Mindful Nourishment: Integrating Nutrition in Patient Care

Garrett P. Clark, D.O., M.S. (Med Ed).
LECOM Integrative Medicine
Medical Fitness & Wellness Center

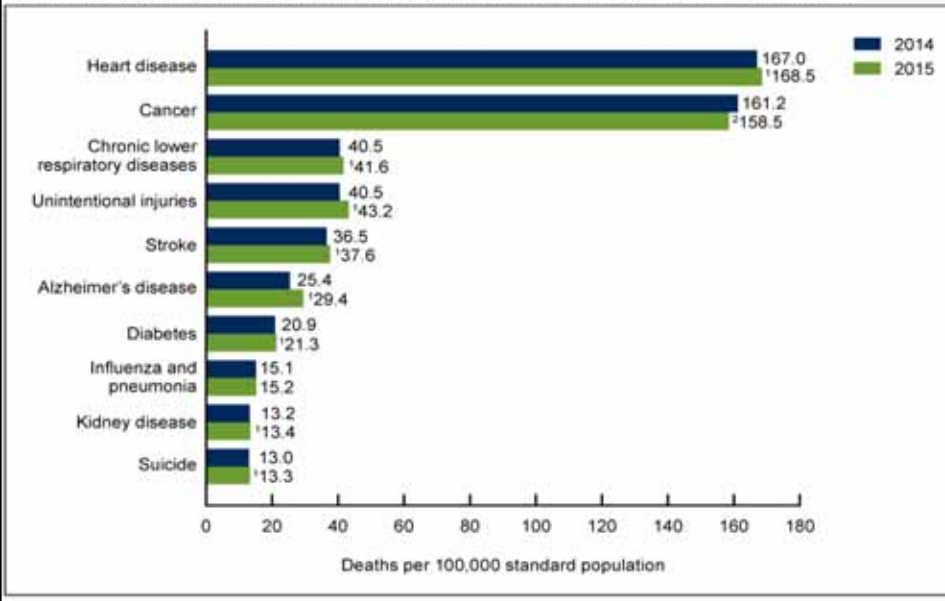
Objectives:

- Review the U.S. Preventive Services Task Force recommendation guidelines on nutrition.
- Review and discuss HHS and USDA dietary guidelines to prevent chronic diseases.
- Discuss the role of dietary supplements.
- Review and discuss research regarding "GMO's" (genetically modified organisms) and their role in diet and nutrition.

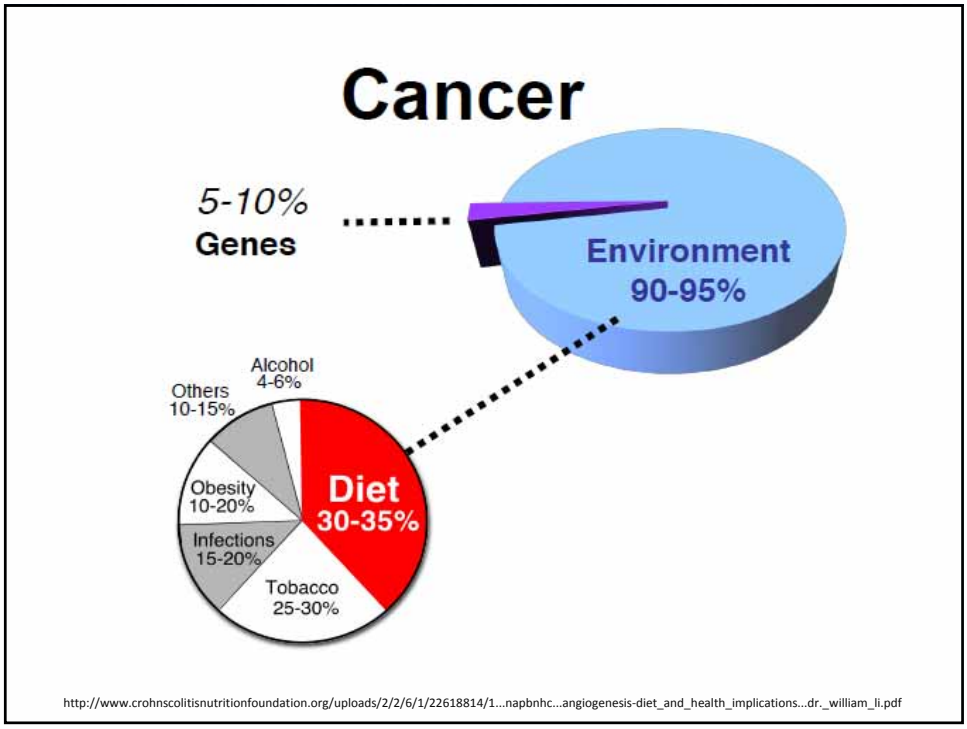
"My lifestyle determines my deathstyle"

-James Hetfield, Metallica

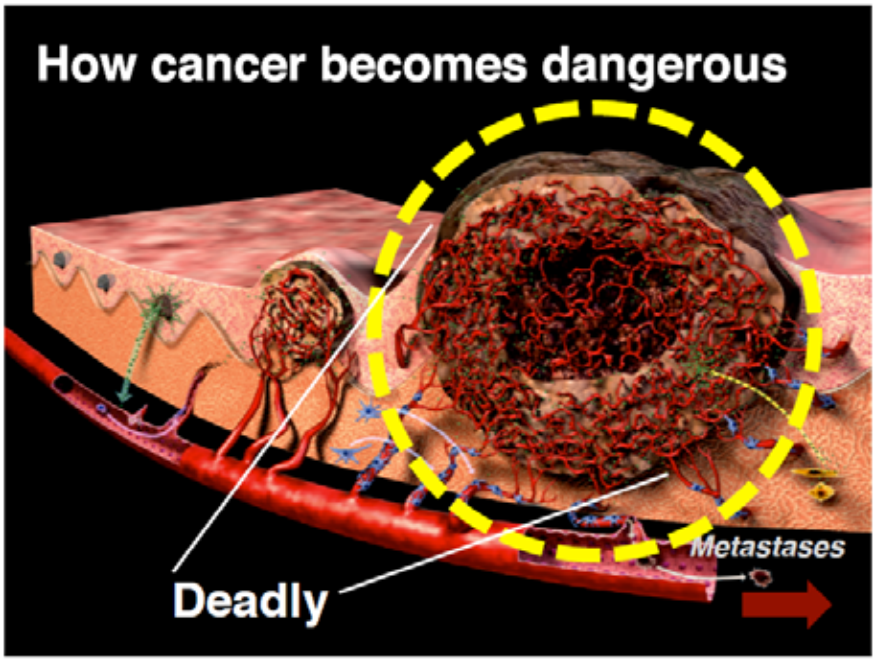
Figure 3. Age-adjusted death rates for the 10 leading causes of death in 2015: United States, 2014 and 2015



↑Statistically significant increase in age-adjusted death rate from 2014 to 2015 ($p < 0.05$).
↓Statistically significant decrease in age-adjusted death rate from 2014 to 2015 ($p < 0.05$).
NOTES: A total of 2,712,630 resident deaths were registered in the United States in 2015. The 10 leading causes accounted for 74.2% of all deaths in the United States in 2015. Causes of death are ranked according to number of deaths. Access data table for Figure 3 at: http://www.cdc.gov/nchs/data/databriefs/db267_table.pdf#3.
SOURCE: NCHS, National Vital Statistics System, Mortality.



http://www.crohnscolitisnutritionfoundation.org/uploads/2/2/6/1/22618814/1...napbnhc...angiogenesis-diet_and_health_implications...dr._william_li.pdf



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Dietary Factors / Choices That May Contribute to Cancer:

- Processed Meat
- Alcohol
- ??? Sugar – indirectly
- Obesity

Processed Meats:

- Meats *that have been preserved by curing, salting or smoking, or with chemical preservatives*
- Ex: bacon, sausage, hot dogs, pepperoni, prosciutto, beef jerky and salami.
- Eating 50 grams of processed meat (the equivalent of four strips of bacon or one hot dog) every day increases the risk of colorectal cancer by 18 %.
- Choose nitrate and nitrite-free meats, which don't have added preservatives if you choose to eat processed meats.

https://www.cancercenter.com/discussions/blog/what-foods-and-drinks-are-linked-to-cancer/

NOT a Good Idea!

http://i1.wp.com/gamedayr.com/wp-content/uploads/2013/07/fourth-of-july-hot-dog-eating-contest.jpg?resize=570%2C376

Charred Meats, Red Meat:

- Charred meats (cooked at high temps) cause changes in your DNA = may lead to cancer.
- Fried or barbecued meats linked to an increased risk of colorectal, pancreatic & prostate cancer.
- Marinating meats before cooking may help reduce the risk of carcinogens forming.

https://www.cancercenter.com/discussions/blog/what-foods-and-drinks-are-linked-to-cancer/

Alcohol:

- When metabolized, alcohol produces acetaldehyde = damage DNA = may lead to cancer.
- The more alcohol consumption, the higher risk for certain kinds of cancer: (head & neck, esophageal, liver, etc).
- Most experts recommend abstaining from alcohol to avoid the risk
- If you choose to indulge, limit your alcohol to no more than one serving/day (women), or two servings/day (men).
- A serving = 12 oz. of beer, 5 oz. of wine or 1.5 oz. of liquor.

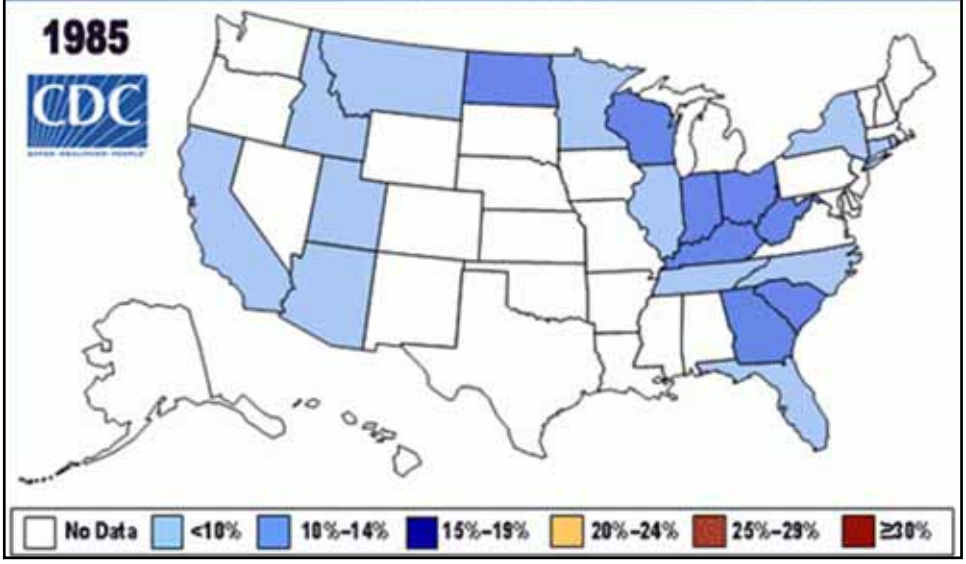
https://www.cancercenter.com/discussions/blog/what-foods-and-drinks-are-linked-to-cancer/

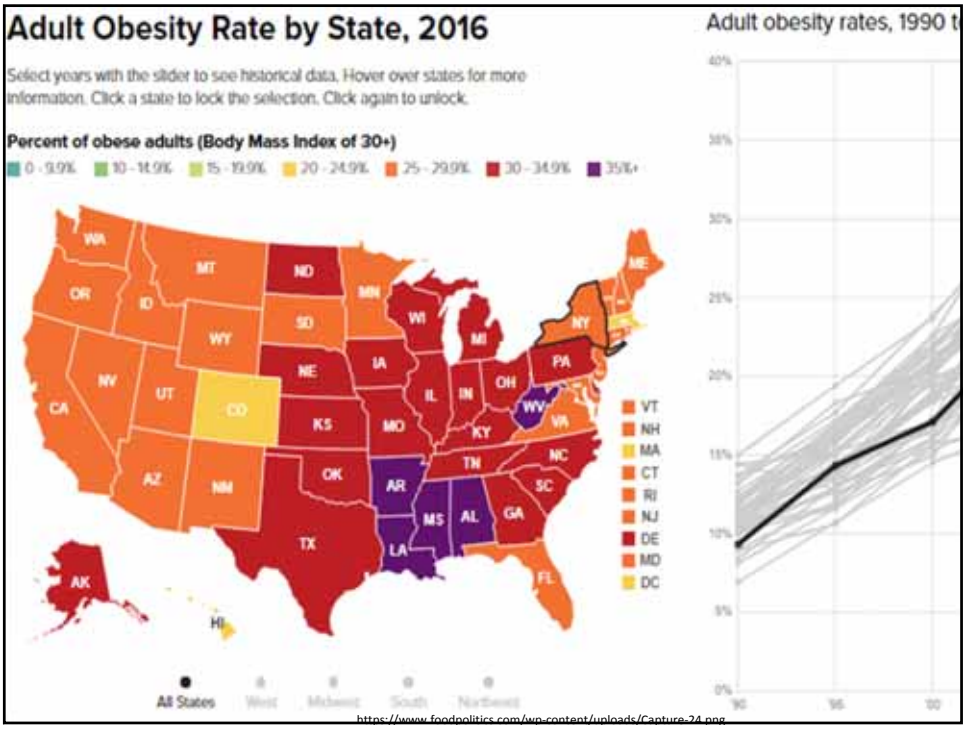
Sugar:

- Sugar: Not ***directly*** on the list.
- Due to the fact that it has not been ***directly*** linked to cancer.
- HOWEVER Sugar = empty calories = weight gain = obesity.
- **OBESITY** has been linked to 13 types of cancer.
- Average American consumes an estimated 89 grams of added sugars per day (2 to 3 times the recommended amount).

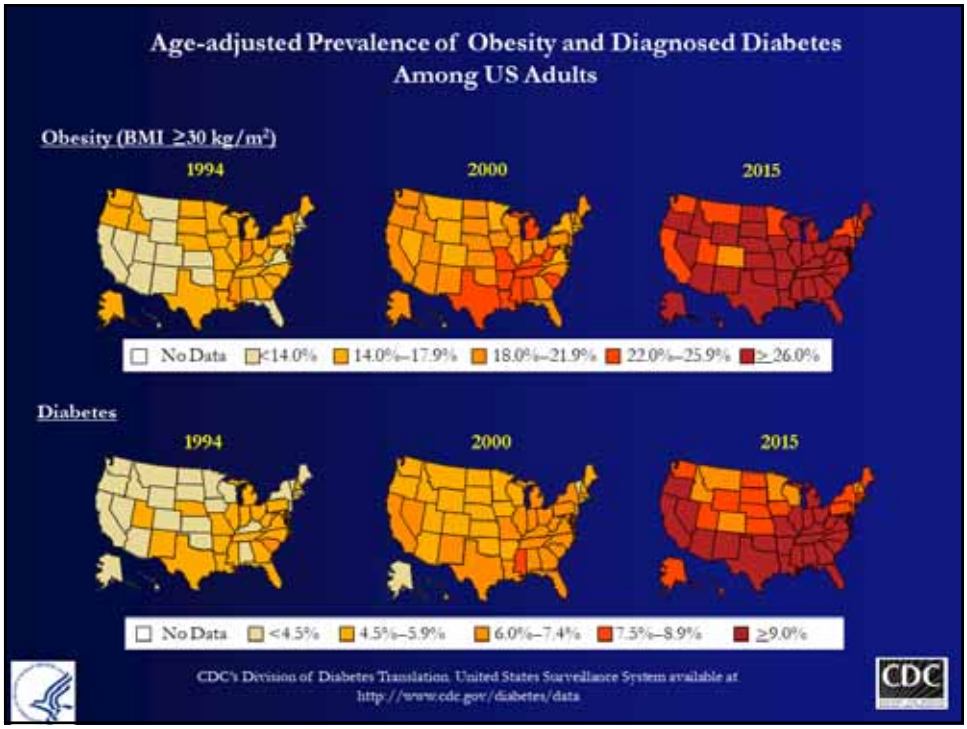
https://www.cancercenter.com/discussions/blog/what-foods-and-drinks-are-linked-to-cancer/

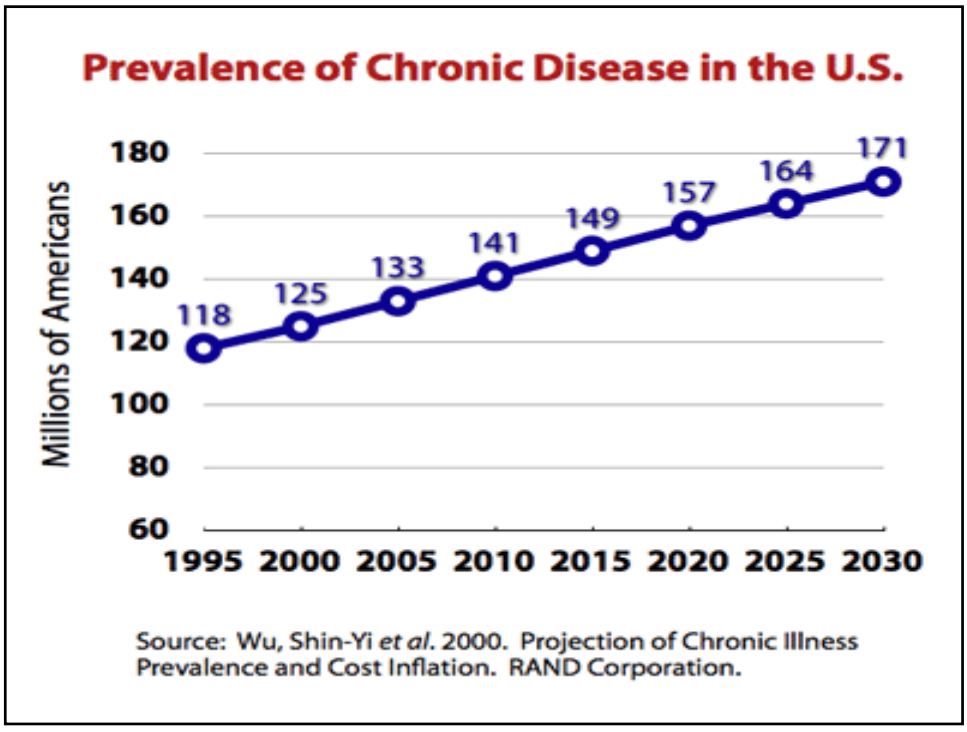
Obesity has increased dramatically in the United States since 1985. Source: CDC





https://www.foodpolitics.com/wp-content/uploads/Capture-24.png

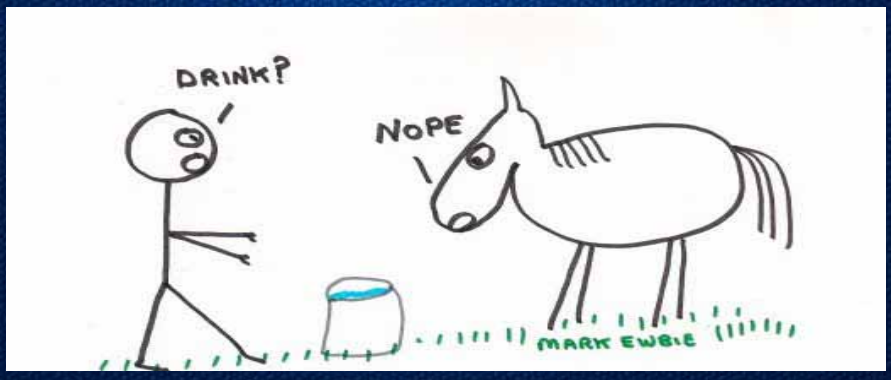

Age-adjusted Prevalence of Obesity and Diagnosed Diabetes Among US Adults
Obesity (BMI ≥30 kg/m²)
1994
2000
2015
No Data
<14.0%
14.0%–17.9%
18.0%–21.9%
22.0%–25.9%
≥26.0%
Diabetes
1994
2000
2015
No Data
<4.5%
4.5%–5.9%
6.0%–7.4%
7.5%–8.9%
≥9.0%
CDC's Division of Diabetes Translation. United States Surveillance System available at http://www.cdc.gov/diabetes/data
CDC


Prevalence of Chronic Disease in the U.S.
Millions of Americans
180
160
140
120
100
80
60
118
125
133
141
149
157
164
171
1995 2000 2005 2010 2015 2020 2025 2030
Source: Wu, Shin-Yi et al. 2000. Projection of Chronic Illness Prevalence and Cost Inflation. RAND Corporation.

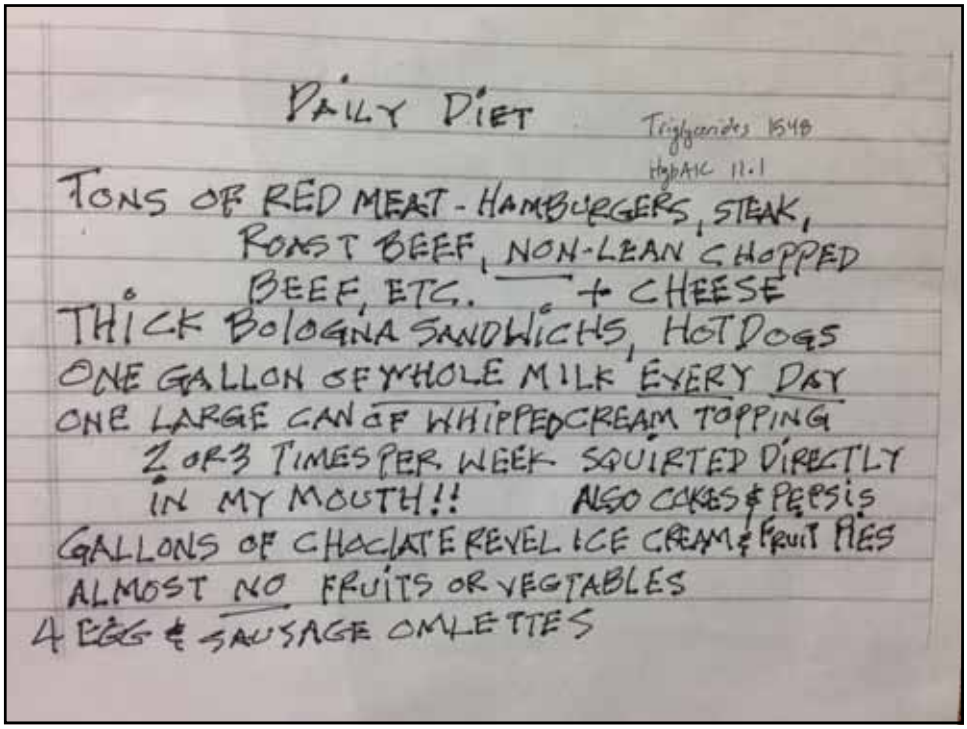
U.S. Preventive Services Task Force Recommendations to combat obesity:

- Most effective interventions were comprehensive and were of high intensity.
- Behavioral interventions included multiple behavioral management activities, (group sessions, individual sessions, setting weight-loss goals).
- Improving diet & nutrition, physical activity, **addressing barriers to change**, active use of self-monitoring, & strategizing how to maintain healthy lifestyle changes.

Addressing barriers to change…



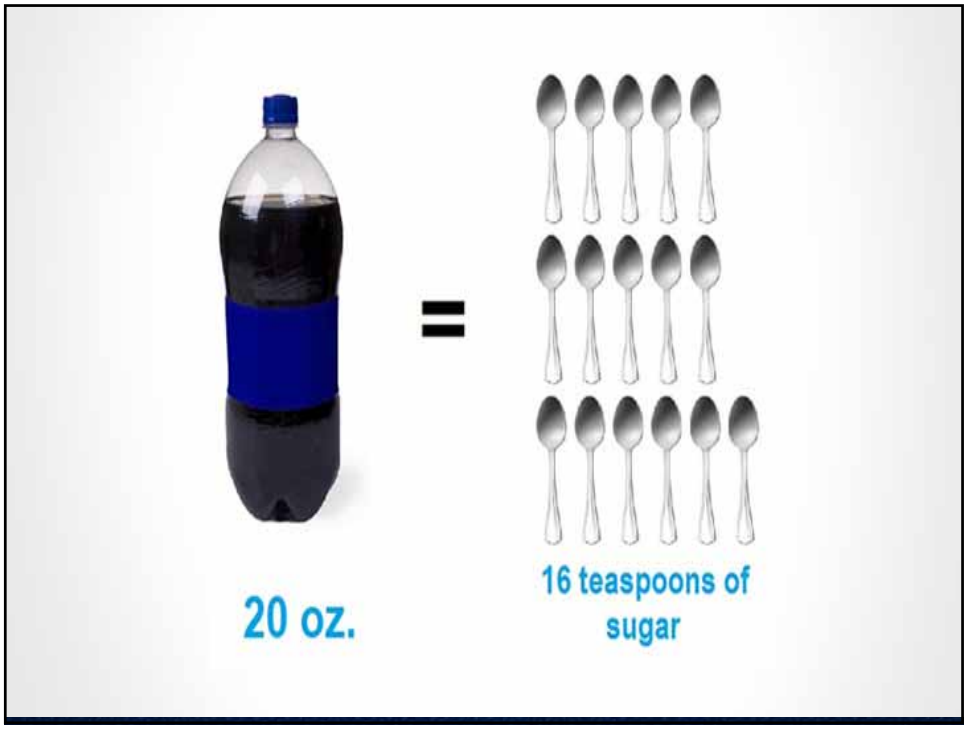
https://media.licdn.com/mpr/mpr/AAEAAQAAAAAAAAIsAAAAJDUyN2NkNWExLTY4ZDEtNGI2OS05NjlkLTQ0NTZiZTI0N2ExZg.jpg

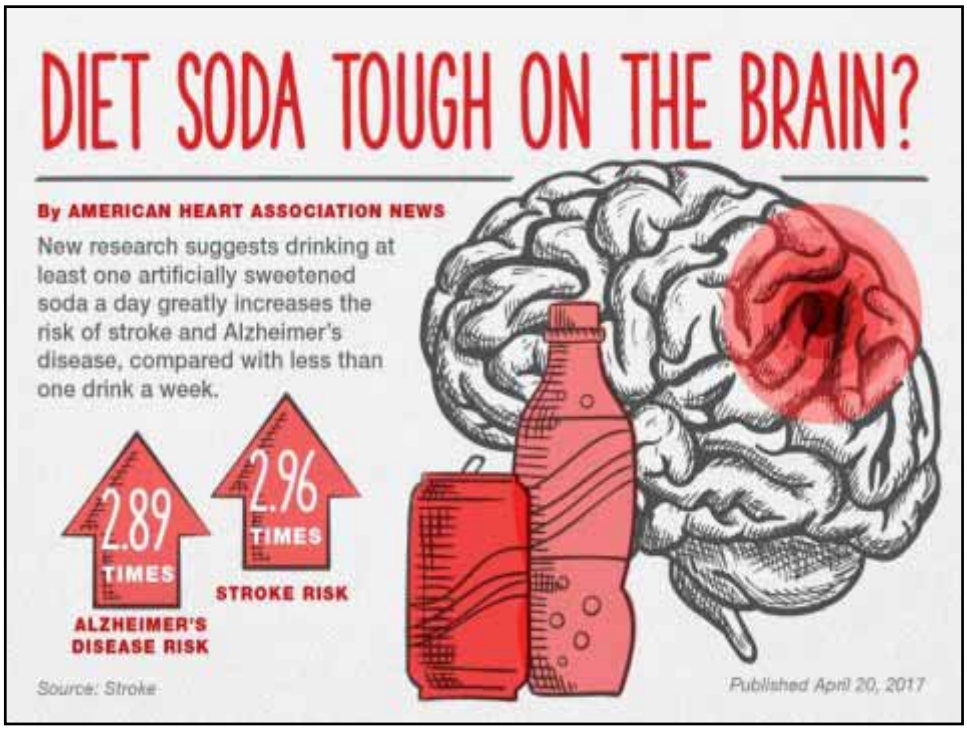


Specific recommendations fit into five guidelines:

1. Follow a healthy eating pattern across the lifespan.
2. Focus on variety, **nutrient-dense foods**, and amount.
3. Limit calories from **added sugars** and saturated fats, and reduce sodium intake.
4. Support healthy eating patterns for all.
5. Shift to healthier food and **beverage choices.**

http://www.hhs.gov/about/news/2016/01/07/hhs-and-usda-release-new-dietary-guidelines-encourage-healthy-eating-patterns-prevent-chronic.html


=
20 oz.
16 teaspoons of sugar

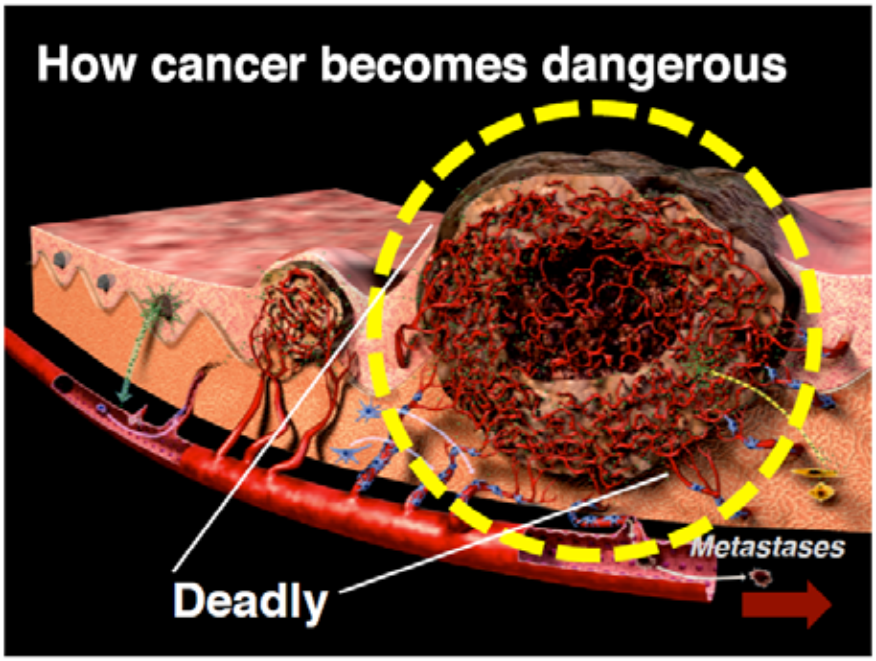

DIET SODA TOUGH ON THE BRAIN?
By AMERICAN HEART ASSOCIATION NEWS
New research suggests drinking at least one artificially sweetened soda a day greatly increases the risk of stroke and Alzheimer's disease, compared with less than one drink a week.
2.89 TIMES
ALZHEIMER'S DISEASE RISK
2.96 TIMES
STROKE RISK
Source: Stroke
Published April 20, 2017

Sugar- and Artificially Sweetened Beverages and the Risks of Stroke and Dementia

A Prospective Cohort Study

- **Results:** Higher recent and higher cumulative intake of artificially sweetened soft drinks were associated with an increased risk of stroke, all-cause dementia, and Alzheimer's disease dementia.
- Sugar-sweetened beverages were **not** associated with stroke or dementia.
- **Conclusions—**Artificially sweetened soft drink consumption was associated with a higher risk of stroke and dementia.

https://doi.org/10.1161/STROKEAHA.116.016027 Stroke. 2017;STROKEAHA.116.016027 Originally published April 20, 2017



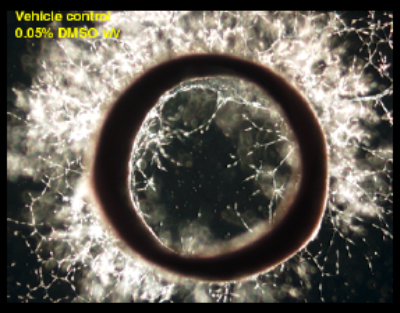
http://www.crohnscolitisnutritionfoundation.org/uploads/2/2/6/1/22618814/1...napbnhc...angiogenesis-diet_and_health_implications...dr._william_li.pdf

Dietary Sources of Naturally-Occurring Antiangiogenic Substances

Green tea	Red grapes	Lavender
Strawberries	Red wine	Cloves
Blackberries	Bok choy	Beet
Raspberries	Kale	Pumpkin
Blueberries	Endive	Sea Cucumber
Cinnamon	Soy beans	Sardine
Cranberries	Ginger	Prawn
Apples	Maitake mushroom	Parsley
Pineapple	Licorice	Garlic
Cherries	Turmeric	Tomato
Sweet potatoes	Nutmeg	Olive oil
Papaya	Artichokes	Maple Syrup
Pomegranate	Kumquat	Dark chocolate
Red Onions	Cauliflower	Gouda cheese
Spinach	Hazelnuts	Avocado
		Others

Source: Angiogenesis Foundation

Resveratrol (Red Grapes)



A TOOL TO STUDY ANGIOGENESIS

http://www.crohnscolitisnutritionfoundation.org/uploads/2/2/6/1/22618814/1...napbnhc...angiogenesis-diet_and_health_implications...dr._william_li.pdf


Ellagic Acid
(Strawberries)
Vehicle control
0.05% DMSO in V
A TOOL TO STUDY
ANGIOGENESIS
http://www.crohnscolitisnutritionfoundation.org/uploads/2/2/6/1/22618814/1...napbnhc...angiogenesis-diet_and_health_implications...dr._william_li.pdf


Genistein
(Soy Bean)
Vehicle control
0.05% DMSO in V
A TOOL TO STUDY
ANGIOGENESIS
http://www.crohnscolitisnutritionfoundation.org/uploads/2/2/6/1/22618814/1...napbnhc...angiogenesis-diet_and_health_implications...dr._william_li.pdf

HHS and USDA New Dietary Guidelines to Prevent Chronic Diseases

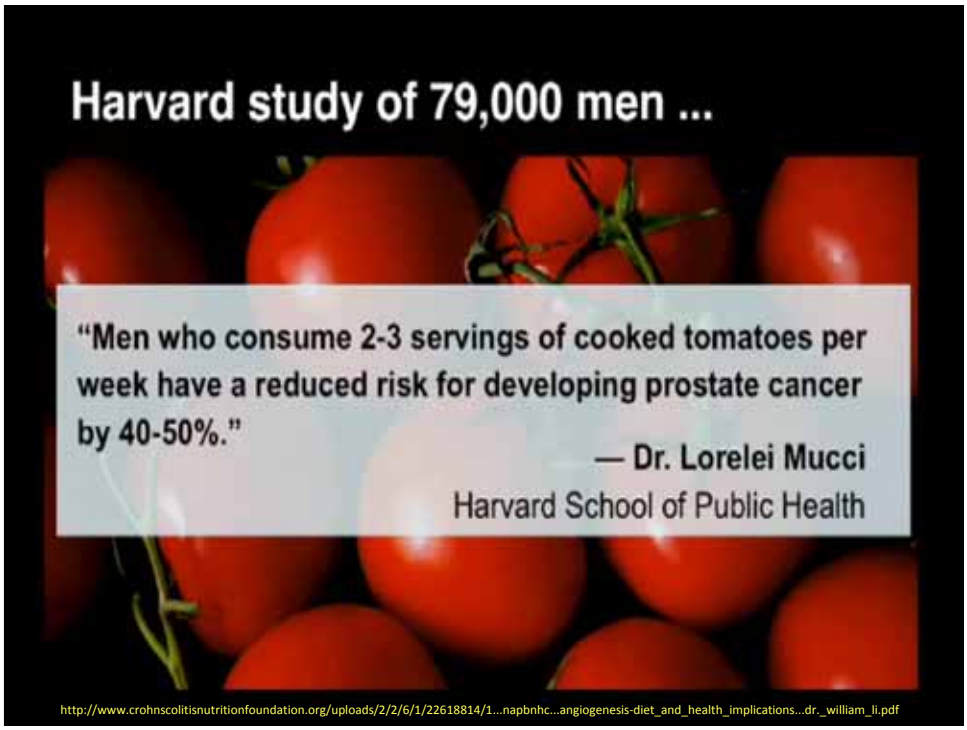
- A variety of vegetables, including dark green, red and orange, legumes (beans and peas),
- Fruits, especially whole fruits
- Grains, at least half of which are whole grains
- Fat-free or low-fat dairy
- A variety of protein foods, including seafood, lean meats and poultry, eggs, legumes, etc.
- Oils, (soybean, sunflower, olives, etc)

http://www.hhs.gov/about/news/2016/01/07/hhs-and-usda-release-new-dietary-guidelines-encourage-healthy-eating-patterns-prevent-chronic.html

HHS and USDA New Dietary Guidelines to Prevent Chronic Diseases:

- Consume less than 10 percent of calories per day from added sugars (sugars and syrups that are added when they are processed or prepared.)
- Less than 10 percent of calories per day from saturated fats. (butter, whole milk, meats that are not labeled as lean, and tropical oils such as coconut oil).
- Less than 2,300 mg per day of sodium.

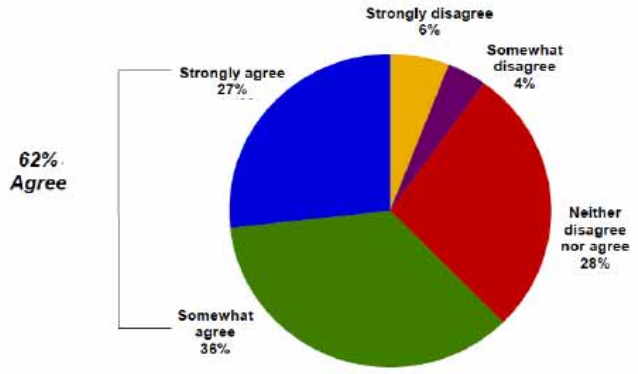

QUAKER
LOWER SUGAR
Maple & Brown Sugar
Sodium 242 mg
20% MORE FREE
Fritos
The ORIGINAL
Sodium 100 mg
KETTLE-COOKED
CAPE COD
Potato Chips
All Natural
NO PRESERVATIVES
Sodium 73 mg
Yoohoo
Sodium 131 mg


Harvard study of 79,000 men ...
"Men who consume 2-3 servings of cooked tomatoes per week have a reduced risk for developing prostate cancer by 40-50%."
— Dr. Lorelei Mucci
Harvard School of Public Health
http://www.crohnscolitisnutritionfoundation.org/uploads/2/2/6/1/22618814/1...napbnhc...angiogenesis-diet_and_health_implications...dr._william_li.pdf


Chunky
RAGÚ
Super Chunky Mushroom
SMUCKER'S
Dove
Dark Chocolate
Sugar
12 G
Sugar
11 G


DOUBLE BIG MAC
CALORIES (kcal)
680 730
FAT (g)
38 53
SODIUM (mg)
1340 1400
PROTEIN (g)
40 28
CAESAR SALAD
with Crispy Chicken and Asiago Caesar Dressing
news
http://www.cbc.ca/news/business/mcdonalds-kale-calorie-questions-1.3423938

Most Americans would rather hear positive messages about what to eat, rather than negative messages about what not to eat.



To what extent do you agree or disagree with the following statements regarding food and health information? *I am more interested in hearing about what TO eat, rather than what NOT to eat* * [Select one] (n=1000)

— International Food Information Council/Food for Health Consumer Trending Survey 2011

http://www.crohnscolitisnutritionfoundation.org/uploads/2/2/6/1/22618814/1...napbnhc...angiogenesis-diet_and_health_implications...dr._william_li.pdf

Should you supplement?

- Fruits and vegetables grown decades ago were far richer in nutrients than what we get today.
- Reasons:
  - modern agricultural methods have stripped nutrients from the soil.
  - "Each successive generation of fast-growing, pest-resistant [food] is truly less good for you than the one before."
  - **GMO's**

http://www.scientificamerican.com/article/soil-depletion-and-nutrition-loss/

Landmark Study:

- University of Texas Department of Chemistry and Biochemistry in 2004:
- Studied U.S. Department of Agriculture nutritional data from both 1950 and 1999 for 43 different fruits and vegetables.
- Finding: "reliable declines" in the amount of calcium, phosphorus, iron, B complex, vitamin C, and other nutrients over the past half century.
- Reason: the preponderance of agricultural practices designed to improve traits (size, growth rate, pest resistance) **other than nutrition**.

http://www.scientificamerican.com/article/soil-depletion-and-nutrition-loss/

Million Dollar Questions: Should You Supplement? What to Supplement?

http://accelerate-motivate.com/wp-content/uploads/bfi_thumb/one-million-dollars-n2x5r12jp7wk9g46jqsjd6iqxn62xi390uacnb1514.jpg

http://oma.drupal.ku.edu/sites/oma.drupal.ku.edu/files/images/galleries/in%20the%20news.jpg

Osteopathic Family Physician (2015), 13-18 13

REVIEW ARTICLE

Dietary Supplements: Navigating the Pharmacologic Influences of Nature's Medicine

Andrew J. Kubinski, MS, DO[1]; Gregory W. Coppola, DO[2]

[1]University of Pikeville Kentucky College of Osteopathic Medicine/East Tennessee State University Quillen College of Medicine Kingsport Family Medicine Residency PGY1

[2]Lake Erie College of Osteopathic Medicine, Director, Integrative Medicine Fellowship Erie, PA; Attending Physician, Lake Erie College of Osteopathic Medicine Sports Medicine Fellowship; Mercyhurst University, Academic Medical Director/Team Physician, Department of Sports Medicine

Regarding multivitamins: "they are the most commonly used supplement, but a consensus statement by the United States Preventive Services Task Force (USPSTF) recommended against their daily use, unless a patient has a known vitamin or mineral deficiency."

https://ofpjournal.com/index.php/ofp/article/download/363/297

Evidence for Commonly Used Supplements:

Multivitamin/mineral

- Do not use unless known deficiency
- Correct specific deficiency
- Do not have health benefit

Vitamin D

- Doses of Vitamin D3 1000-2000IU PO daily up to 10,000IU have been shown to be safe and effective
- Keep levels between 40-60nmol/L
- No consensus on routine screening for Vitamin D deficiency in asymptomatic, healthy adults
- Vitamin D receptor on a majority of cells in the body, checking vitamin D levels can be considered helpful especially in an area where the population does not receive adequate sunlight.

Omega-3 (DHA/EPA)

- SMASH (Salmon [wild pacific], Mackrel [spanish], Anchovies, Sardines, and Herring)
- 1-2g PO daily for cardiovascular benefits
- 2-4g PO daily anti-inflammatory benefits
- 4g PO daily for elevated triglycerides

https://ofpjournal.com/index.php/ofp/article/download/363/297

When to Consider Supplement Use / When to Screen for Deficiency:

- Results from different studies are still far from conclusive.
- At the moment, it seems more advisable to target vitamin supplements for at risk groups:
  - Poor Diet, malabsorption issues, pregnancy, infancy
  - Area / Latitude, skin tone
  - Certain medications (PPI use for example.), etc.

https://www.ncbi.nlm.nih.gov/pubmed/9167137

Vitamin D

- Fat-soluble vitamin
- Naturally present in a few foods, added to others.
- Produced endogenously when ultraviolet rays from sunlight strike the skin and trigger vitamin D synthesis.
- The role of vitamin D in bone health is well described.

https://ods.od.nih.gov/factsheets/VitaminD-HealthProfessional/

Vitamin D

- The International Osteoporosis Foundation (2010) recommended that average risk adults take 800-1000 IU per day of vitamin D3.
- Their Position Statement in 2010 recommended that high risk adults (e.g., osteoporosis, obese, little sun exposure, dark skin, etc.) be screened and supplemented to reach 30 ng/ml.
- Re-measure 25(OH)D at 3 month intervals to evaluate level.

https://integrativemedicine.arizona.edu/curriculum/modulePrint.html

Effect of Latitude on Vitamin D Levels.

Leary PF, Zamfirova I, Au J, McCracken WH

- **METHODS:** Osteopathic medical students were recruited from campuses in Bradenton, Florida, and Erie, Pennsylvania. Blood samples were drawn to measure total vitamin D levels.
- **CONCLUSION:** Latitude was found to be a statistically significant risk factor for vitamin D deficiency. Additionally, the findings suggest that persons with darker skin tone and, to a lesser degree, men and persons who are overweight or obese are also at increased risk for vitamin D deficiency.
- **Physicians should be cognizant of these risk factors when deciding whom to screen**.

J Am Osteopath Assoc. 2017 Jul 1;117(7):433-439. doi: 10.7556/jaoa.2017.089.

Vitamin D:

- The safe upper limit is 4000 IU. (However, some patients will need higher doses to correct very low serum levels).
- Vitamin D deficiency has been associated with several clinical conditions, including cardiovascular disease, diabetes, and cancer. The strength of evidence for the associations is variable, complex, and updated regularly in response to research findings and international consensus.

https://integrativemedicine.arizona.edu/curriculum/modulePrint.html

Vitamin D Food Sources

Food	Serving Size	Vitamin D (I.U.)
Pink salmon, canned	3 ounces	530
Sardines, canned	3 ounces	231
Tuna, canned	3 ounces	200
Cow's milk	8 ounces	100
Orange juice fortified with vitamin D	8 ounces	100
Fortified breakfast cereals	1 serving (~1 cup)	40-50
Egg	1 ounce	20
Cod liver oil	1 ounce	1,360

GMO's

- GMOs = "genetically modified organisms"
- Living organisms whose genetic material has been artificially manipulated through genetic engineering
- MAY create unstable combinations of plant, animal, bacteria and viral genes that do not occur in nature or through traditional crossbreeding methods.

http://www.nongmoproject.org/learn-more/

GMO's:

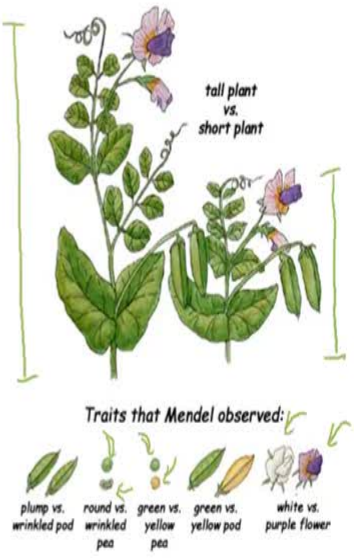
- Genetically modified crops - the DNA is modified to introduce a new trait which does **not occur naturally** in the species.
- Ex: resistance to bugs, disease, or chemical treatments (e.g. resistance to a herbicide).
- They have the potential to contaminate forever.
- They increase herbicide use:
- Between 1996 and 2008, US farmers sprayed an extra 383 million pounds of herbicide on GMOs = **higher residues of toxic herbicides**. (linked with sterility, hormone disruption, birth defects, and cancer.)

http://www.responsibletechnology.org/10-Reasons-to-Avoid-GMOs
http://truthwiki.org/Genetically_modified_crops

1) dominance
2) segr.

Mendel and His Peas

1865



The Spider Goat ????!!!!

- Scientists breed goats that produce spider silk
- Researchers have developed a way to incorporate spiders' silk-spinning genes into goats.
- The silk protein from the goats' milk can then be used for a variety of applications:
  - making artificial ligaments and tendons
  - for eye sutures, and for jaw repair.
  - applications in bulletproof vests
  - improved car airbags.

https://phys.org/news/2010-05-scientists-goats-spider-silk.html

GMO Studies:

- Claims that Americans eat millions of GMO meals with NO ill effects are unscientific.
- **NO HUMAN EPIDEMIOLOGICAL STUDIES HAVE BEEN DONE** to establish whether GMO foods may be affecting the health of Americans.
- Because most GMOs are NOT labeled, there is no way of tracing any effects.
- In the U.S., GMOs are in as much as 80% of conventional processed food.

Long-term toxicology study on pigs fed a combined genetically modified (GM) soy and GM corn diet:

- Study showed a diet of GM feed **had a significant effect on inflammation.**
- This finding was statistically significant. GM-fed male pigs showed severe stomach inflammation at a rate of 4.0 times that of the non GM fed male pigs; and female pigs showed a rate of severe stomach inflammation that was 2.2 times the rate of the non-GM fed female pigs.

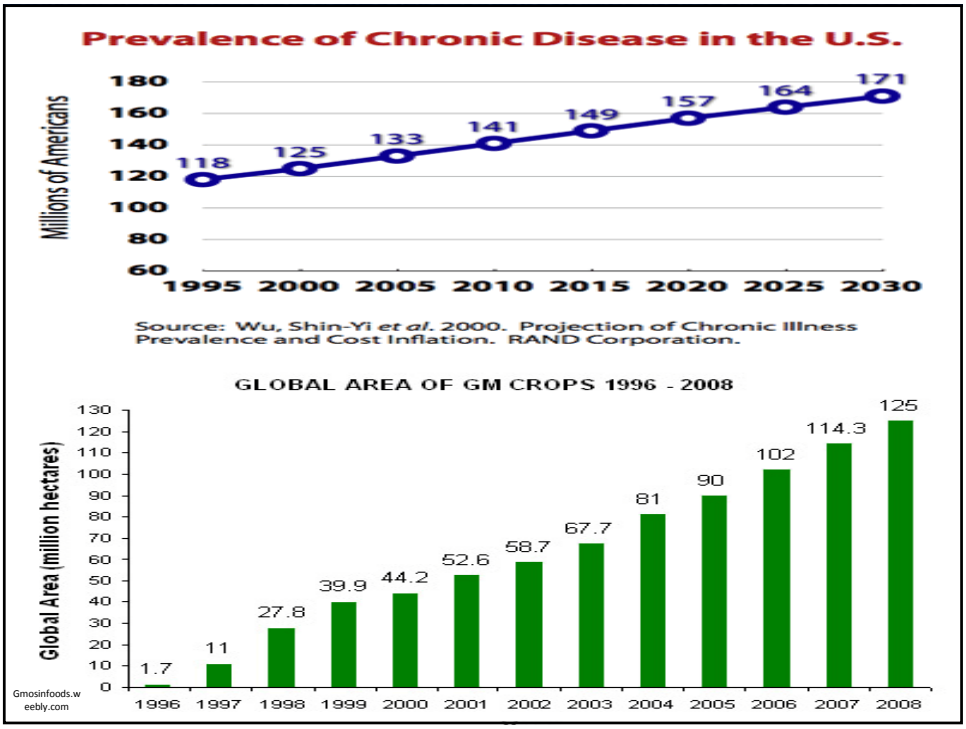
http://www.organic-systems.org/journal/81/8106.pdf

Figure 1. Different levels of stomach inflammation found (clockwise from top left): nil (from a non-GM-fed pig, number B41), mild (from a non-GM-fed pig, number B15), moderate (from a GM-fed pig, number C34) and severe (from a GM-fed pig, number D22).

Study Conclusions:

"Given the widespread use of GMO feed for livestock as well as in humans, this is a cause for concern. *The results indicate that it would be prudent for GM crops to undergo long-term animal feeding studies preferably before commercial planting*, particularly for toxicological and reproductive effects."

http://www.organic-systems.org/journal/81/8106.pdf



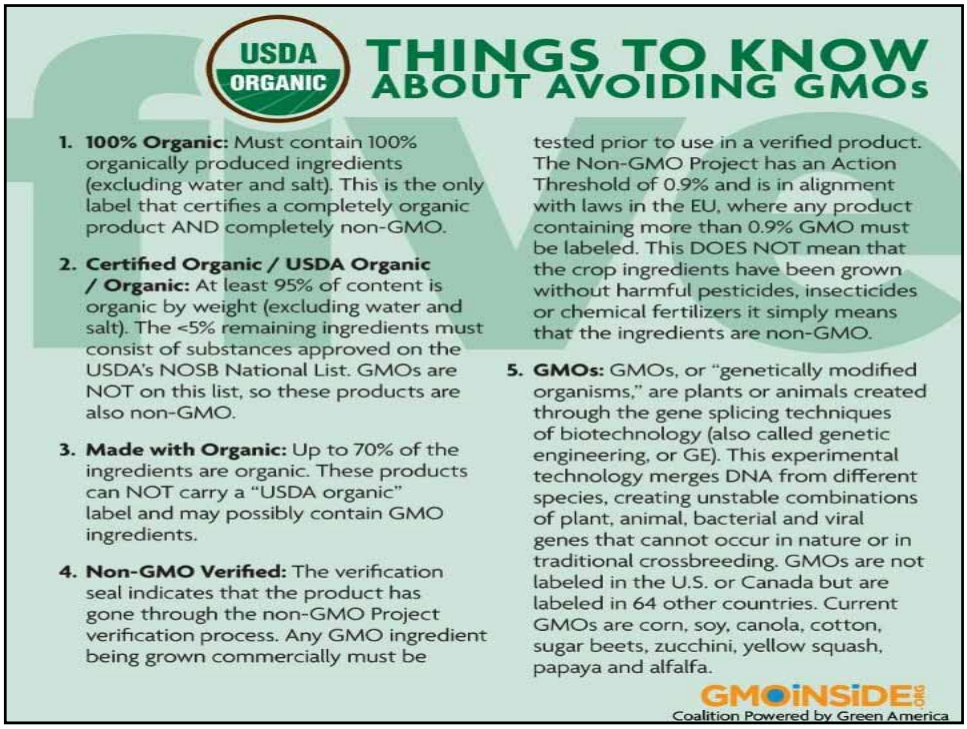
GMO Studies:

- Most animal feeding studies on GMOs are short-medium term studies.
- LONG-TERM, multi-generational studies are needed, as these are often suggestive of harmful health effects.
- Long-term studies are not currently required by GMO regulators anywhere in the world.

GMO Studies:

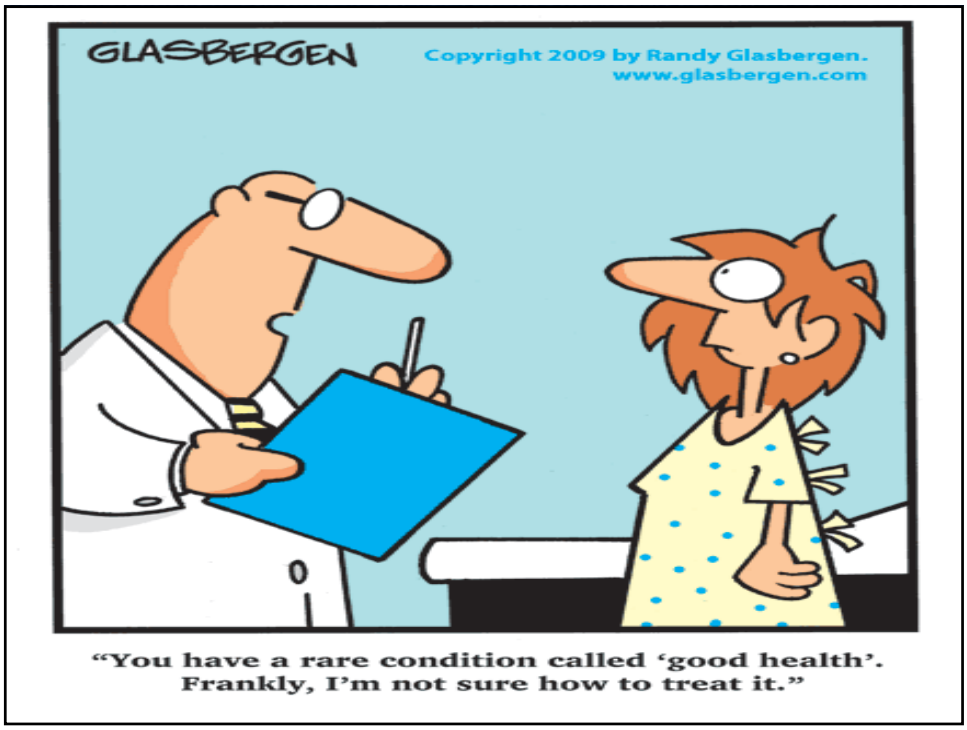
- "The vast majority of the research on genetically modified (GM) crops **suggest** that they are safe to eat.
- Pro-GM scientists are, at times, unscientific in their rejection of the counterevidence.
- A careful analysis of the risks and benefits argues for **expanded safety testing of GM crops**."

http://www.scientificamerican.com/article/the-truth-about-genetically-modified-food/



Wrap Up:

1. Decrease (preferably eliminate) the consumption of processed foods.
2. Natural whole foods are preferable over supplements.
3. Daily supplements MAY be prudent if unable to adhere to HHS and USDA dietary guidelines.
4. If given the choice, limit consumption of GMO-derived foods until better safety data and long-term studies are obtained.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"You have a rare condition called 'good health'.
Frankly, I'm not sure how to treat it."

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