Nutrition Counseling for Office Practice:
Understanding the New Guidelines and the Cacophony of Expert Opinion

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Disclosure
No relevant financial relationships

Why Do We Care About What We Eat?

<table>
<thead>
<tr>
<th>US Leading Causes of Death, CDC</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Heart Disease</td>
<td>32.6%</td>
</tr>
<tr>
<td>2. Cancer</td>
<td>30.9%</td>
</tr>
<tr>
<td>3. Chronic lower respiratory disease</td>
<td>7.5%</td>
</tr>
<tr>
<td>4. Stroke</td>
<td>7.0%</td>
</tr>
<tr>
<td>5. Accidents</td>
<td>6.4%</td>
</tr>
<tr>
<td>6. Alzheimer’s disease</td>
<td>4.3%</td>
</tr>
<tr>
<td>7. Diabetes</td>
<td>3.7%</td>
</tr>
<tr>
<td>8. Influenza and pneumonia</td>
<td>2.9%</td>
</tr>
<tr>
<td>9. Nephritis, nephrotic syndrome &amp; nephrosis</td>
<td>2.7%</td>
</tr>
<tr>
<td>10. Intentional self-harm (suicide)</td>
<td>2.0%</td>
</tr>
</tbody>
</table>
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Lifestyle and Disease

- 1/3 of premature deaths in the U.S. are attributable to poor nutrition and physical inactivity.
- Well over 50% of American adults do not get the recommended amount of physical activity.
- Only 10% of Americans eat a healthy diet consistent with current nutrition recommendations.

Questions for Reflection

- How would you describe your own diet?
- How do you ask patients about their diets?

Topics

- Total calories and macronutrient balance
- Weight Loss Diets
- Dietary Fiber
- Dietary Guidelines
- Vegetarian Diets
- Mediterranean Diets
- Final Recommendations
- Sodium

U.S. Calorie Intake

- Calorie consumption in the U.S. has increased 30% over the past 4 decades.

<table>
<thead>
<tr>
<th>Year</th>
<th>Average calories consumed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1970</td>
<td>2,057</td>
</tr>
<tr>
<td>2008</td>
<td>2,674</td>
</tr>
</tbody>
</table>
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Top calorie sources in U.S.
1. Grain-based desserts
2. Yeast breads
3. Chicken and chicken-mixed dishes
4. Soda, energy drinks, and sports drinks
5. Pizza
6. Alcoholic beverages
7. Pasta and pasta dishes
8. Mexican mixed dishes
9. Beef and beef dishes
10. Dairy desserts

Extra Calories From Eating Away From Home

<table>
<thead>
<tr>
<th>Calorie Level</th>
<th>Calories/meal at home</th>
<th>Calories/meal at a restaurant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal Weight</td>
<td>550</td>
<td>825</td>
</tr>
<tr>
<td>Overweight/Obese</td>
<td>625</td>
<td>900</td>
</tr>
</tbody>
</table>

Public Health Nutrition, 2013

Macronutrient Composition
• Macronutrient composition: the relative proportions of fat, carbohydrate, and protein in the diet
• Bottom line:
  • A wide range of macronutrient composition is consistent with a healthy diet
  • In most clinical circumstances, total calories “trump” macronutrient composition
  • Achieving desired calorie intake will achieve most clinical goals

COMPARISON OF WEIGHT LOSS DIETS WITH DIFFERENT MACRONUTRIENTS
< RCT of 811 patients, 4 diets: fat/protein/carbs
  20/15/65; 20/25/55; 40/15/45; 40/25/35
< 6 months: 6 kg, 7% weight;
< 2 years: completers lost 4 kg. 15% lost 10% of weight
< Results similar for:
  < 15% pro v. 25% pro
  < 20% fat v. 40% fat
  < 35% carbs v. 65% carbs
< Weight loss highly correlated with adherence; satiety, hunger, lipids, insulin all equal
**Principles of Weight Management**

- Be as fit as you can be at your current weight
- Don’t gain any more weight
- If highly motivated, attempt weight loss

**Dietary Fiber**

- Plant matter
- Not digested by human digestive enzymes
- Some can be digested by gut bacteria
- Includes
  - Cellulose, hemicellulose, pectins, gums, and mucilages, lignins
- Classified as soluble or insoluble
- IOM: Men 30-38 g/day. Women 21-25 g/day.

**Dietary Fiber: The Most Important Nutrient?**

- Heart: Lowers LDL, lowers triglycerides
- Diabetes: Reduces blood sugar
- Gut: Prevents constipation, hemorrhoids, diverticular disease
- Weight: Promotes satiety

Baron RB, BMJ 2013

**Dietary Fiber: The Most Important Nutrient?**

- Meta-analysis of 22 cohort studies:
- Every 7 grams of fiber associated with a 9% decrease in CV events
- One portion of whole grains and one portion of legumes, or from two to four servings of fruits and vegetables.

Threapleton DE, BMJ, 2013
Quantifying Dietary Fiber (per serving)

<table>
<thead>
<tr>
<th>Food</th>
<th>Fiber (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apple</td>
<td>4.4</td>
</tr>
<tr>
<td>Blueberries</td>
<td>3.6</td>
</tr>
<tr>
<td>Orange</td>
<td>3.0</td>
</tr>
<tr>
<td>Grapes</td>
<td>0.8</td>
</tr>
<tr>
<td>Pear</td>
<td>5.5</td>
</tr>
<tr>
<td>Raspberries</td>
<td>8.0</td>
</tr>
<tr>
<td>White bread</td>
<td>0.7</td>
</tr>
<tr>
<td>Wheat bread</td>
<td>1.9</td>
</tr>
<tr>
<td>Brown rice</td>
<td>1.5</td>
</tr>
<tr>
<td>White rice</td>
<td>0.3</td>
</tr>
<tr>
<td>Wheat-bran cereal</td>
<td>7.4</td>
</tr>
<tr>
<td>Oatmeal</td>
<td>4.8</td>
</tr>
<tr>
<td>Shredded wheat</td>
<td>6.1</td>
</tr>
<tr>
<td>Cornflakes</td>
<td>0.9</td>
</tr>
<tr>
<td>Peanuts</td>
<td>9.1</td>
</tr>
<tr>
<td>Kidney beans</td>
<td>6.8</td>
</tr>
<tr>
<td>Asparagus</td>
<td>1.4</td>
</tr>
<tr>
<td>Broccoli</td>
<td>1.1</td>
</tr>
<tr>
<td>Carrot</td>
<td>1.7</td>
</tr>
<tr>
<td>Spinach</td>
<td>3.5</td>
</tr>
<tr>
<td>Powdered psyllium</td>
<td>3.0</td>
</tr>
</tbody>
</table>

Principles of a Healthy Diet

- Wide variety of foods
- High food quality
- Moderation (right quantity)

Dietary Guidelines 2010

- Enjoy food, but eat less
- Make half your “plate” fruits and vegetables; consume beans, whole grains, nuts and seeds
- Increase the intake of seafood & fat-free & low-fat milk and milk products
- Drink water instead of sugary drinks
- Compare sodium in foods and choose the lower
- Consume only moderate amounts of lean meats, poultry & eggs

Dietary Guidelines 2015

- Limitations on dietary cholesterol have been removed
- Consume a diet rich in fruits and vegetables, whole grains, low-fat dairy, seafood, legumes, and nuts
- Consume a diet low in red or processed meats, sugar sweetened foods and beverages, and refined grains
Dietary Guidelines 2015

- Limit daily consumption of added sugars (<10% of calories), saturated fat (<10% of calories), and dietary sodium (2300 mg)
- Half of all grain intake should come from whole grains
- Moderate alcohol is fine in most (non-pregnant) adults
- Up to five cups of coffee per day is not associated with adverse effects in most adults

MyPlate

Too Many Refined Grains

- Guidelines recommend six, 1-ounce servings per day for a 2000 calorie diet, and half should be whole grain.

- The average person eats 8 servings of grains per day, and 7 of the 8 are refined.
What is a serving of grain?

- 1/2 cup cooked rice or other cooked grain
- 1/2 cup cooked pasta
- 1/2 cup cooked hot cereal, such as oatmeal
- 1 six inch tortilla
- 1 slice of bread (1 oz.); ½ bun
- 1 very small (1 oz.) muffin
- ½-1 cup ready-to-eat cereal
  (½ cup = ½ a baseball)

Select whole grains

- Look for “whole” in the first ingredient on the label.
- Aim for total carbs/fiber = <10 for bread and <5 for cereals.
- Whole grains: wheat (spelt, farro, durum, bulgur, others), barley, buckwheat, corn, millet, oats, quinoa, rice, rye

Way Too Much Added Sugar

The average person in US consumes 30 teaspoons of sugar and sweeteners per day (up to 600 calories)

(Includes cane and beet sugar, high fructose corn syrup, corn syrup, dextrose, honey)

- The Dietary Guidelines recommend <10 teaspoons (200 calories) of added sugar per day for women.
  (Am. Heart Association says <6 teaspoons/120 calories)
- A 20 oz. soda has 240 calories from sugar

Salt and Public Policy

- Coronary Heart Disease Policy Model to quantify benefits of modest salt reduction in U.S.
- Benefit through a reduction in systolic blood pressure from 1-9 mm Hg in selected populations
- New cases of CHD decrease by 4.7 - 8.3 and stroke by 2.4 to 3.9 /10,000
- Regulatory change leads to wide benefit and is cost-effective

Bibbins-Domingo K, et al. NEJM 2010
Sodium reduction and BP control in individual patients

- Reduce sodium intake to ≤100 meq/d (2.4 g Na): 2-8 mm Hg in SBP
- DASH Diet: 6 mm alone;
- DASH diet plus sodium restriction: 14 mm Na

Dietary Guidelines 2010

Addressing Sodium:
- 2,300 mg per day for general population
- 1,500 mg for aged 51+, African Americans & hypertension, diabetes & kidney disease

Sodium

But:
- 1/2 of U.S. would qualify for 1,500 mg recommendation
- Average current intake 3,400 mg per day (1.5 teaspoon salt)
Institute of Medicine: May 2013:
- Limit everyone to 2,300 mg per day (1 teaspoon salt)
- Evidence doesn’t support lower recommendations

Salt in the US Diet

80% in processed or pre-prepared foods

Sources of sodium

- Home cooking
- While eating 8%
- Naturally occurring 12%
- Processed/instant foods 77%

Sources: Mattes et al.
Top sodium sources in U.S.

1. Yeast breads
2. Chicken and chicken-mixed dishes
3. Pizza
4. Soda, energy drinks, and sports drinks
5. Cold cuts
6. Condiments
7. Mexican mixed dishes
8. Sausage, franks, bacon and ribs
9. Regular cheese
10. Grain-based desserts

Classification of Dietary Fat

Saturated Fat and Cardiovascular Disease (CVD)

- **Recent meta-analysis of observational studies**: no association between higher saturated fat and CVD
- **But strong evidence from randomized trials**: replacing saturated fat with unsaturated fat reduces total and LDL cholesterol.
- **Replacing sat fat with carbohydrates**: reduces total and LDL cholesterol but increases triglycerides and lowers HDL

Saturated Fat and Cardiovascular Disease (CVD)

- **Current recs**: Limit saturated fat, but be careful what replaces it
- **Use oils (soy, corn, olive, canola) to replace animal fats (butter, cream, lard) or tropical oils (palm, coconut)
Mediterranean Diet:
Healthy fats and good carbs with a big side of fruits and vegetables

Primary Prevention of Cardiovascular Disease with a Mediterranean Diet
NEJM, Feb. 25, 2013

7447 Men and women, type 2 diabetes or at least 3 CV risk factors. 4.8 years

Compared 1) Mediterranean diet supplemented with 4 Tbsp/day of olive oil or 2) with 1 ounce of nuts/day; vs. 3) a low fat diet (the control)

Results: 288 cardiovascular events occurred; 3.8% in the olive oil group, 3.4% in the nut group, and 4.4% in the control group. (P=0.015)

Eat about 1 ounce of nuts most days

- 1 ounce of nuts=1/4 cup or a small handful
- But be aware of the calories...
  - 1 ounce=160-200 calories
Vegetarian Diets

- Vegans
- Fruitarian
- Lacto-vegetarians
- Lacto-ovo vegetarians
- Pesco-vegetarians
- Pollo-vegetarians
- Flexitarians (Semi-vegetarians)

Vegetarian Diets: Observational Study

- Adventist Health Study 2
  - 73,000 participants; 2570 deaths
  - 5.8 years follow-up
- Compare: vegans, pesco-; lacto-ovo-; and semi-vegetarians to non-vegetarians
- Outcome: lowest mortality in pesco-vegetarians and vegans (15-20%).

Micronutrients in Brief

- Beta-carotene
  - Discourage - harmful
- Vitamin E
  - Discourage - harmful
- Folate
  - Women of child-bearing age – prevent neural tube defects

Micronutrients in Brief

- Omega-3 fatty acids
  - Discourage – no benefit
- Vitamin D and calcium
  - Older, frail patients to prevent falls
  - Use with bisphosphonates
  - 800 IU of vitamin D3 is sufficient
  - Ensure adequate calcium intake
    - 1000 mg under 50; 1200 mg over 50
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### Dietary Calcium

**Dairy**
- Plain Yogurt 8 oz 448
- Mozzarella 1.5 oz 333
- Cheddar 1.5 oz 307
- 2% milk 1 cup 293
- Cottage cheese 1 cup 206

**Fruits and vegetables**
- Fortified OJ 6 oz 261
- Kale 1 cup 100
- Bok Choy 1 cup 74
- Broccoli 1 cup 43

### Canned fish
- Sardines 3 oz 325
- Salmon 3 oz 183

### Grains
- Fortified cereals 1 cup 100-1333
- Fortified cooked oats 1 cup 187

### Commercial breads
- 1 slice 30-73

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Michael Pollan’s Three Rules
- Eat food
- Not too much
- Mostly plants

Baron’s Rules
- Eat unprocessed foods
- Eat the right amount to maintain your weight
- Eat something colorful at every meal (and every snack)
- Don’t drink calories
- If can’t make the “best” choice, make a better choice
- Be as fit as you can be: exercise daily
- Eat with your children; eat at home
The “Generic” Diet

- Continued debate: macronutrient balance, amounts of meat/fish/fowl, other specific foods
- But almost all agree:
  - Limit: sugar, refined grains, large amounts of saturated and trans fat.
  - Eat: fruits and vegetables, healthy oils, whole grains, legumes and nuts
- Bottom line: Master a “generic” diet for patients and self

Baron’s Rules

- Exercise is “biblical”
  - 6 days of exercise, one day of rest
- Never go to sleep without knowing exercise plan for tomorrow (and back-up plan)
- Morning exercise is best (to do it when energy is highest)
- Home machines help with adherence
- Focus on cardiovascular fitness, strength, balance, and flexibility

For More Information

- Dietary Guidelines for Americans, 2015
- USDA’s Food & Nutrition Information Center:
- CDC Division of Nutrition, Physical Activity & Obesity:
  http://www.cdc.gov/nccdphp/dnpao/index.html
- USDA National Agricultural Library:
  http://www.nutrition.gov/
- Center for Science in the Public Interest (CSPI):
  http://www.cspinet.org/
- ChooseMyPlate.gov: http://www.choosemyplate.gov/
- FDA: How to Understand and Use the Nutrition Facts Label:
  http://www.fda.gov/Food/ResourcesForYou/Consumers/ NIFLM/ucm274593.htm
- FDA: Label Man – Make Your Calories Count:
  http://www.accessdata.fda.gov/videos/CFSAN/HWM/hwm
  intro.cfm
- Nutrition.gov: Shopping, Cooking & Meal Planning:
  http://www.nutrition.gov/shopping-cooking-meal-
  planning
- Healthy Eating Plate (Harvard):
  http://www.hsph.harvard.edu/nutritionsource/what-
  should-you-eat/pyramid/