COMMON SENSE NUTRITION

AN EVIDENCE BASED SYNTHESIS FOR PHYSICIANS AND PATIENTS
Objectives

- To synthesize the current tsunami of nutrition information into straight-forward recommendations we can pass on to our patients

- Overview of the literature on plant based diets to elucidate some of the underlying causes of the epidemics of obesity, diabetes, coronary artery disease, cancer and stroke in the USA
You Are What You Eat!

- And Drink
- And Breathe
<table>
<thead>
<tr>
<th><strong>Transformation of the Physical Body</strong></th>
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<tbody>
<tr>
<td><strong>Replacement Rates</strong></td>
</tr>
<tr>
<td>--------------------------------------</td>
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<tr>
<td><strong>Gastric epithelium = 5 days</strong></td>
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<tr>
<td><strong>Skin = 1 month</strong></td>
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<tr>
<td><strong>Liver = 6 weeks</strong></td>
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<tr>
<td><strong>Bone Calcium &amp; Phosphorus = 4 months</strong></td>
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<tr>
<td><strong>98% of all atoms in the body = 1 year</strong></td>
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<tr>
<td><strong>Entire Body = 3 years</strong></td>
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Obesity

• **Data and recs from 87 studies** (Berkow and Barnard et al, 2006)
  - Vegan or Vegetarian diet is highly effective for weight loss
  - Weight loss in vegetarians does not appear dependent on exercise and occurs at a rate of 1 pound/wk

• **Farmer, 2011** (NHANES 1999-2004)
  - Vegetarians were slimmer and consumed less total fat & more essential minerals and vitamins than meat eaters
  - Linear and logistic regression analysis: + correlation between meat consumption and obesity
Diabetes

- Bernard et al, 1 RCT
  - Individuals on low fat vegan diet vs. ADA diet reduced their A1C by 1.23 points vs. 0.38 points
  - 43% on vegan diet reduced their medication vs. 26% on the ADA diet
Heart Disease

- Ornish et al, 1990; controlled Trial
  - Population: diagnosed heart disease
  - Experimental group: comprehensive lifestyle changes (low fat plant based diet which allowed fish and non fat dairy products <10% calories from fat)
  - Results: 82% of patients had some level of REgression of atherosclerosis vs. 53% of control group had PROgression

- Dietary Guidelines Advisory Committee, review, 2010
  - Vegetarian diets were associated with lower systolic and diastolic blood pressure
Mortality

- Dietary Guidelines Advisory Committee, review, 2010
  - Reduced risk of mortality with plant based vs. meat eating diet (red meat diet)
- Huang et al, 2012
  - Vegetarians had 29% lower mortality (heart disease) than non-vegetarians
Summary

- Vegetarian or Vegan diets are associated with:
  - Greater intake of essential nutrients
  - Less intake of fat/lower weight
  - Lower blood sugar and risk of developing diabetes
  - Lower blood pressure
  - Regression of already existing heart disease
  - Decreased mortality
What is a whole foods plant-based diet?

If it grows on a plant, eat it; if it’s made in a plant, don’t!

Don’t eat foods with ingredients that a normal human being wouldn’t have in their own kitchen. (from Food Rules by M. Pollan)
# Basic Nutrients in Food

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>Cal/gram</th>
<th>Elements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protein</td>
<td>4</td>
<td>N, C, H, O, S</td>
</tr>
<tr>
<td>Carbohydrates</td>
<td>4</td>
<td>C, H, O</td>
</tr>
<tr>
<td>Fats</td>
<td>9</td>
<td>C, H</td>
</tr>
</tbody>
</table>
Eight “Essential” Amino Acids (More for pediatric ages as pathways not fully developed esp. during growth spurts)

Complete protein can be found in single source foods such as egg white, dairy products, meats, or by combining vegetable foods (beans & corn; lentils & rice; nuts and seeds)

RDA for protein in adults over age 19 = 0.8 gm/kg body wt
CARBOHYDRATES: COMPLEX & Refined

• Whole fruits & vegetables:
  o Mostly complex carbs
  o Lots of fiber
  o Variable amounts of protein
  o Very little fat
  o Rich in Vitamins & Minerals
  o Many micronutrients and antioxidants (flavonoids, terpenes, sterols, indoles, phenols, & carotenoids, etc.)
  o Benefits found in whole foods but not in supplements for most antioxidants.
CARBOHYDRATES: COMPLEX & Refined

- Beans, seeds, nuts, & pulses higher in protein

- Grains
  - Whole grains are also mostly complex carbs with moderate amounts of protein, fiber, some fat, and B vitamins
  - Refined grains such as white flour retain the protein, but lose most of their fiber & B vitamins in the refining process and need to be fortified with B vitamins.
Trans fats raise cardiovascular risk more than any other nutrient on a gram per gram basis EB2a #6

Saturated fats raise cardiovascular risk but not as much as trans fats on a gram per gram basis EB2a #6

Monounsaturated fats (MUFAs) & Polyunsaturated fats (PUFAs) are the least harmful

Omega 3 Fatty Acids or their immediate precursors are required in humans to synthesize these fats that are important for neurons to develop and function.
Non-nutrients in Foods & Calorie Density

- **Fiber:** Soluble & Insoluble

- **Water:** Whole milk is 90% water and 3.25% fat
  The percent of calories from fat in various milk products:
  - Whole milk = 49%
  - 2% milk = 35%
  - 1% milk = 20%
  - Skim (non-fat) milk = 0%

- The water and fiber content of foods largely determines their calorie density
  - Watermelon has only 26 calories/100g
  - Walnuts have 628 calories/100 g
  - Cabot cheese with 393 cal/100 g
Food Additives & Preservatives

- **Sodium & Potassium**: IOM report on Sodium Rec. to cut the U.S. avg. daily intake of sodium to <2.3 gm./d. from current 3.4gm./d.
  - Projected savings of over $10billion/yr in healthcare costs & saving over 50,000 lives/yr.
- **Sweeteners**: dextrose, fructose, (sucrose), honey, syrups inc HFCS, aspartame (Nutrasweet, Equal), sucralose (Splenda), stevia (Truvia), saccharin (Sweet’N Low), sorbitol, xylitol, etc.
- **Artificial colorings**: Avoid blue 1 & 2, green 3, red 3, & yellow 6 especially
- **Stimulants**: caffeine, theobromine
- **Conditioners**: Gums, mono- & diglycerides, others
Salt, Sugar and Fat all stimulate the same pleasure centers in the brain that are excited by heroin and crack cocaine.

Food producers attempt to achieve a “bliss point” for their products by adjusting the amounts of sugar or sweetness, fat and salt for some products to maximize allure and craving for their products.

Despite calls to industry to decrease the amount of salt (from the IOM) and sugar (from the AHA and ADA) and fat (from the AHA) in processed foods no significant decreases have occurred.
Contaminants & Toxins in Food

- Heavy Metals: Mercury in fish
- Dioxin, PCBs & related compounds
- Bisphenol A, Phthalates & Endocrine Disruptors
- Pesticide Residues (see ewg.org)
- Antibiotic Residues
- Biological Agents: E. coli O157:H7, Campylobacter, Salmonella, staphlococci
- Maintain a healthy weight throughout life EB2a
- Consume a healthy diet with an emphasis on plant sources.
- Choose amounts that maintain a healthy weight EB2a
- Eat five or more servings of fruits and vegetables each day EB3b
- Choose whole grains over refined grains EB5
- Limit consumption of processed & red meats EB2a
- Limit consumption of alcohol to 1♀or 2♂drinks/day EB2a
AHA HEART-HEALTHY DIET

- Total fat between 25% & 35% total daily cal.
- Saturated fat <7% total daily cal.
- Trans fat <1% of total daily cal.
- Cholesterol <300mg/d (<200mg/d if on Rx)
- Eat at least 25 to 30 grams of fiber/d
- Limit sodium to <1500mg/d
- Alcohol: ♂ ≤2 drinks/d; ♀ ≤1 drink/d
- Rich in fruits, vegetables, whole grains, high-fiber foods, lean meats & poultry, & skim or 1% dairy products
- Eat fish at least twice a week
DASH DIET

- Limit sodium intake to 2300mg (vs. 1500mg) daily
- 7 to 12 servings of fruits and veggies /day
- Whole grains 6 to 11 servings /day
- 2 to 3 servings of fat-free/low-fat dairy /day
- Limit sweets/added sugars <5 servings /wk
- Limit fats & oils to 27% of total calories
- 3 to 7 servings of nuts, seeds, & legumes /wk.
- Lean meats, poultry, & fish 3-6 servings /wk
- RCT showed significantly lower BP with DASH diet vs. controls EB 1b #1
CONVERGENCE OF RECS.

- Balance intake of calories with activity so as to achieve and maintain a healthy weight A
- Eat 5-10 servings of fruits & vegetables/d B
- Eat 6-10 serving of whole grains daily C
- Eat 3-6 servings/wk of lean meat, poultry, or fish C
- Eat 2-3 servings of low/non-fat dairy products/d B
- Eat fish at least twice weekly B
- Limit sodium intake to <2300mg./day (1500mg./day) A
- Limit trans fats <1% of total cal. (<2g/d) A
- Limit sat. fats to <7% of total cal. (<15g/d) B
Limit cholesterol to <300mg./day B
Limit sweets & added sugars to <5 servings/wk C
Limit alcohol to ♂ ≤2 drinks/d, ♀ ≤1 drink/d A
Limit total fat to <25%-35% of total daily cal B
Eat at least 25 grams of fiber daily C
The China Study Conclusions

“We now have a deep and broad range of evidence showing that a whole foods, plant-based diet is best for”:

- The Heart
- Cancer
- Diabetes
- Autoimmune Diseases
- Kidneys
- Bones
- Eyes
- Brains
Ingredients are listed in order of percent by weight
Make sure that at least the first 5 ingredients are foods that you recognize and want to eat
Trans fat should be zero grams (<499mg/serving)
Sodium should be <100 mg/serving
Saturated fat should be ≤ 1g/serving
Cholesterol should be ≤ 20mg/serving
Calories from fat should be <30% of calories
When comparing products check serving size
Check fiber: a true high fiber cereal has ≥ 8g/serving
Overarching Principles

- “Eat Food; Mostly Plants; Not Too Much” from “Food Rules” by Michael Pollen

- “Eat a whole foods plant-based diet” from “The China Study” by T. Colin Campbell PhD

- “Eat nothing with a mother or a face, No dairy products, No added oils or fats, No nuts or avocados” from “Prevent & Reverse Heart Disease” by Caldwell Esselstyn, Jr., M.D.
Second & Third Generation Vegetarians