



CARDI•OH

Ohio Cardiovascular and Diabetes Health Collaborative



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Cardi-OH ECHO

*Innovations in Diabetes and  
Cardiovascular Health*

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## Today's Presenters

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# Plant-Based Diets

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# Learning Objectives



1. Define a plant-based diet.
2. List the benefits of plant-based diets in mitigating cardiovascular risk.
3. Describe a practical approach to introducing patients to a plant-based diet.

# The Importance of Diet



- The leading predictor of health outcomes globally
- The leading predictor of total chronic disease risk
- The leading predictor of premature death
- Leading risk factor for cardiovascular disease, type 2 diabetes, and obesity
  - Driven by diets high in sodium, low in whole grains, fruits, vegetables, nuts & seeds, omega-3 fatty acids

# Healthy Eating Index Scores



## The Healthy Eating Index Score

shows that Americans do not align their eating choices with the Dietary Guidelines (on a scale from 0-100)

# Leading Vegetables in the American Diet



- Potatoes: French fries, potato chips
- Tomatoes: Pizza sauce



# Ultra-Processed Foods



- UPFs: formulations of ingredients resulting from industrial processes
  - Frozen pizza, soda, fast food, sweets, salty snacks, canned soup, most breakfast cereals
- Significantly associated with obesity, cardiometabolic disorders, cancer
- Comprise 57% of daily energy intake in US in 2018
  - Largest increase from 2001-2018 was in ready-to-eat/heat meals
  - Born after 1950: availability, marketing exposure, preferences and habits

# Animal-Based Foods

- Saturated fats
- Dietary cholesterol
- Antibiotics
- Insulin-like Growth Factor-1
- Heme iron
- Polycyclic aromatic hydrocarbons, advanced glycation end products, heterocyclic amines
- Carnitine (TMAO)

# Inconsistent Messages



- Dietary advice for health and weight loss often focus on specific macro/micronutrients; messages are often contradictory
- Media coverage of dietary research is oversimplified
- Dietary recommendations can be confusing to the public
- Underfunding of nutrition research
- *“Advice on what constitutes a healthy diet is more prevalent and more inconsistent than ever.”*

# Consensus



- There is scientific consensus on an optimal pattern of eating for most people:
  - *“Eat food. Not too much. Mostly plants.”*
- There is no ‘single best diet’ for everyone
- Specific health problems may require specialized diets

# Plant-Based Diets: Mostly Plants



- Maximizes consumption of nutrient-dense plant foods
- High in nutrient density, low in calorie density
- Emphasizes unprocessed or minimally processed foods
- Minimizes ultra-processed foods and animal foods

# Plant-Based Diets



- Mostly fruits, vegetables, whole grains, legumes (beans, peas, lentils, peanuts), nuts, and seeds; mostly drink plain water
- Low intake of sweetened beverages, ultra-processed/junk food, and foods high in saturated fat
  - Avoid high calorie density and low nutrient density foods
- May include fish, meats, eggs, dairy

# Plant-Based Diets



- The Mediterranean diet
- The DASH diet
- American Heart Association's recommendations
- WHO dietary recommendations
- USDA MyPlate
- Vegetarian and vegan diets and others

# Mediterranean Diet



- 5-year PREDIMED Study, RCT, n=7447
- ‘CVD events’ - a composite of myocardial infarction, stroke, or CVD death
- CVD events: 30% reduced risk for vs. control group (advice for low-fat diet)
- Diabetes incidence: 40% lower (Med+olive oil) and 18% lower (Med+nuts) vs. control
- Improvements in blood pressure, insulin sensitivity, lipid profiles, lipoprotein particles, inflammation, oxidative stress, and carotid atherosclerosis



# The DASH Diet



- Focuses on fruits, vegetables, whole grains and lean meats
- Low in red meat, salt, added sugars and fat
- Systolic blood pressure lowered by 12 points in patients with HTN, more when physical activity was added
- May significantly protect against CVDs (-20%), CHD (-21%), stroke (-19%), and HF risk (-29%)
- May reduce cancer risk

Sacks FM, Svetkey LP, Vollmer WM, et al. N Engl J Med. 2001 Jan 4;344(1):3-10.

Salehi-Abargouei A, Maghsoudi Z, Shirani F, et al. Nutrition. 2013 Apr;29(4):611-8.

Onvani S, Fahimeh Haghghatdoost F, et al. J Res Med Sci. 2015 Jul;20(7):707-13.

# Plant-Based Diets



Vegan	Fruits, vegetables, grains, beans, nuts and seeds. <b>Avoids all animal-based products.</b>
Whole-foods, low-fat plant-based	Plant foods in their <b>whole form</b> : vegetables, fruits, grains, legumes, and seeds and nuts. <b>Avoids animal-based products, restricts total fat intake, and often limits added salt, sugar and oil.</b>
Lacto-vegetarian	<b>Dairy products</b> , fruits, vegetables, grains, beans, nuts and seeds; avoids other animal-based products.
Ovo-vegetarian	<b>Eggs</b> , fruits, vegetables, grains, beans, nuts and seeds; avoids other animal-based products.
Lacto-ovo vegetarian	<b>Dairy products, eggs</b> , fruits, vegetables, grains, beans, nuts and seeds; avoids other animal-based products.
Pescatarian	<b>Fish and other seafood</b> , fruits, vegetables, grains, beans, nuts and seeds; avoids other animal-based products.
Flexitarian	Fruits, vegetables, grains, beans, nuts and seeds, <b>but occasionally consumes animal-based products</b> (meat, fish/seafood, dairy products, eggs).

# Vegetarian/Vegan Diets



## Cardiovascular risks

- Pooled data from seven prospective cohort studies – Vegetarian/vegan diets associated with 28% lower CHD incidence and 22% CHD mortality
- Adventist-2 Study -- prevalence of hypertension significantly lower in the plant-based groups vs. non-vegetarian comparison group
- Blood lipids: generally lower total cholesterol, LDL, HDL and triglycerides

# Vegetarian/Vegan Diets

## Diabetes risk

- A 14-study systematic review/meta-analysis reported 27% lower risk of diabetes in vegetarians vs. non-vegetarians

## BMI

- Vegans and vegetarians typically have the lowest BMIs or lowest prevalence of overweight and obesity in studies comparing multiple dietary patterns
- 6-month plant-based diet RCT: mean weight loss of 9.7 lb. in the whole foods plant-based diet group vs. 0.4 lb. in the control group

# Nutrient Concerns



- Vitamin B12
- Calcium
- Iron
- Zinc
- Vitamin D
- Omega-3 Fatty Acids
- Protein
- Academy of Nutrition and Dietetics: “Vegetarian, including vegan diets are appropriate for all stages of the life cycle, including pregnancy, lactation, infancy, childhood, adolescence, older adulthood, and for athletes.”

# Health Benefits



## Dietary Qualities

- High nutrient density
- Low calorie density
- High dietary fiber
- Low in saturated fat, high in unsaturated fat
- High levels of antioxidants
- High levels of micronutrients
- Low levels of heme iron, nitrates, nitrites

## Health Benefits

- Enhanced glycemic control
- Weight loss/maintenance
- Improved lipid profile
- Lower blood pressure
- Improved vascular health
- Decreased inflammation
- Reduced oxidative stress
- Improved gut microbiome

# Diet Quality Matters



- The Nurses' Health Study 1 and 2 and the Health Professionals Follow-up Study (n = 116,969)
- Healthy plant-based diet: high in whole grains, fruits, vegetables, nuts, legumes, water, coffee, tea
  - -25% risk of CVD; -44% risk of T2DM after BMI adjustments
- Unhealthy plant-based diet: high in refined grains, fruit juice, potatoes, desserts, sugar-sweetened beverages
  - +32% risk of CVD, +15% risk of T2DM

# Evidence-Based Resource



REVIEW

## A Clinician's Guide to Healthy Eating for Cardiovascular Disease Prevention

Vincent A. Pallazola, MD; Dorothy M. Davis, MSN, RN;  
Seamus P. Whelton, MD, MPH; Rhanderson Cardoso, MD;  
Jacqueline M. Latina, MD; Erin D. Michos, MD, MHS; Sudipa Sarkar, MD;  
Roger S. Blumenthal, MD; Donna K. Amett, PhD, MSPH; Neil J. Stone, MD;  
and Francine K. Welty, MD, PhD



# Helping Patients Get Started



- 5-10% weight loss is a clinically meaningful target that patients notice
- “Opening the Door” method to initiate the conversation
- Link to the patient’s current health problems and/or concerns
- Explain the health benefits of a plant-based diet using MI (elicit motivation, ‘ask-tell-ask’, identify action steps), revisit

# Expertise and Support

- Dietitians
- Weight management programs
- Cardiac rehabilitation programs
- Health coaches, personal trainers
- Supportive family members & friends



# Patient Information and Support



- Mediterranean Diet: American Heart Association: <https://www.heart.org/en/healthy-living/healthy-eating/eat-smart/nutrition-basics/mediterranean-diet>
- DASH Diet: NHLBI Patient Guide [https://www.nhlbi.nih.gov/files/docs/public/heart/dash\\_brief.pdf](https://www.nhlbi.nih.gov/files/docs/public/heart/dash_brief.pdf)
- Vegan/Vegetarian: 21-Day Kickstart Kit <https://www.pcrm.org/vegankickstart>
- Meatless Mondays – Information and weekly email reminders from Johns Hopkins <https://www.mondaycampaigns.org/meatless-monday>
- Cooking courses – online, local community/senior centers
- Books and DVDs at public libraries: Mediterranean, DASH, plant-based, recipes
- Documentaries: Netflix, Prime, Youtube, etc.

# Peer & Community Support



- Weight management programs that create communities
- Social Media & Virtual Communities
  - Facebook groups; YouTube channels – Mediterranean, DASH, many types of plant-based dietary patterns
- Many cultures have plant-based traditions
  - African American communities of plant-based chefs, bloggers, cookbook authors, social media influencers, celebrities, athletes

# Plant-Based Diets



- Lower overall mortality
- Reduce ischemic heart disease mortality
- Support sustainable weight management
- Lower the risk of most chronic diseases
- Decrease the severity of diabetes, obesity, hypertension, hyperlipidemia, and hyperglycemia
- Reduce medication needs



Thank you!

Questions/Discussion