Dietary Guidelines for Preventing and Treating Atherosclerotic Heart Disease

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Introduction

• Diet is the major cause of the most common chronic diseases (WHO, 2003)
• Nutrition is a modifiable risk factor for primary and secondary disease prevention and treatment.
• Only 13% of medical office visits included counseling on diet or nutrition, while 75% included a prescription or prescription renewal for one or more medications (CDC, 2010).
“Heads you get a quadruple bypass. Tails, you eat your veggies!”
Heart Disease

Atherosclerosis  [ath-uh-roh-skluh-roh-sis]
Arteriosclerosis  [ahr-teer-ee-oh-skluh-roh-sis]
A form of arteriosclerosis characterized by the deposition of plaques containing cholesterol and lipids on the innermost layer of the walls of large- and medium-sized arteries. Individuals with arteriosclerosis have a higher risk of coronary artery disease and stroke. Smoking, high blood pressure, diabetes mellitus, and elevated levels of fat in the blood contribute to the development of arteriosclerosis.

The American Heritage® Science Dictionary
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Cite This Source
Per Dr. C. Esselstyn: 8 Measures of Cardiovascular Disease Reversal

- Coronary Angiogram
- Stress Test
- Pet Rubidium Dipyridamole Scar
- Carotid Ultrasound
- Pulse Volume
- Angina
- Claudication
- Erectile Dysfunction

Heart disease is not limited to the heart!
Goals for Nutrition Recommendations

1. Focus on prevention.
2. Evidence based.
3. Keep it simple – 5 recommendations?
4. Limitations:
   - Atherosclerosis only (not valve dz, or arrythmias)
   - Just nutrition; not smoking cessation, exercise, etc.
   - Subject to revision!
Standard Dietary Interventions for CVD: First Line of Defense

- **American Heart Association (AHA) Diet**
  - Lifestyle prescription to promote cardiovascular health
  - 30% kcal from Total fat
  - 7% kcal Sat fat
  - <300mg Cholesterol
  - <1500mg Sodium
  - Encourages fruits and veggies, whole grains, but refined grains, plant oils, low-fat dairy, lean meat/fish allowed

- **NIH NCEP Therapeutic Lifestyle Changes (TLC) “Diet”**
  - 25-35% kcal Total Fat
  - <7% kcal Sat Fat
  - 50% to 60% kcal carbs
  - ~15% kcal protein
  - <200 mg Cholesterol
  - 30 minutes moderate physical activity
  - Previous research shows low-fat, vegan diets significantly more effective at long-term weight loss
We recognized the importance and key function of the U.S. *Dietary Guidelines* in forming the basis of Federal nutrition policy and programs and in providing a critical framework for local, state, and national health promotion and disease prevention strategies. We also understood the influence of the *Guidelines* in shaping policies, standards, and initiatives across the public and private sectors, including public health and health care, education, business, and the food industry and retailers.”
At a minimum, dietary guidelines should reduce measures of risk

Here are healthful ranges for five metabolic risk factors—body mass index, waist circumference, glycemic control, blood pressure, and cholesterol—which provide a quick snapshot for overall cardiovascular health.

<table>
<thead>
<tr>
<th>BMI (kg/m²)</th>
<th>Waist Circumference (inches)</th>
<th>Glycemic Control</th>
<th>Blood Pressure (mmHg)</th>
<th>Cholesterol (mg/dL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 25</td>
<td>Men ≤ 40</td>
<td>A1c &lt; 5.7 %</td>
<td>&lt; 120/80 mmHg</td>
<td>Total Cholesterol &lt;180 to 200</td>
</tr>
<tr>
<td></td>
<td>Women ≤ 35</td>
<td>*Pre-diabetes starts at 5.7%</td>
<td></td>
<td>HDL &gt; 40 (Strive for &gt;60)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>*Diabetes starts at 6.5%</td>
<td></td>
<td>LDL&lt;100</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fasting blood glucose &lt; 100 mg/dL</td>
<td></td>
<td>Triglycerides &lt;150</td>
</tr>
<tr>
<td>≤ 23 for Asian Americans</td>
<td></td>
<td></td>
<td></td>
<td>Total cholesterol = HDL + LDL + .20 (Triglyceride Level)</td>
</tr>
</tbody>
</table>
Healthy people 2020

NWS-6
Increase the proportion of physician office visits that include counseling or education related to nutrition or weight

NWS-6.1
Increase the proportion of physician office visits made by patients with a diagnosis of cardiovascular disease, diabetes, or hyperlipidemia that include counseling or education related to diet or nutrition

NWS-6.2
Increase the proportion of physician office visits made by adult patients who are obese that include counseling or education related to weight reduction, nutrition, or physical activity

NWS-6.3
Increase the proportion of physician visits made by all child or adult patients that include counseling about nutrition or diet

https://www.healthypeople.gov/2020/topics-objectives/topic/nutrition-and-weight-status/objectives#4939
Dietary Recommendations for Prevention of Heart Disease

1. Choose plant-based foods: beans, vegetables, whole grains and fruit every meal, every day.

2. Minimize refined grains, high-salt foods and sugar-sweetened beverages.

3. Include some nuts and seeds; avoid oils.

4. Avoid foods containing trans and saturated fats - processed foods and animal foods.

5. Have a reliable source of vitamin B12.
1. Choose plant-based foods.

The Power Plate
“Vegetarian diets can provide health benefits in the prevention and treatment of certain health conditions, including atherosclerosis, type 2 diabetes, hypertension and obesity...and are appropriate for all stages of the life cycle, including pregnancy, lactation, infancy, childhood and adolescence.”

Plant-Based Diets Reduce CVD Risk Factors

Lower body weight$^1$
Lower blood pressure$^2$
Improved lipid profile$^3$
Improved blood glucose control$^4$


New in 2015 DGAC Report: Environmental Impact

Dietary Patterns and Sustainability

Question 1: What is the relationship between population-level dietary patterns and long-term food sustainability?

Source of Evidence: Modified NEL systematic review

Conclusion
Consistent evidence indicates that, in general, a dietary pattern that is higher in plant-based foods, such as vegetables, fruits, whole grains, legumes, nuts, and seeds, and lower in animal-based foods is more health promoting and is associated with lesser environmental impact (GHG emissions and energy, land, and water use) than is the current average U.S. diet.
Is this concern the purview of health care professionals?
2. Minimize refined grains, salty foods and sugar-sweetened beverages.
What Are Refined Grains?

• Starches that have been stripped of nutrients by food processing techniques.
Whole Grain Hierarchy – From Intact to Highly Processed

- **Intact whole grains**
  - e.g. wheat berries, brown rice, barley, oat groats, quinoa

- **Broken whole grains**
  - e.g. Red River cereal, cracked wheat

- **Rolled whole grains**
  - e.g. rolled oats, barley, rye

- **Shredded whole grains**
  - e.g. shredded wheat

- **Ground whole grains**
  - e.g. whole wheat flour products

- **Flaked whole grains**
  - e.g. cold flaked cereals

- **Puffed whole grains**
  - e.g. puffed wheat, rice, millet

Used with permission from Brenda Davis, RD
Minimize Salty Foods

Recommendations vary: 1,500 to 2,300mg/day\textsuperscript{1}

90% of the U.S. population overconsumes sodium.

Average intake = 3,592 mg/day\textsuperscript{2}


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High salt intake increased the risk of heart attack by 19%.

Of 3 DGAC-recommended dietary patterns, which had lowest Na+ intake?

• Healthy US-Style Pattern?
• Healthy Mediterranean-Style Pattern?
• Healthy Vegetarian-Style Pattern?
Read labels: Sodium $\leq$ Calories

Jeff Novick, RD
Minimize Sugar-Sweetened Beverages

A diet rich in added sweeteners increases the risk for CVD by 38-50%, depending on daily consumption patterns.¹

Best sources of sweets?

Swap sugary treats for fruits high in vitamin C to reduce the risk of CV disease by 15% and risk of early death by 20%.¹

3. Include some nuts and seeds; avoid oils.
Benefits of Nuts and Seeds

• Heart-health benefits found in almonds, walnuts, pine nuts, Brazil nuts and flaxseeds.
• High nutrient density: fiber, vitamin E, plant-sterols, L-arginine, polyunsaturated and monounsaturated fats, and omega-3 fatty acids.
• Lower LDL, attack plaque formation, and provide flexible support for arterial walls, reducing the risk of blood clots.
Too much of a good thing?

“They come in a shell for a reason”

Brenda Davis, RD
Limit oil

Fat = 9 calories/gram
Protein and Carbohydrates = 4 calories/gram

Unsaturated fats in oils:
• increased free-radical production
• impaired immune system
• increased body weight

http://www.pcrm.org/health/health-topics/cholesterol-and-heart-disease
Olive, soybean and palm oils intake have a similar acute detrimental effect over the endothelial function in healthy young subjects

Christian F. Rueda-Clausen a, Federico A. Silva a,b, Manuel A. Lindarte a, Cristina Villa-Roel a, Elieth Gomez b, Roberto Gutierrez c, Carlos Cure-Cure d, Patricio López-Jaramillo a,*
4. Avoid foods that have trans and saturated fats – processed and animal foods.
5. Have a reliable source of vitamin B12, especially if 50 years or older
Causes of Low B12

Older age
Use of acid-blockers
Use of metformin
Vegan diets
Bariatric surgery
Celiac disease
Crohn’s disease
Practice Pearls

• With diet change medications may produce:
  – Low blood sugar
  – Low blood pressure

• Consider greens and blood thinners

• Instruct patient to work with HCP on medication adjustments.

• Remember Vitamin B12
Call for Action

• Enrich
• EAT for Health
• DGAC – Past and Future
Resources
Resources for Everyone

- Free downloadable resources (PCRM.org/Lit)
- 21-Day Kickstart (21DayKickstart.org)
- Books, DVDs, etc. (PCRM.org/shop)
- Food for Life classes (PCRM.org/FFL)
Resources for HCP

• Nutrition education curriculum (PCRM.org/Curriculum)
• Free continuing education credits (NutritionCME.org)
• Nutritional considerations for various disease states (NutritionMD.org)
• Posters and literature to promote healthful eating (PCRM.org/Nurses and PCRM.org/lit)
• Breaking Medical News alerts
• Conferences on nutrition and health
Welcome to plantbasedresearch.org, an online narrative review of peer-reviewed, scientific research papers and educational resources that are relevant to plant-based nutrition. Links to the abstract are included with every article, and links to the free full articles are included when possible. A narrative review is a collection of research papers supporting a particular theory - this website is by no means an exhaustive directory of all research on nutrition and disease but presents the growing body of evidence supporting the theory that whole food, plant-based diets offer the best chance for avoiding chronic disease, and in some cases, reversing it.

To browse scientific papers a variety of topics visit our "Research Articles by Category" page. Please Join Our Newsletter for updates on new studies! Or, do a site search to find information by keyword. Visit the Participate in Research Study page to see the latest volunteer opportunities.
Early Intervention Is Key!

Children who eat fruit, veggies, whole grains, legumes = Adults who eat fruit, veggies, whole grains, legumes

Healthy Kids and Teens = Healthy Adults

Do we need more health promotion and nutrition education in childhood and young adulthood?
HealthySchoolFood.org
Research Participants Needed!

• New 15-min research survey launched at Tufts on popular diets
• Visit hnrca.tufts.edu/studyadapt to participate
• Any diet to no diet is welcome!
Summary
Dietary Recommendations for Prevention of Heart Disease

1. Choose plant-based foods: beans, vegetables, whole grains and fruit every meal, every day.
2. Minimize refined grains, high-salt foods and sugar-sweetened beverages.
3. Include some nuts and seeds; avoid oils.
4. Avoid foods containing trans and saturated fats - processed foods and animal foods.
5. Have a reliable source of vitamin B12.
Animal Products: The New Tobacco?
WE DON'T SELL Tobacco TO MINORS
Credits – Thank you!

• Brenda Davis, RD
• Ted Barnett, MD
• Susan Levin, MS, RD, CSSD
• Eliza Mellion, BA
• Cameron Wells, MPH, RD

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