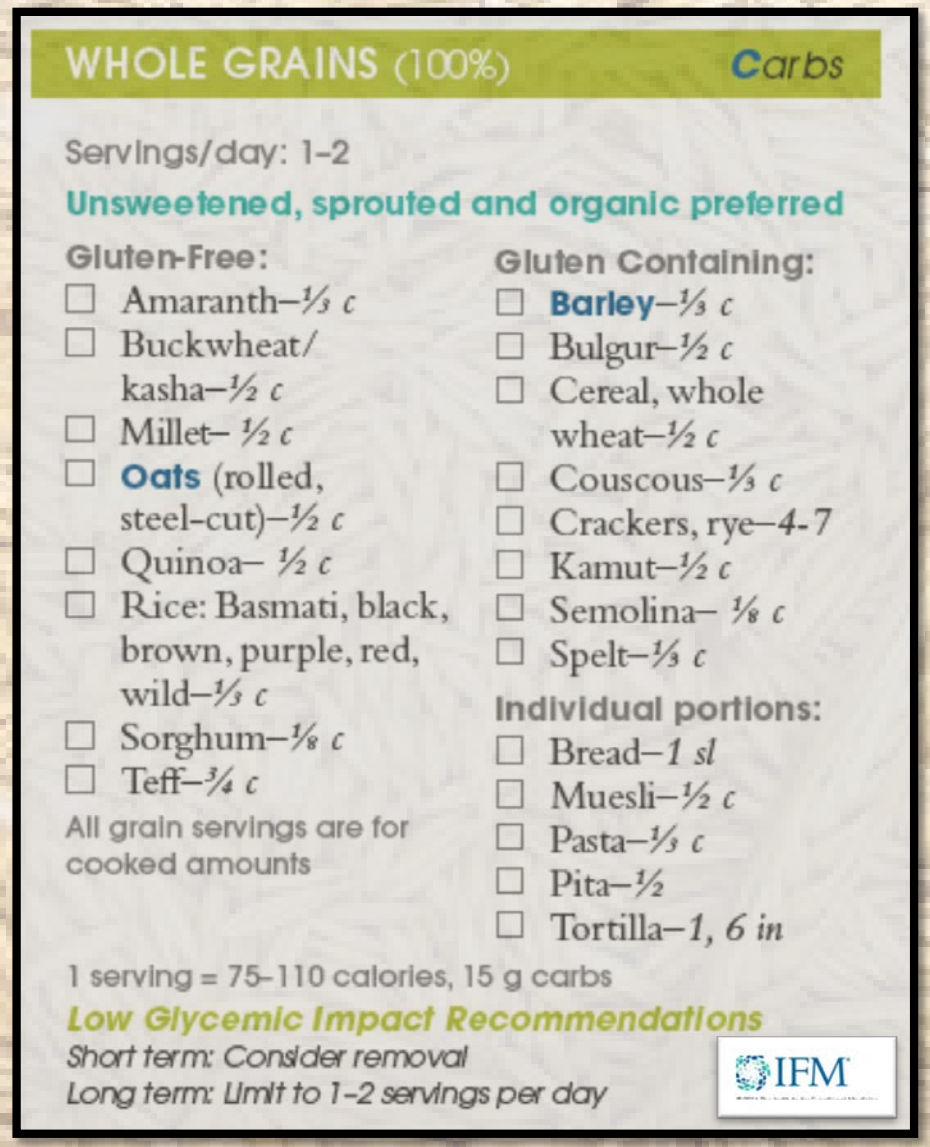
Whole Grains

- Limit intake to 1 to 2 servings per day or omit them entirely
- Grains can also be overeaten and are a common trigger food
  - Avoid all processed grain
- Eat only those with an intact bran, or outer coat
- Provide a good source of fiber and other phytonutrients
- Patients with celiac disease or gluten sensitivity should refrain from eating gluten-containing grains
  - barley, rye, wheat, and spelt.
- ***Therapeutic Foods: Oats and barley.***
  - Contain beta-glucan to help with maintaining low cholesterol and blood sugar



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What group is missing.?

- We discussed proteins, legumes, nuts, seeds, grains, fruits and veggies.
- What else…

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CHOCOLATE! Just kidding. That is not a food group

- But it does have some benefits…
- Rich in polyphenols, bioactive flavonols and theobromine
  - Positive effects on cells of the heart and blood vessels
- A review of 20 different studies investigating cacao's effects on blood pressure published in August 2012, show a relationship between chocolate in the diet and markers of good cardiovascular health
- Chocolate in the diet is linked to a lower risk of stroke, according to a Finnish study published in September 2012.
- Tip – use it for the little bit of fat with the fruit

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Susanna C et al. Chocolate consumption and risk of stroke: A prospective cohort of men and meta-analysis. Neurology. September 18, 2012; 79(12):1223-1229.

Okay really, what food group did I miss?

- Think back to that pyramid from medical school….

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What about dairy…

- Which of the following is TRUE?
  - A. Low fat milk is better for you than whole milk.
  - B. Children need to drink milk to build strong bones and teeth.
  - C. Dairy is a great source of Vitamin D.
  - D. Yogurt is a health food.
  - E. Butter can prevent diabetes and has not been shown to increase the risk of heart disease.

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Human l ver.

- There is no esse that cannot be c
- The average glas different hormo
  - Many anaboli make baby co
  - IGF-1 is a kno associated wi
  - All the natura the problema as casein and
  - Grass fed is b

Do NOT drink low-fat milk

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Food for the Heart by Diagnosis

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Food for the Heart

- **Nutrients that assist in blood sugar regulation:**
  - 4-hydroxyisoleucine in fenugreek seeds
  - Charantin from bitter melon
  - Cinnamaldehyde in cinnamon
  - Isoflavones from soybeans
  - Beta-glucan from oats and barley

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Food for the Heart

- **Nutrients that decrease LDL-cholesterol oxidation:**
  - Carotenoids including lycopene from tomatoes, red-pink grapefruit and watermelon
  - Hydroxytyrosol from extra-virgin olive oil
  - Isoflavones from soybeans
  - Polyphenols from green tea, dark chocolate and pomegranate
  - Garlic

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Food for the Heart

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Nutrients that assist in the reduction of blood pressure:

- Quercetin from onions,
- Sulfur compounds from garlic
- Beta-glucan from whole oats
- Isoflavones from soybeans,
- Polyphenols from pomegranate juice, blueberries and dark chocolate
- L-arginine: lentils, hazelnuts, walnuts, peanuts

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Foods With Antihypertensive Action

Class	Natural Substances		
Angiotensin Receptor Blocker	Potassium (K+) Fiber Vitamin B-6 (Pyridoxine) Gamma Linolenic Acid (GLA and DGLA)	Taurine Garlic Co Enzyme Q-10	Resveratrol Vitamin C Celery
Angiotensin Converting Enzyme Inhibitor	Garlic Sardine protein Dried Salted Fish Hawthorne Berry Casein Hydrolyzed Gelatin Zinc	Seaweed – (Wakame, etc.) Tuna protein/muscle Fish Sauce Pycnogenol Whey Protein Sake Chicken Melatonin Zein	 Bonito Fish (dried) Omega-3 FA Pomegranate Sour Milk and Milk peptides Egg Yolks
Calcium Channel Blocker	Alpha Lipoic Acid (ALA) Vitamin C Hawthorne Ca, Mg	Pyridoxine N-Acetyl Cysteine (NAC) Celery Garlic	 Omega-3 fatty acids (EPA + DHA) Taurine
	Vitamin E : high gamma/delta E with alpha tocopherol, (↑ cytosolic Mg++ with ↓ Ca++), also diuretic		
Vasodilators	Omega-3 Soy Garlic Vitamin C Coenzyme Q-10	FAMUFA (Omega-9 FA) Fiber Flavonoids Vitamin E L-Arginine	ALA K, Mg, Ca Celery Taurine
Central Alpha Agonists	Taurine Protein Vitamin C Coenzyme Q-10 GLA/DGLA	K*Zinc Fiber Vitamin B-6 Celery Garlic	Na* restriction
Diuretics	Vitamin B-6 (Pyridoxine) Celery Vitamin C (Ascorbic Acid) High Gamma/Delta E	Taurine GLA K· Mg, Ca Fiber	L-Carnitine Coenzyme Q-10 Hawthorne Berry Protein

FM Blood Pressure Companion Guide

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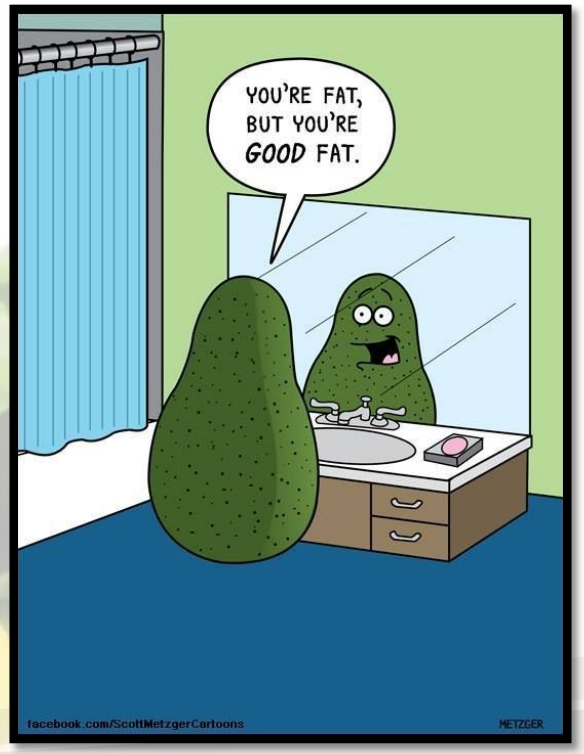
Cardiac Superfoods:

- *Omega-3 rich fish*
- *Edamame / soybeans / soy nuts*
- *Flaxseed and unsalted mixed nuts*
- *Avocado*
- *Olives (black or green), and extra-virgin olive oil*
- *All leafy greens*
- *Garlic and onions*
- *Tomatoes*
- *Beets*
- *Blueberries*
- *Pomegranate*
- *Oats and barley*
- *Chocolate*



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What about Fasting?

- Intermittent Fasting
  - Time Restricted Feeding (TRF)
    - Shortened window of time when a person consumes calories.
    - Extends a person's typical overnight fast.
    - 16/8, 18/6 and 20/4
  - Alternate Day Fasting (ADF) - fasting intervals, intermittent energy restriction
    - Cycle of fasting on one day (<600cal/day) and eating on the next day.
    - 5:2 or 4:3
- Fasting Mimicking Diet (FMD)
  - Very low calorie (<600/day) ketogenic diet followed for five days once a month.
  - Improves body composition and lower blood pressure after three consecutive cycles (3 months).

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Wei M, et al. Fasting-mimicking diet and markers/risk factors for aging, diabetes, cancer, and cardiovascular disease. Sci Transl Med. 2017;9(377):eaai8700. doi:10.1126/scitranslmed. aai8700

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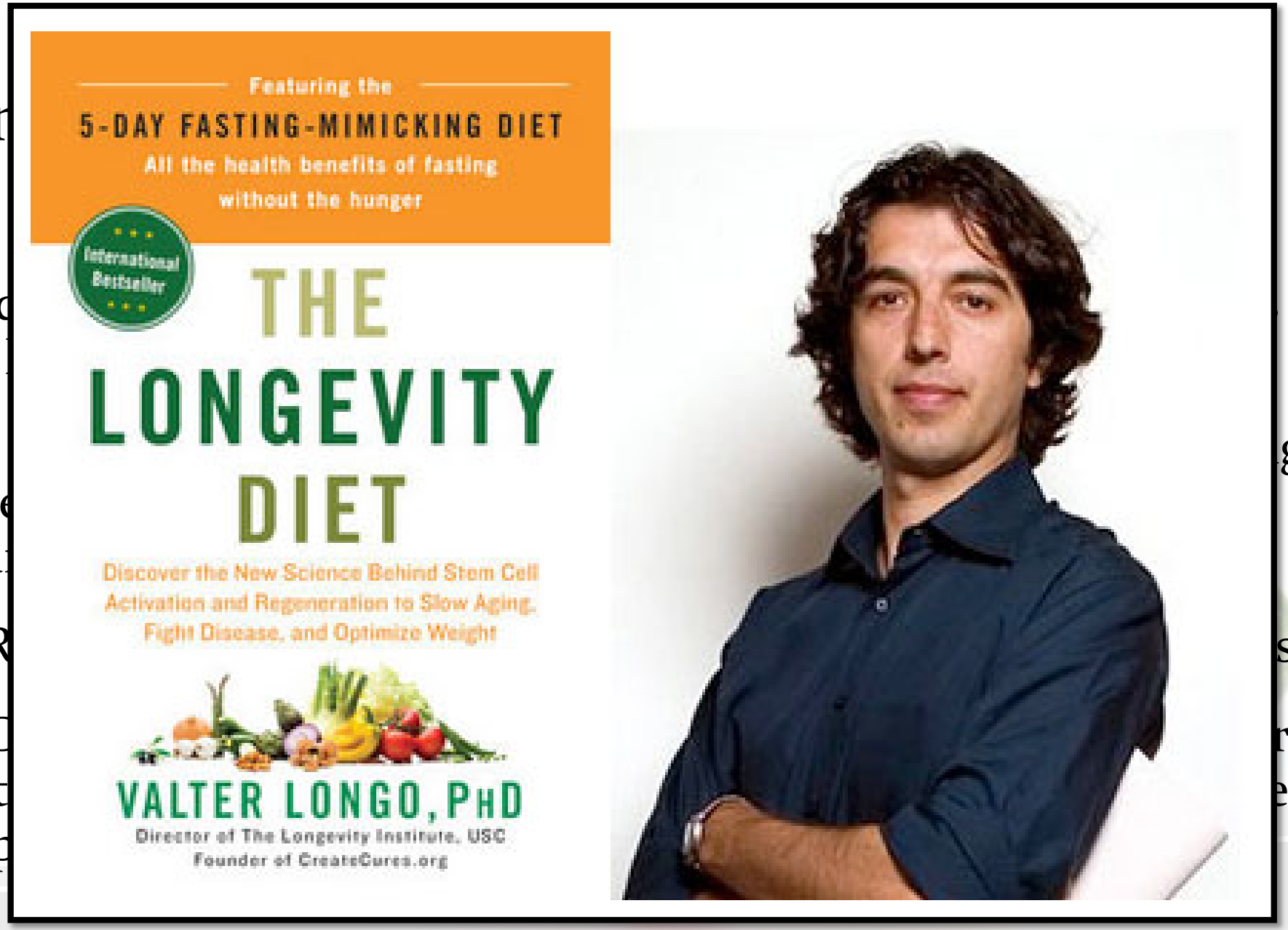

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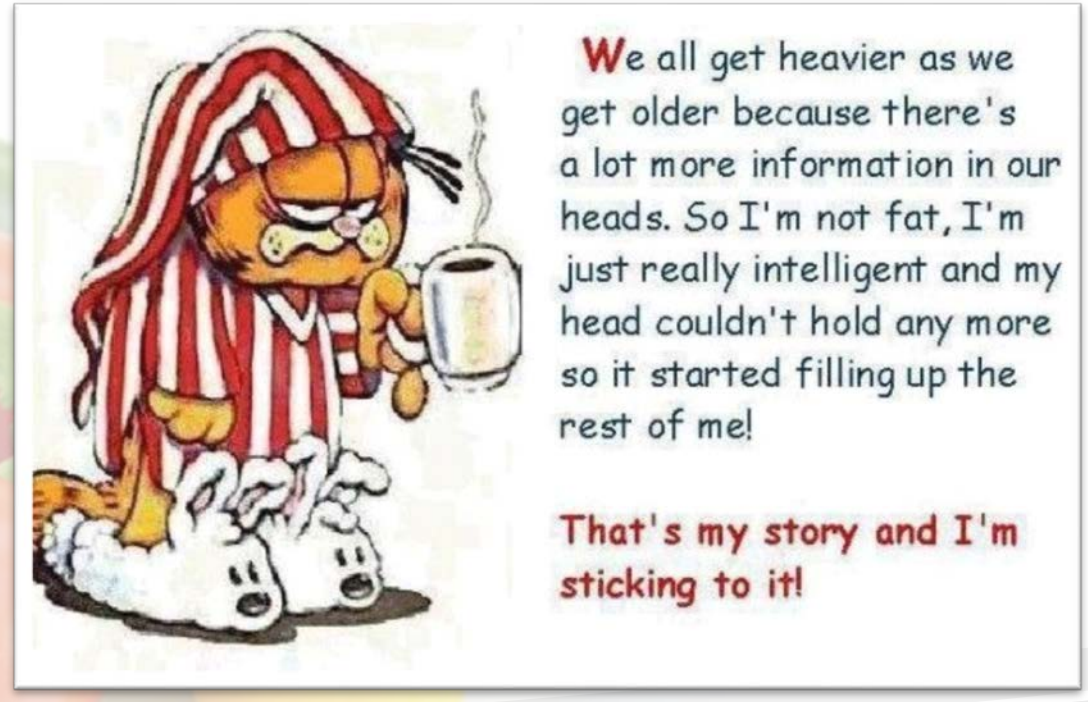
B Malinowski et al. Intermittent Fasting in Cardiovascular Disorders—An Overview. *Nutrients* **2019**, *11*(3), 673; https://doi.org/10.3390/nu11030673
https://drhyman.com/blog/2019/04/10/podcast-ep48/

In Summary…

- Obesity is a devastating global epidemic that is causing us to live shorter lives
  - Fankenfoods have caused it
- Saturated fat is not the villain it is made out to be
- Refined highly processed polyunsaturated fatty acids (vegetable oils) are not healthier than saturated fat
- Butter is not bad, but cow's milk is for baby cows
- Chocolate is heart healthy
- Fasting does the body good



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Let Food be thy Medicine and Medicine be thy Food - Hippocrates

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The miracle we humans have always known is this:

> Food exists specifically to energize, heal, repair and uplift us. Every bite you take is a powerful opportunity to create health or promote disease. When I say it's miraculous, I'm talking about real food, the kind that comes from the earth and fuels and sustains us, not the industrialized, hyperprocessed, hyperpalatable junk that degrades us and makes us sick.

Which kind will you allow into your body?

The choice is yours to make.

> Dr. Mark Hyman

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Hyman, M. Food: What the Heck Should I Eat? Hyman Enterprises, LLC, 2018.

Choose real food!

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