Dietary Prevention for Cardiovascular Disease

August 25th, 2016
Julia Zumpano RD, LD
Registered Dietitian
Department of Preventive Cardiology & Rehabilitation & The
Women’s Cardiovascular Center

Objectives

• Explain the difference between Omega 3 and Omega 6 Fatty Acids and their effect on Inflammation
• Provide the Ideal ratio of Omega 3 vs Omega 6 and explain why this ratio has changed over time
• Explain the Mediterranean diet and benefits
• Discuss a strict diet for Triglycerides > 1000 mg/dL
• Provide a summary of Sodium guidelines
• Discuss the role that Vitamin K has on Warfarin Therapy and how to adjust diet

FACTORS ATTRIBUTABLE FOR 90% OF HEART-RELATED EVENTS WORLDWIDE

1. Lipids
2. Hypertension
3. Diabetes
4. Lack of fruits/vegetables
5. Lack of exercise
6. Tobacco use
7. Abdominal obesity
8. Alcohol
9. Stress, depression, anxiety, hostility
SCOPE OF THE PROBLEM: CVD

Age-Adjusted Death Rates (per 100,000 people):
10 Leading Causes of Death in the U.S.
2010

Can what you eat affect inflammation levels?

- According to the Journal of the American Medical Association, the Mediterranean-style diet decreased the level of C-Reactive Protein in the blood and reduced overall body inflammation.
- According to the New England Journal of Medicine, an energy-unrestricted Mediterranean diet, supplemented with extra-virgin olive oil or nuts, resulted in a substantial reduction in the risk of major cardiovascular events among high-risk persons. The results support the benefits of the Mediterranean diet for the primary prevention of cardiovascular disease.
- A meta-analysis of 22 studies found that high adherence to the Mediterranean diet was associated with a protective effect for stroke (pooled relative risk, 0.71), depression (PRR, 0.68), and cognitive impairment (PRR, 0.60).

The Ratio
Omega-6's:Omega-3's

<table>
<thead>
<tr>
<th>Historically</th>
<th>The past ~100 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ratio 1:1</td>
<td>Ratio 15:1 – 20:1</td>
</tr>
<tr>
<td>Whole foods comprise largest proportion of standard American diet</td>
<td>Processed items comprise large proportion of standard American diet</td>
</tr>
</tbody>
</table>
Omega-6’s (pro-inflammatory)

- Essential fatty acid, arachidonic acid precursor.
- Pro-inflammatory immune response
- Excessive intake leads to
  - Chronic diseases including arthritis, asthma, diabetes, psoriasis, eczema
  - Autoimmune disease

Daley et al. Nutrition Journal 2010; 9:10

Omega-3 Fatty Acids (Anti-inflammatory)

- Essential fatty acid.
- Precursor of DHA and EPA.
  - EPA (eicosapentaenoic acid)
  - DHA (docosahexaenoic acid)
- Benefits
  - Lower risk of sudden death
  - Reduce blood clot formation
  - Inhibit growth of plaque
  - Decrease triglycerides
  - May increase good cholesterol

Omega-3 Fatty Acids

- EPA & DHA
  - Salmon, tuna, mackerel, herring, sardines
- ALA
  - Flaxseeds
  - Chia seeds
  - Walnuts
  - Soybeans
Mediterranean Diet Definition

- Food patterns typical of Crete, Greece, and southern Italy in the 1960's due to positive evidence
  - Life expectancy highest in the world
  - Incidence of chronic disease lowest in the world

Mediterranean Diet

- There is not a specific Mediterranean diet
- More a style or type of cuisine
- Recommendations based on:
  - Mediterranean diet pyramid
    - American Journal of Clinical Nutrition, June 1995
  - Primary Prevention of Cardiovascular Disease with Mediterranean Diet
    - New England Journal of Medicine, March 2013

The Key Components of the Mediterranean Diet

- Whole foods, minimally processed:
  - Fruits and Vegetables
    - Multiple times throughout the day
  - Legumes
  - Whole grains
  - Fish
    - Preferred source of protein
  - Olive Oil/Nuts
    - To replace other forms of added fat
  - Dairy
    - Limited
  - Red meat
    - Avoidance or restricted
Fruits and vegetables

- Choose fruits and vegetables that are deep in color and brightly pigmented.
- Include dark leafy green vegetables daily
- Goals: 3+ serving of vegetables; 2+ servings of fruit
  - Avoid canned versions, dried fruit with sugar added or juices
- Include a serving of fruit and/or vegetable with each meal and snack
- Taste the rainbow
  - Fruits and vegetables of similar color provide similar nutrients
- Choose fresh or frozen most often – buy local

Legumes (Dried Beans, Lentils and Split Peas)

- The U.S. Dietary Guidelines for Americans recommends that people eat about three cups of beans per week, or about one-half cup daily.
- Most people are lucky to eat a third of this amount, so there’s room for improvement.

<table>
<thead>
<tr>
<th>% CUP COOKED BEANS</th>
<th>Protein</th>
<th>Fiber</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chickpeas, canned</td>
<td>5g</td>
<td>5 grams</td>
</tr>
<tr>
<td>Black beans, cooked</td>
<td>7.5g</td>
<td>7.7 grams</td>
</tr>
<tr>
<td>Great Northern, cooked</td>
<td>7g</td>
<td>8.0 grams</td>
</tr>
<tr>
<td>Kidney beans, canned</td>
<td>8g</td>
<td>5.5 grams</td>
</tr>
<tr>
<td>Lima, cooked</td>
<td>4.6g</td>
<td>5.6 grams</td>
</tr>
<tr>
<td>Split Peas, cooked</td>
<td>8g</td>
<td>8 grams</td>
</tr>
<tr>
<td>Lentils, cooked</td>
<td>9g</td>
<td>7.6 grams</td>
</tr>
</tbody>
</table>

Eat fish at least 3 times per week

Fish high in Omega 3 fatty acid
- Salmon – preferably wild (fresh, frozen or canned)
- Trout
- Sardines
- Tuna (Fresh or canned in water- chunk light)
- Herring
- Mackerel
- Black cod (salmon or butterfish)
- Halibut

Shellfish/White Fish – lower in omega 3
- Shrimp, lobster, clams, mussels, scallops, crab
- Tilapia, Walleye, Perch, Flounder, Orange Roughy, Sole, Smelt, Haddock

https://ndb.nal.usda.gov/ndb
Mercury in Fish

• Limit fish with higher levels of mercury.
  – Shark, swordfish, tilefish, and King mackerel
• Women who are pregnant or nursing and young children should completely avoid eating these types of fish.
• Women who are pregnant or nursing can still safely eat 12 ounces of other types of fish each week
  – These include shrimp, canned fish and smaller ocean fish
• Albacore Tuna has more mercury than canned light tuna.
  – Limit the amount of Albacore tuna you eat to no more than 6 ounces per week

For more information on the mercury content in fish, please visit the US Department of Agriculture website at: [http://www.cfsan.fda.gov](http://www.cfsan.fda.gov)

Choosing an Omega 3 Supplement

• Check the nutrition label for the EPA and DHA content
• Add these two values together
• Check the serving size
• Choose the supplement with the most EPA + DHA per pill
• Avoid omega 6, 9 or borage oil – these are not necessary and are commonly used as fillers
• [Consumerlabs.com](http://www.consumerlabs.com) – tests and reports supplements
Red Meat

- Includes – Beef, Pork, Veal and Lamb
- Avoid completely or limit to less than 1 serving per week
  (3-4 oz = 1 serving)
- Avoid all processed forms of red meat (sausage, bacon, deli meats, hot dogs, canned meats)
- Choose the leanest cut possible with all fat and bone removed
  – Loin, tenderloin, flank, filet, shank
  – 90% lean ground meat
  – USDA Choice or Select Grades
- Grassfed, organic versions when possible

Poultry and Eggs

Poultry
- Choose white meat over dark
- Skinless, boneless
- Free Range/Antibiotic Free
- Organic

Eggs
- Limit to 2-4 yolks per week with existing HD
- No greater than 6-7 yolks per week for prevention of HD
- No restriction on egg white

Additional Guidelines on the Mediterranean Diet

- Dairy
  – Non Fat or Low fat plain or lightly sweetened yogurt
  – Cheese
    – Choose fresh naturally light cheeses made with part skim milk such as fresh mozzarella, ricotta, feta and goat
    – No greater than 3-4 oz per week
- Shellfish – no restriction
- Desserts- choose fresh fruit, low fat yogurt, sorbet, or homemade baked goods with acceptable ingredients
- Avoid foods containing Trans Fat = partially hydrogenated oil (fast foods, creamers, commerical baked goods and snack foods, vegetable shortening, tub margarine, convenience foods – frozen pizza, pot pie, etc)
Beverages

• Include mainly water
• Coffee and tea without sugar is acceptable in moderation (1-2 cups per day)
• Avoid all drinks with sugar – soft drinks, juice, punch, sports drinks, sweetened tea or lemonade

Alcohol
• 1 drink per day for women – no greater than 7 drinks per week
• 2 drinks per day for men – no greater than 14 drinks per week
  – For habitual drinkers only
  – Avoid or limit alcohol unless advised by your physician
  – Choose red wine as often as possible
  – Limit or avoid all other forms of alcohol

Triglyceride Lowering Diet

• Patient population
  – Triglycerides >1,000mg/dL
• Causes
  – Uncontrolled diabetes
  – Excessive alcohol intake
  – Drugs-steroids, beta-blockers, and oral contraceptives
  – Familial
Triglyceride Lowering Diet

- Baseline lipid panel
- Follow diet for 7-14 days
- Diet
  - 7-10 ounces of very lean protein
  - 30-45g carb from fruit or milk/yogurt
  - Unlimited non-starchy vegetables
- Repeat labs the day prior to meeting with the RD
  - Trigs decrease >50%
- RD follow up within 1-2 weeks
- RD adjusts the diet based on lab results and patient compliance and ability to adhere long term

Plant Stanols & Sterols

- Sterols are a group of naturally occurring compounds that are part of all animal and plant cell membranes
- Reduce “bad” cholesterol up to 17%
- Dosage: 1.3 - 3.4 grams per day
- Similar in shape to cholesterol yet minimally absorbed
- Compete with cholesterol for absorption
- Block cholesterol from entering blood stream

Sodium Recommendations

- FDA’s goal
  - Reduce Americans’ salt consumption over the next decade to 2,300 mg a day
- The 2015–2020 Dietary Guidelines for Americans
  - less than 2,300 milligrams (mg) of sodium per day
  - Americans average sodium is about 3,400 mg a day (that’s about a teaspoon and a half).
- The Centers for Disease Control and Prevention estimates
  - that the majority of our sodium intake — about 75 percent — comes from processed and restaurant foods
- American Heart Association
  - No more than 1,500 milligrams of sodium per day.
  - For a significant reduction in blood pressure, which in turn reduces the risk of heart disease and stroke.
  - even cutting back to no more than 2,400 milligrams a day will significantly improve blood pressure and heart health.
Guidelines based on PMH & FH

- For patients with uncontrolled high blood pressure/hypertension (HTN), congestive heart failure (CHF), and edema; or another significant health concern that requires strict restriction in sodium
  - Limit to 1500 mg per day
- Controlled HTN, CHF, or Heart Disease
  - Limit to 2000 mg
- Generally healthy but has family history or risk factors of developing HTN, CHF, heart disease, diabetes and obesity
  - 2000-2300 mg per day
- Healthy
  - No greater than 2400 mg per day

Breaking it down

- Here are the approximate amounts of sodium in a given amount of table salt:
  - 1/4 teaspoon salt = 575 mg sodium
  - 1/2 teaspoon salt = 1,150 mg sodium
  - 3/4 teaspoon salt = 1,725 mg sodium
  - 1 teaspoon salt = 2,300 mg sodium

- Just like with your produce, use a variety of herbs and spices, including garlic, onion, various peppers, ginger and turmeric
- Choose salt free seasoning and fresh herbs as often as possible
Warfarin & Vitamin K

- Warfarin blocks formation of Vitamin K dependent clotting factors in the liver
- Vitamin K needed to make clotting factors that help the blood clot and prevent bleeding
- Daily needs
  - Women-90 micrograms
  - Men-120 micrograms

- Goals
  - Eat a relatively similar amount of vitamin K each week
  - Consistency is key
  - Even foods high in vitamin K

Diet for Warfarin Therapy

- Do not start taking fish oil, herbal teas and supplements
- Control consistency of
  - Dark Leafy Greens
    - Spinach
    - Kale
    - Collard
    - Mustard
    - Turnip greens
    - Endive
    - Lettuce: red leaf, Boston, bib, head, romaine
- Additional Green Vegetables which are lower in K
  - Broccoli, Brussels sprouts, cabbage, asparagus
  - Frozen peas, okra
- Check supplement labels to ensure they do not provide high doses of Vitamin K

Any questions??

Please refer patients to see a dietitian – same day visits are available!!!
Call 216-444-9353 for an appointment
Contact me directly with any questions or concerns:
zumpanj@ccf.org; 216-445-4306; pager 81563