

Alkaline, Paleo, Ketogenic, Macrobiotic, or Vegan: Are Any Really Anticancer?

Donald I. Abrams, MD

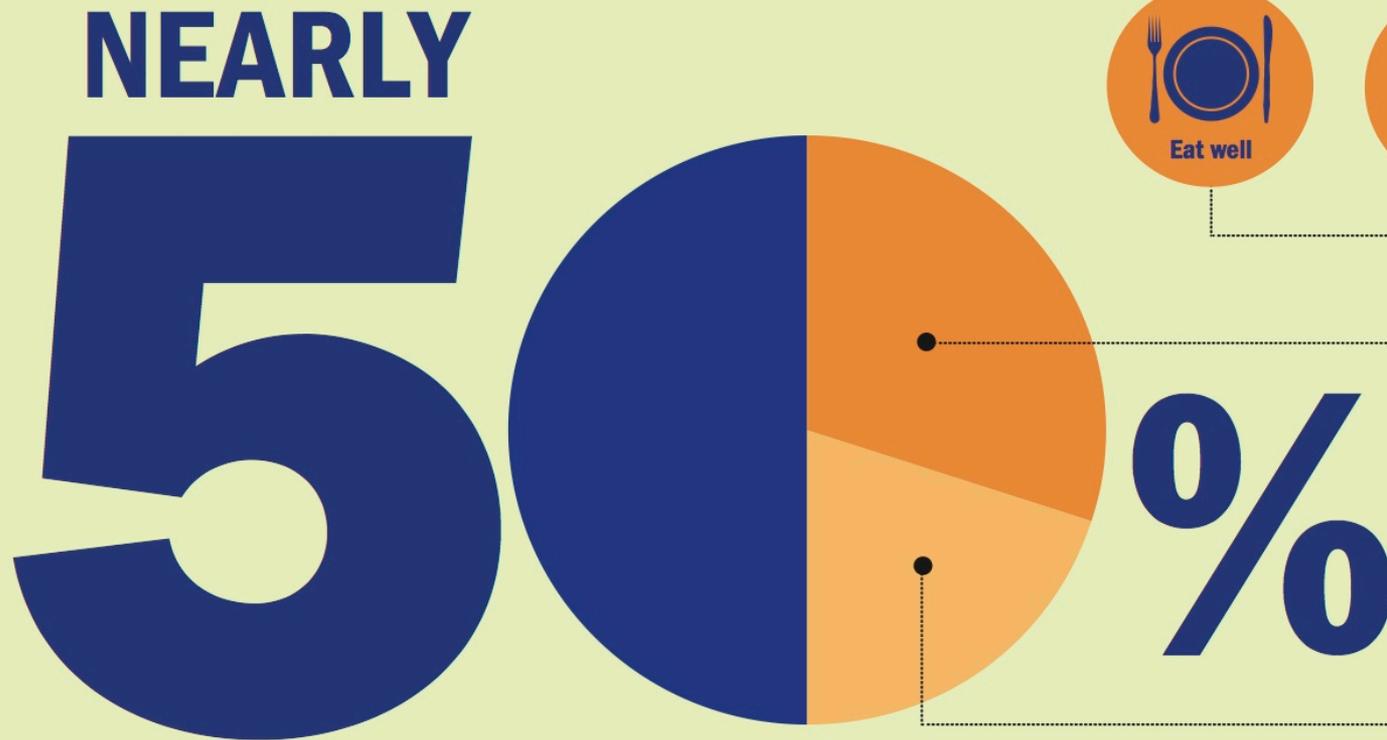
Oncology, Zuckerberg San Francisco General

Integrative Oncology

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University of California San Francisco



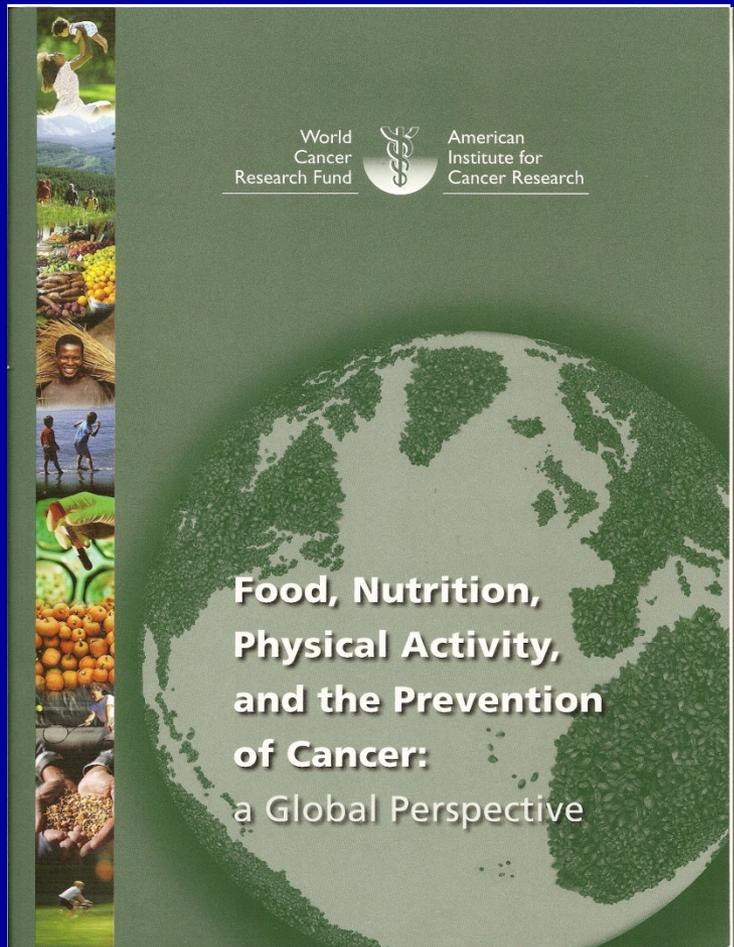
of the most common cancers



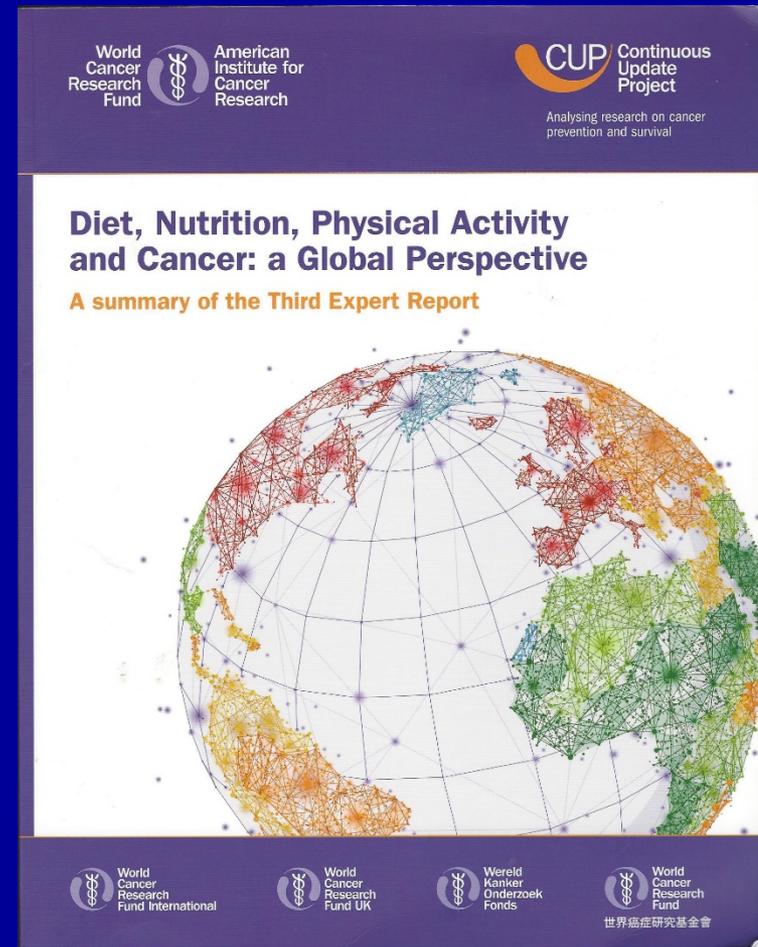
CAN BE PREVENTED

SOURCES: Colditz GA et al. Sci Transl Med. Applying what we know to accelerate cancer prevention. Sci Transl Med. 2012 Mar 28;4(127); AICR/WRCF's, *Food, Nutrition, Physical Activity and the Prevention of Cancer: a Global Perspective* (2007), *Policy and Action for Cancer Prevention* (2009), Continuous Update Project reports (ongoing).

WCRF/AICR Guidelines



2007



2018

AICR RECOMMENDATIONS FOR CANCER PREVENTION

A Blueprint to Beat Cancer

To prevent cancer, people should aim to follow as many of the 10 Cancer Prevention Recommendations as possible. However, any change you make that works toward meeting the goals set out in the Recommendations will go some way to reducing your cancer risk.

BE A HEALTHY WEIGHT

Keep your weight within the healthy range and avoid weight gain in adult life



BE PHYSICALLY ACTIVE

Be physically active as part of everyday life – walk more and sit less



EAT A DIET RICH IN WHOLE GRAINS, VEGETABLES, FRUITS AND BEANS

Make whole grains, vegetables, fruits and pulses (legumes) such as beans and lentils a major part of your usual daily diet



LIMIT CONSUMPTION OF RED AND PROCESSED MEAT

Eat no more than moderate amounts of red meat, such as beef, pork and lamb. Eat little, if any, processed meat



LIMIT CONSUMPTION OF SUGAR-SWEETENED DRINKS

Drink mostly water and unsweetened drinks

LIMIT CONSUMPTION OF "FAST FOODS" AND OTHER PROCESSED FOODS HIGH IN FAT, STARCHES OR SUGARS

Limiting these foods helps control calorie intake and maintain a healthy weight



LIMIT ALCOHOL CONSUMPTION

For cancer prevention, it's best not to drink alcohol



DO NOT USE SUPPLEMENTS FOR CANCER PREVENTION

Aim to meet nutritional needs through diet alone



FOR MOTHERS: BREASTFEED YOUR BABY, IF YOU CAN

Breastfeeding is good for both mother and baby



AFTER A CANCER DIAGNOSIS: FOLLOW OUR RECOMMENDATIONS, IF YOU CAN

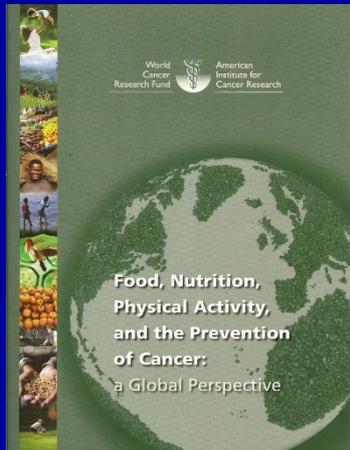
Check with your health professional about what is right for you



Not smoking and avoiding other exposure to tobacco and excess sun are also important in reducing cancer risk.

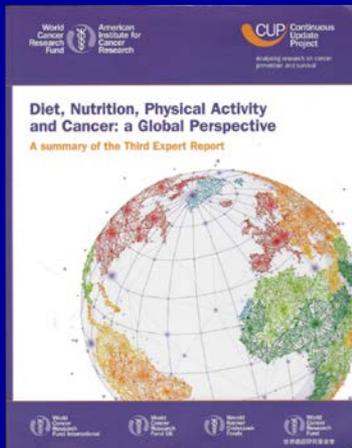
Following these Recommendations is likely to reduce intakes of salt, saturated and trans fats, which together will help prevent other non-communicable diseases.

GUIDELINE #3-ENERGY DENSE



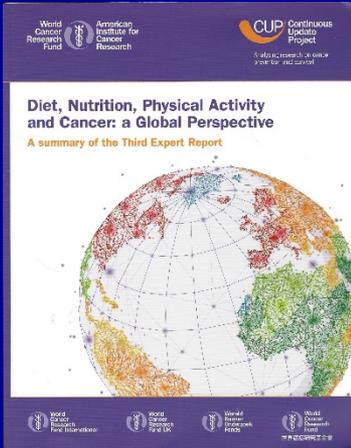
Avoid sugary drinks

**Limit consumption of energy dense foods
(particularly processed foods high in
added sugar, or low in fiber, or high in fat)**



**Guideline split into two separate
components in 2018 edition**

ENERGY DENSE FOOD GUIDELINE #4



Limit consumption of 'fast foods' and other processed foods high in fat, starches or sugars

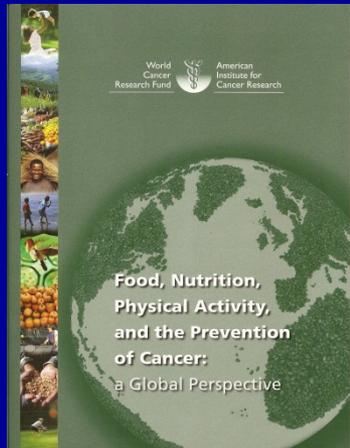


AICR Fast Foods Guideline

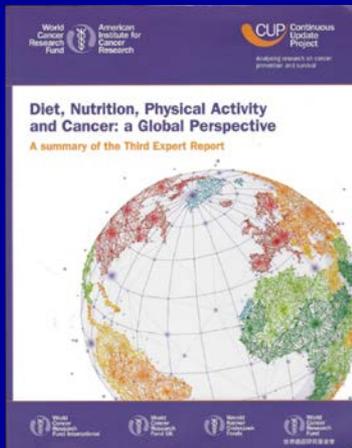


“Processed foods high in fat, starches or sugars embody a cluster of characteristics that encourage excess energy consumption, for example, by being highly palatable, high in energy, affordable, easy to access and convenient to store”

SUGARY DRINK GUIDELINES



2007- #3
Avoid sugary drinks



2018- #6
Limit consumption of sugar-sweetened drinks
Drink mostly water and unsweetened drinks



NONI



Out of Stock at the Company



\$19.18 Now Acai Concentrate 16oz
 \$34.39 Nature's Way Organic Acai Berry Juice
 \$19.18 Now Acai Juice Superfruit Tonic Size
 \$28.30 Nature's Way Alive! Whole Fruit Antioxidant Goji Berry
 \$16.96 Pure Fruit Goji-Zen 1 Liter (33.8oz)
 \$24.99 Pure Planet Tart Cherry Concentrate



Out of Stock at the Company



Out of Stock at the Company

\$16.96 Pure Fruit
 \$28.78 Now Mangosteen Superfruit
 \$44.99 Pure Fruit
 Nature's Way
 \$10.99 Pear

Is This the Best Option?

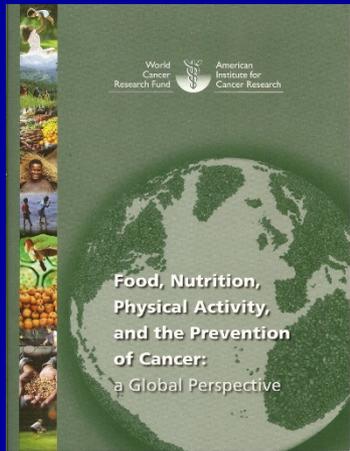
- Label ingredients of a nutritional supplement include:
- WATER, CORN MALTODEXTRIN, SUGAR (SUCROSE), CORN SYRUP, MILK PROTEIN CONCENTRATE, COCOA POWDER (PROCESSED WITH ALKALI), SOY OIL, SHORT-CHAIN FRUCTOOLIGOSACCHARIDES, SOY PROTEIN ISOLATE, CANOLA OIL
- Too much SUGAR!!!

A Better Choice

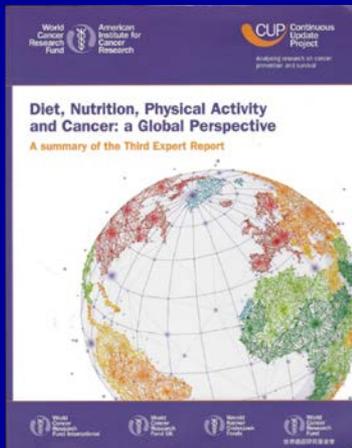


- Organic
- Favorable sweeteners
- Grass fed dairy
- Vegan options

PLANT-BASED GUIDELINES



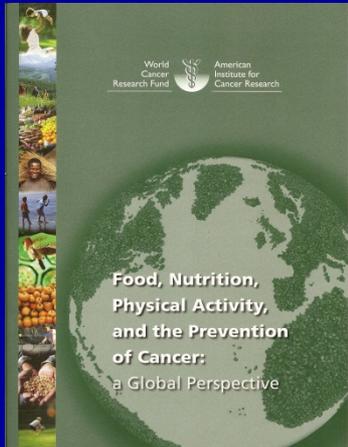
Eat more of a variety of vegetables, fruits, whole grains and legumes such as beans



Eat a diet rich in wholegrains, vegetables, fruits and beans

Moved from #4 to #3

RED MEAT GUIDELINE #5



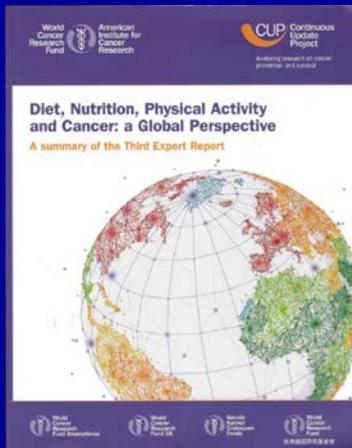
2007

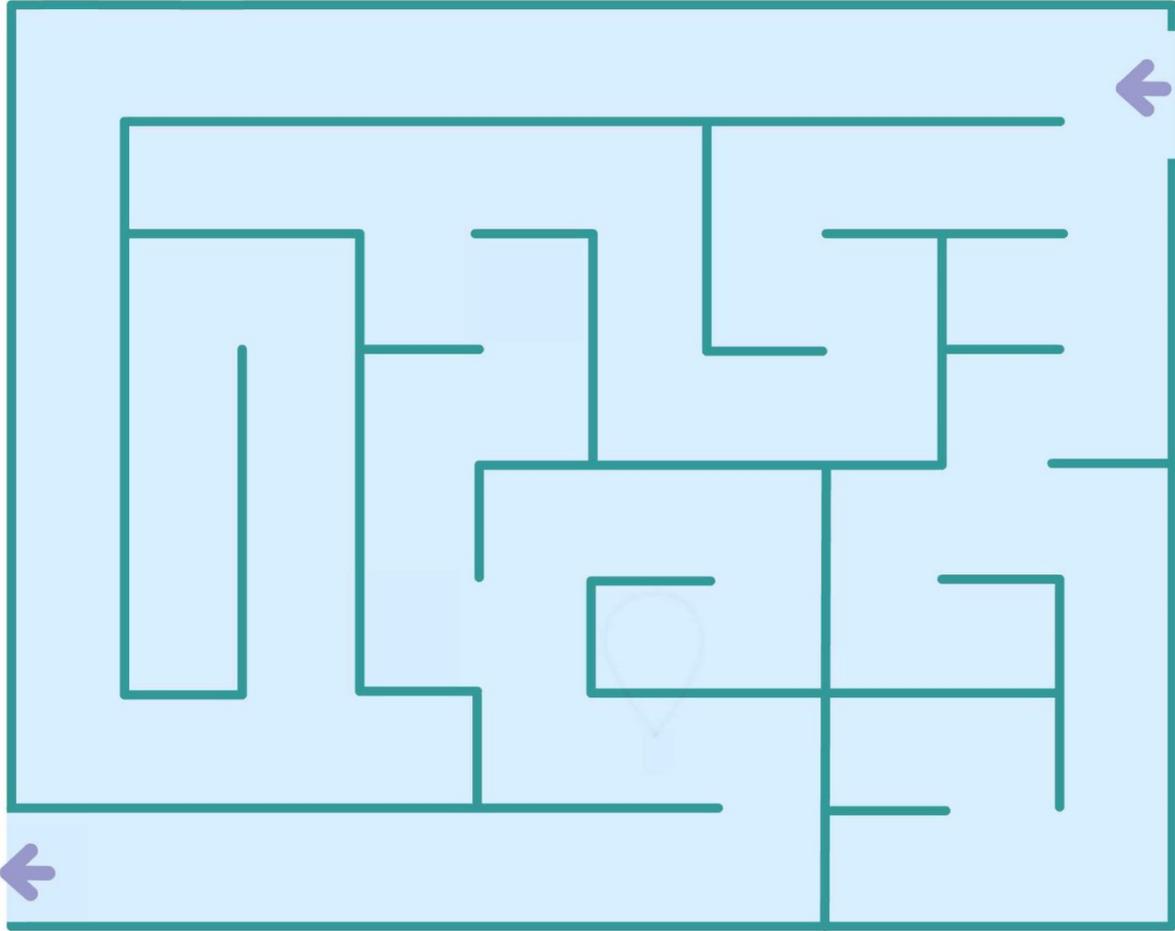
Limit consumption of red meats (beef, pork and lamb) and ***avoid*** processed meats



2018

Limit consumption of red and processed meats. Eat no more than moderate amounts of red meat, such as beef, pork and lamb. Eat little, if any, processed meat





**BUT WHAT ABOUT THE
_____ DIET???**

Navigating the Diet Craze Maze

- Three Questions to Ask
 - What is it?
 - Is the rationale behind it logical?
 - Does it promote health?

Alkaline Diet

- SAD is highly acid-forming, overwhelming body's mechanism for removing excess acid
- Based on the theory that an acid environment causes and promotes cancer
- Alkaline diet reduces acid load, helping to reduce strain on acid-detoxification systems
- Patients assess diet's effects by monitoring urine pH

Alkaline Diet

- 80% alkaline foods (vegetables, low sugar fruits, some legumes)
 - Alkalinizing vegetables: beets, broccoli, cauliflower, celery, cucumber, kale, lettuce, onions, peas, pepper, spinach
 - Alkalinizing fruits: apples, bananas, berries, grapes, lemons, oranges, melons, peach, pear
- <20% acid-forming foods (meat, dairy, eggs, corn, wheat, coffee, sugar, alcohol)
- Fermented soy acceptable

Alkaline Diet

- Lemons and Oranges?
 - **Note:** a food's acid or alkaline forming tendency in the body has nothing to do with the actual pH of the food itself. Although it might seem that citrus fruits would have an acidifying effect on the body, the citric acid they contain actually has an alkalinizing effect in the system.
 - The Acid-Alkaline-Association Diet® web site

Alkaline Diet

- If kidney function is normal, body maintains optimal blood pH regardless of diet
- Urine pH does not reflect change in body pH
- Diet is high in fiber and plant nutrients
- Diet may be low in protein, calories, vitamin D and calcium
- No clinical data on benefit in cancer
- May be good diet but for wrong reason

Paleolithic Diet aka Paleo

- Founded on the premise that we should only eat foods that our ancestors ate during the Paleolithic period
- Features foods that were gathered or hunted by our ancestors before agriculture
- Contrasts with high carb diet in that it reduces inflammation, reverse diabetes, lower blood pressure and ↓ cancer risk

Paleolithic Diet Assumptions

- Human genes have not changed much since the Paleolithic era
 - Irish genes changed with the introduction of potato as a staple
 - Gene to digest lactose induced by dairy
- We have understanding of prehistoric diets
- Foods available then are available now
 - Nuts and seeds of today felt to be different

Paleolithic Diet

- Includes

- Fruits and shoots
- Flowers and buds
- Young leaves
- Roots and bulbs
- Nuts & non-grass seeds
- Animal meat & organs
- Bone marrow
- Fish and shellfish
- Insects, larvae
- Eggs

- Excludes

- Grains
- Beans
- Dairy products
- Refined fat
- Sugar
- Hence provides more fat, saturated fat and cholesterol and less CHO than Guidelines





Sea

Zynerba

Germanwi...

Barracuda...

Heal Thy P...

Calif. Coun...

ALS (Lou...

Can Oat...

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HEALTH TOPICS

NUTRITION QUESTIONS

BLOG

ABOUT

J. Nutr. 142: 1304–1313, 2012

Greater Whole-Grain Intake Is Associated with Lower Risk of Type 2 Diabetes, Cardiovascular Disease, and Weight Gain^{1–3}

We also observed an inverse association between whole-grain intake and weight gain, with consistently less weight gain observed in those consuming 48–80 g/d of whole grain (3–5 servings/d) compared with never/rare consumers (1.27 vs. 1.64 kg) during 8–13 y of follow-up.

Whole-grain and high fiber intakes are routinely recommended for prevention of vascular diseases; however, there are no comprehensive and quantitative assessments of available data in humans. The aim of this study was to systematically examine longitudinal studies investigating whole-grain and fiber intake in relation to risk of type 2 diabetes (T2D), cardiovascular disease (CVD), weight gain, and metabolic risk factors. We identified 45 prospective cohort studies and 21 randomized-controlled trials (RCT) between 1966 and February 2012 by searching the Cumulative Index to Nursing and Allied Health Literature, Cochrane, Elsevier Medical Database, and PubMed. Study characteristics, whole-grain and dietary

Volume 23 · March 23rd 2015 · Michael Greger, M.D.

Can Oatmeal Help Fatty Liver Disease?



Is whole grain consumption just a marker for healthier behaviors, or do whole grains have direct health

PALEO CHARD SAUTE

chard, garlic, olive oil, white wine, salt, & pepper

Was that a Paleo
chardonnay or
Sauvignon blanc?



Ketogenic Diet

- A diet that can induce ketosis, the state of having elevated ketone bodies in blood
- Ketone bodies are a form of energy produced by breakdown of fat
- During periods of prolonged fasting or CHO restriction, blood glucose levels do not meet energy demands
- Fat is broken down leading to ketosis

Ketogenic Diet

- Introduced in 1920's for children with uncontrolled epilepsy; now being explored in autism, Alzheimer's, ALS, Parkinson's and cancer (especially brain tumors)
- Premise: Cancer cells can only use glucose for energy (Warburg effect), but not ketone bodies
- Hypothesis is that glucose restriction may “starve” cancer cells and ketones are toxic to cancer cells

Ketogenic Diet

- Restricted calorie ketogenic diets in mice
 - Decreased glioma size
 - Reduced ROS produced in tumor cells
 - Enhanced anti-tumor effects of radiation
 - Prolonged survival
- Ketogenic diet in human gliomas
 - Positive case reports of transient effects
 - 5 ongoing clinical trials in brain tumor patients
 - (ClinicalTrials.gov)

Ketogenic Diet

- Ketogenic diet characterized by a ratio of fat:protein+CHO of 3:1 or 4:1
- Diet usually initiated in a clinical setting
- Sample Ketogenic Diet Meal
 - Breakfast: Eggs Benedict
 - 55 gm cream, 36% fat
 - 48 gms butter
 - 14 gms Canadian bacon
 - 60 gms eggs, raw
 - 5 gm cheese
 - 15 gm strawberries

Ketogenic Diet

- Side effects
 - Vitamin and mineral deficiencies
 - Hyperlipidemia
 - Constipation/diarrhea
 - Weight loss
 - Kidney stones
 - Nausea and vomiting
 - Acute pancreatitis
 - Fatigue
 - Headaches

» <http://www.ketogenic-diet-resource.com>

Ketogenic Diet in Recurrent GBM

- 20 pts with recurrent GBM put on low CHO diet to assess feasibility
- 3 discontinued because of tolerability
- Urine ketosis in 12/13 evaluable patients
- 1 minor response, 2 stable disease @ 6wks; 6/7 on bevacizumab + diet had objective response
- Median PFS 5 wks; overall survival 32 wks
- No adverse effects of diet

Not All Fats Are the Same

- Foods high in omega-3 fats
 - Cold water fish
 - Ground flax seeds or flax oil
 - Leafy green vegetables
 - Walnuts
- Foods high in trans- and omega-6 fats
 - Red meats
 - Dairy products
 - Partially hydrogenated oils
 - Corn, cottonseed, grapeseed, peanut, safflower, soy, and sunflower oils
 - Foods with long shelf life

Vegan Diet

- Based on risks associated with animal products; often overlay of ethics or other beliefs; 6% of US population is vegan
- Diet avoids all animal products
- Many health benefits appreciated
 - Protection against CV disease, obesity, type-2 diabetes, HTN, some cancers, total mortality
- Potential deficiencies
 - Protein - Vitamin B12 -Iron - Omega 3's
 - Calcium -Zinc -Iodine

Ornish Regimen

- Vegan diet with only 10% calories from fat
 - Diet supplemented with soy, fish oil, vit C, E and selenium
 - 30 min aerobic exercise and 60 min stress reduction daily
 - Participants adhered to regimen for 3-months
- Randomized trial in 93 prostate CA patients
 - Experimental group had ↓ PSA while controls ↑
 - Experimental group had ↑ telomerase activity
 - At 2 yrs, conventional Rx to 5% vs 27% controls

Ornish et al, J Urology 2005; Urology 2008; Lancet Oncology 2008



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376



HEALTH & WELLNESS

Vegetarian Diet Lowers Risk for Some Cancers, Study Finds

Vegetarians who also eat fish have even greater protection against colorectal cancers



A vegetarian and pescovegetarian diet reduced risk for colorectal cancers, according to a new study by Dr. Michael Q. Li. The study has been published in the journal *Journal of the National Cancer Institute*.

Vegetarian Diet Patterns & CRC

- Adventist Health Study 2 of 77,659 people
- 380 colon and 110 rectal CA dx at 7.3 yrs
 - Adjusted HR in vegetarians vs non
 - All CRC 0.78 [0.64-0.95]
 - Vegans 0.84 [0.59-1.19]
 - Lacto-Ovo 0.82 [0.65-1.02]
 - Pescoveg 0.57 [0.40-0.82]
 - Semiveg 0.92 [0.62-1.37]
 - Colon CA 0.81 [0.65-1.00]
 - Rectal CA 0.71 [0.46-1.06]



Macrobiotics

- Based on teachings of Japanese physician, Sagen Ishizuka (1850-1910)
- Saw food as basis of health and illness
- Saw changing food habits as the cause of physical and moral decline of Japan
- Modern era ushered in meat, dairy, potatoes, eggs, white bread, refined sugar
 - Perhaps appropriate for cold, dry climates
 - For warm, moist island climate, proper diet is rice, vegetables and sea products



Macrobiotics

- Macro=great bios=life
- Diet emphasizes whole grains and fresh vegetables
- Avoids meat, dairy foods and processed foods
- Goal is to provide the body with essential nutrients to function efficiently without taxing it with toxins or excesses that must be eliminated or stored
- A body not burdened by excesses or toxins can heal better

Macrobiotic Diet and Cancer

- Remarkable case reports of people attributing recovery from cancer to macrobiotics
- Many dietary factors recommended are associated with ↓'ed cancer risk
- Women consuming macrobiotics have lower estrogen levels
- Few studies have compared macrobiotic patients to historical controls

Macrobiotic Diet

- Potential Risks
 - Weight loss
 - Anemia
 - Low protein
 - Low B12, vitamin D, calcium, zinc and iron

Other Popular Anti-Cancer Diets

- Budwig Diet
 - Natural unrefined foods emphasized
 - Flaxseed oil, cottage cheese and honey bid
 - Avoids complete protein
- Gerson Therapy
 - Vegetarian diet and coffee enemas
 - Intake of 15-20# organic F&V daily, juiced
 - Avoids fat and protein
- Raw Food Plan
 - Raw or heated to 105° to preserve enzymes
 - 75% fruits and vegetables plus seaweed, sprouts, nuts, beans and whole grains
 - Avoids meat, dairy and eggs

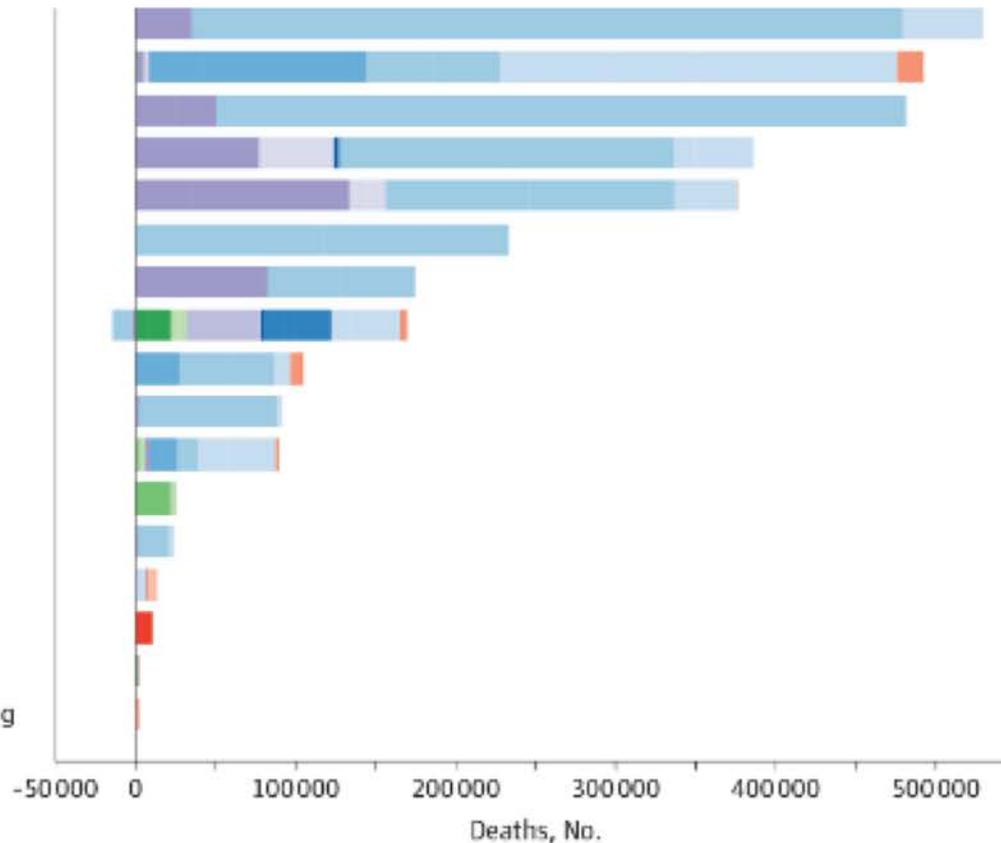
From: **The State of US Health, 1990-2016 Burden of Diseases, Injuries, and Risk Factors Among US States**

JAMA. 2018;319(14):1444-1472. doi:10.1001/jama.2018.0158

A Risk factors and related deaths

Risk factors

- Dietary risks
- Tobacco use
- High systolic blood pressure
- High body mass index
- High fasting plasma glucose
- High total cholesterol
- Impaired kidney function
- Alcohol and drug use
- Air pollution
- Low physical activity
- Occupational risks
- Low bone mineral density
- Residential radon and lead exposure
- Unsafe sex
- Child and maternal malnutrition
- Sexual abuse and violence
- Unsafe water, sanitation, and handwashing



Communicable, maternal, neonatal, and nutritional diseases

- HIV/AIDS and tuberculosis
- Diarrhea, lower respiratory and other common infectious diseases
- Maternal disorders
- Neonatal disorders
- Nutritional deficiencies
- Other communicable maternal, neonatal, and nutritional diseases

Noncommunicable diseases

- Neoplasms
- Cardiovascular diseases
- Chronic respiratory diseases
- Cirrhosis and other chronic liver diseases
- Digestive diseases
- Neurological disorders
- Mental and substance use disorders
- Diabetes, urogenital, blood and endocrine diseases
- Musculoskeletal disorders
- Other noncommunicable diseases

B Risk factors as a percentage of disability-adjusted life-years

Risk factors

14 Components of Dietary Risk

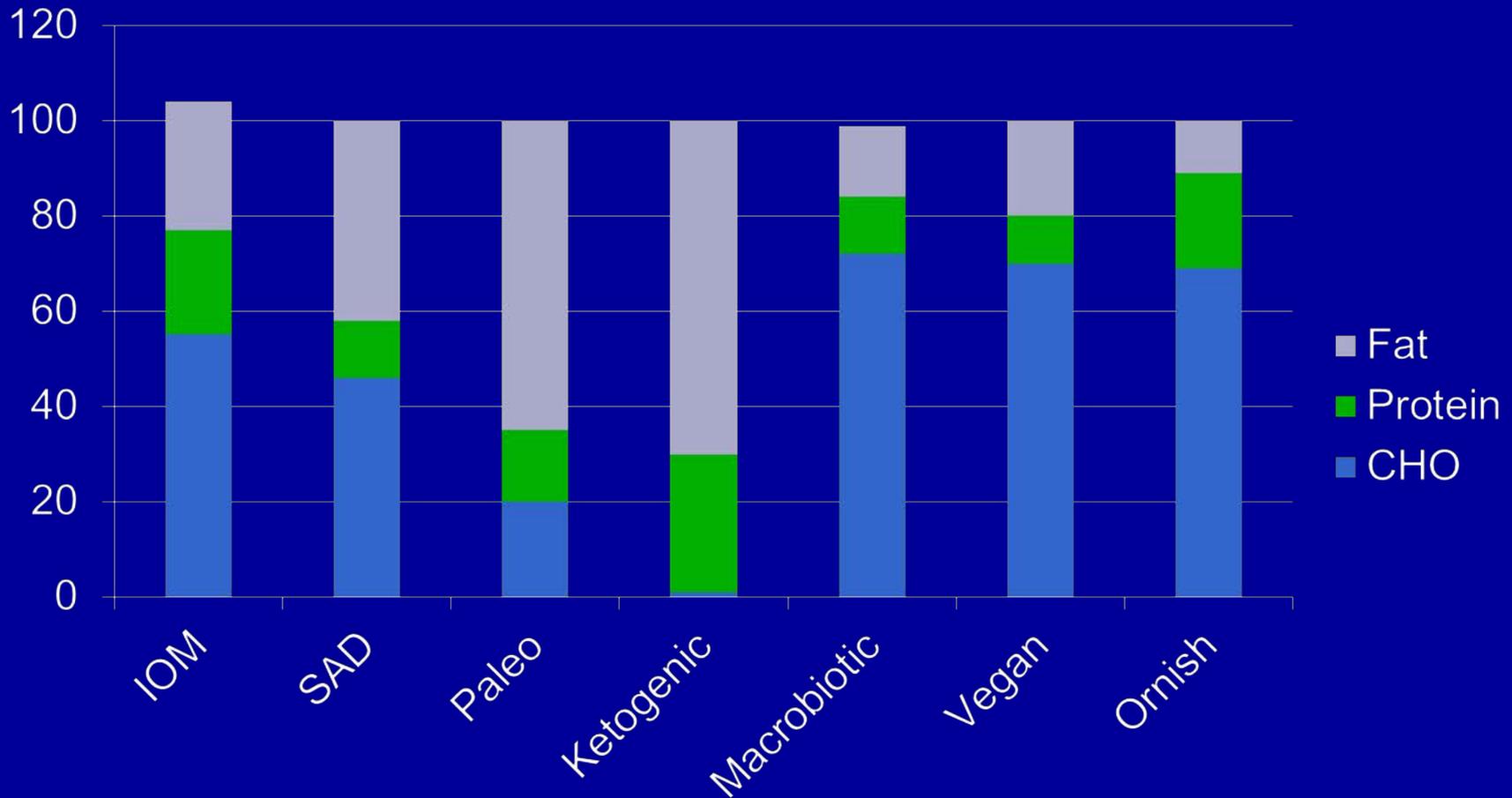
- **Diets low in:**

- Fruits
- Vegetables
- Whole grains
- Nuts and seeds
- Milk
- Fiber
- Calcium
- Seafood omega 3s
- PUFA's

- **Diets high in:**

- Red meat
- Processed meat
- Sugar-sweetened beverages
- Trans fatty acids
- Sodium

Comparative Macronutrients



Cancer Diets Sytematic Review

- Diets evaluated: alkaline, raw, macrobiotic, Budwig, Gerson and ketogenic
- “We did not find clinical evidence supporting any of the diets.”
- Case reports and preclinical data point to potential harm of some of the diets
- Conclude oncologists should engage more in counseling patients on such diets

My Ideal Anticancer Diet

ORGANIC +

PLANT-BASED +

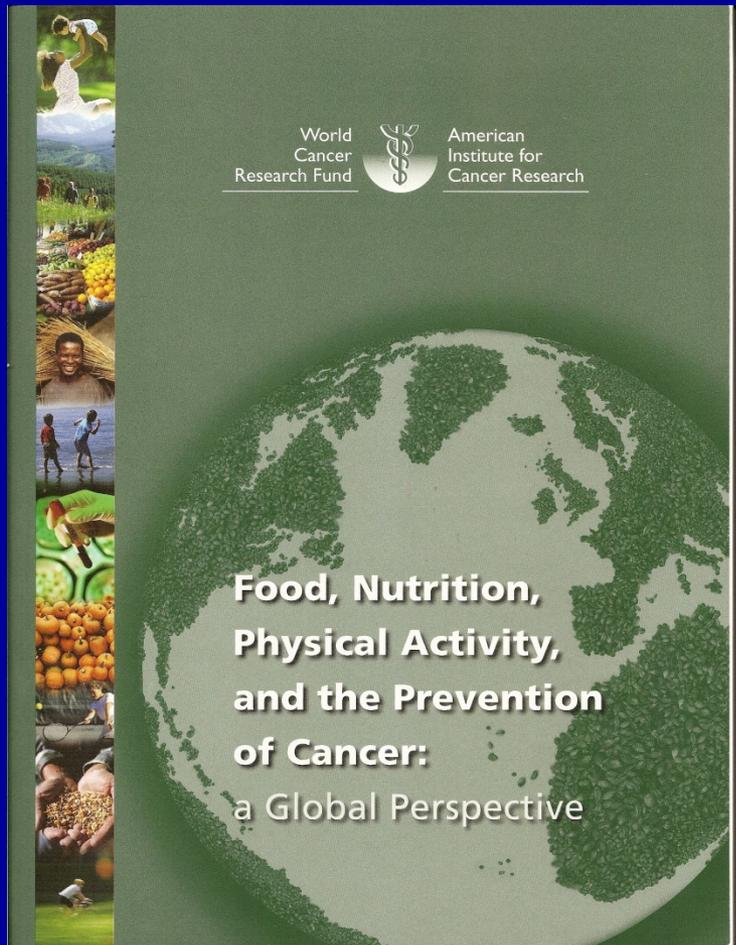
ANTIOXIDANT RICH +

WHOLE FOODS

ANTI-INFLAMMATORY

Does It Really Matter?

Guideline #10



- After treatment, cancer survivors should follow the recommendations for cancer prevention

Nutrition

6. Please describe your typical diet:

Breakfast Buttered, toasted bagel; orange juice; coffee
Lunch Rarely
Dinner Restaurants / burgers + fries / frozen dinners
Snacks Occasional ice cream

7. Do you change your eating habits when you are upset, worried, or sad? Yes No

8. Do you eat when you are rushed? Yes No

9. Do you skip meals? Yes No

Breakfast Lunch Dinner

10. How many glasses of fluids (water, juice) do you drink a day? five to eight

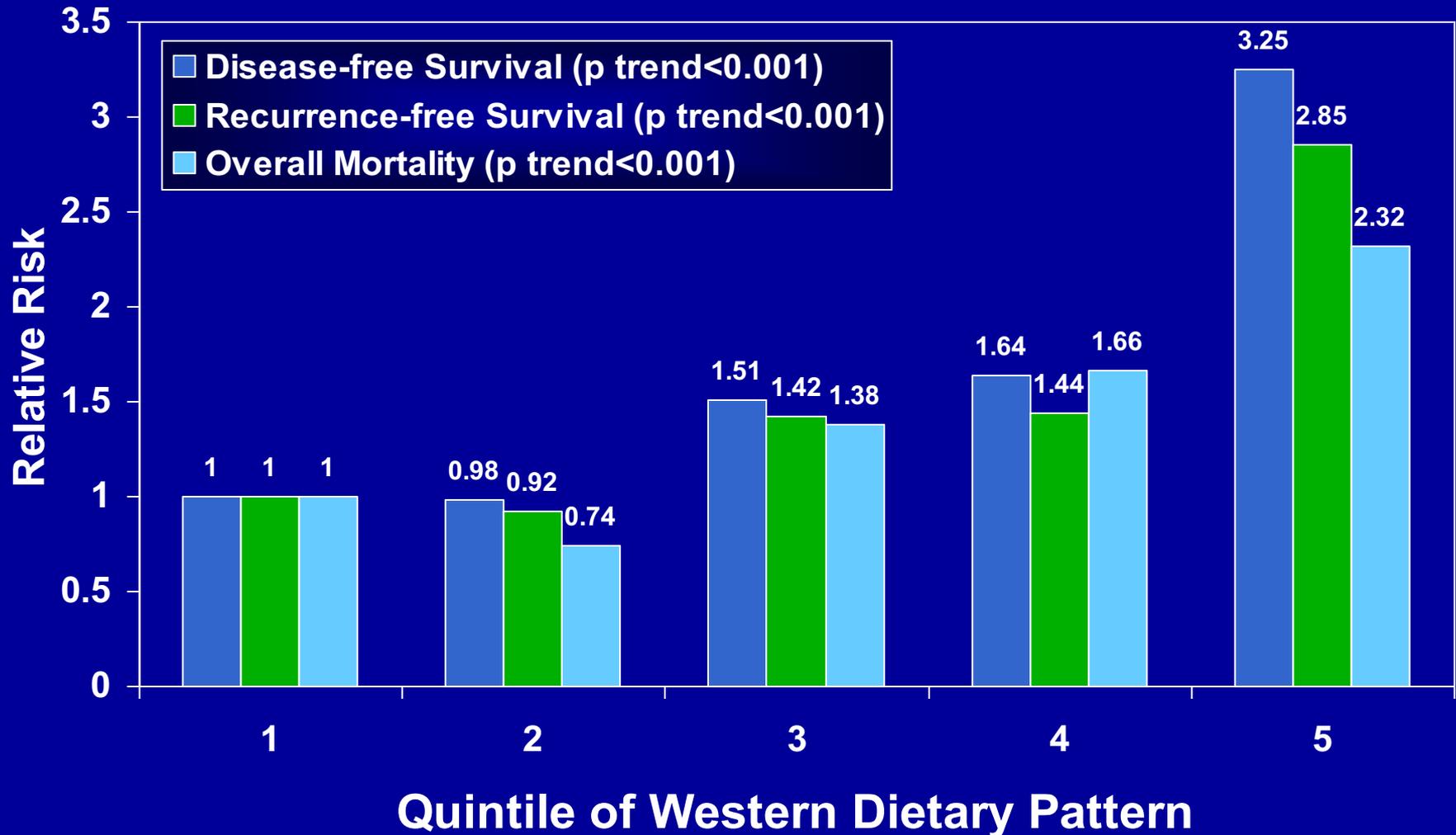
11. How many cups/cans of caffeinated drinks (coffee, tea, soda) do you drink/day? six to eight

Dietary Patterns in Colon CA

- Prospective observational study of 1009 pts with Stage III colon cancer enrolled in CALGB 89803 between 4/99-5/01
 - Pts reported on dietary intake using a ffq during and 6 months after the trial
 - Two major dietary patterns recognized
- Two major dietary patterns identified
 - **Western pattern** characterized by high intakes of meat, fat, refined grains, and dessert
 - **Prudent pattern** characterized by high intakes of fruits and vegetables, poultry and fish
 - Every patient scored along the spectrum of both
- Patients were followed up for cancer recurrence or death

CALGB Prospective Observational Study: Western Dietary Pattern and Cancer Outcomes

•F/U 5.3 years, 324 patients recurred, 223 died with recurrence and 28 died without CA



Dietary Patterns in Colon CA

- Highest quintile in Western diet had daily median
 - 1 serving of red meat
 - 5 servings of refined grains
 - 2 sugar desserts
- Lowest quintile in Western diet had daily median
 - 0.3 serving red meat (2 per week)
 - 2 servings refined grain
 - 0.5 sugar desserts (3 per week)
- “So the recommendation is more of an avoidance than an increase in diet components”

My Standard Recommendations

- Increase plant based foods
 - Whole grains
 - Fruits (deep pigment) and vegetables (cruciferous)
- Decrease animal fats
 - Decrease dairy, red and processed meats
 - Poultry preferably organic
 - Increase marine omega-3's
- Decrease refined carbohydrates
 - Sugar, white flour, white rice
- Season with garlic, ginger, onions, turmeric
- Drink green tea and red wine

Let your food be your medicine
And your medicine be your food

Hippocrates

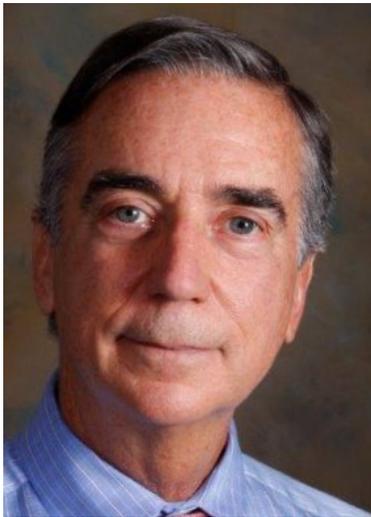




Professional Education Series

Support. Inform. Educate. Empower

Thank You!



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