

Why Am I Here?



PREVENTIVE CARDIOLOGIST
RESEARCHER



MOTHER



ATHLETE



PATIENT









How Does Illness Make One Feel?

Scared all of the time

Emotional

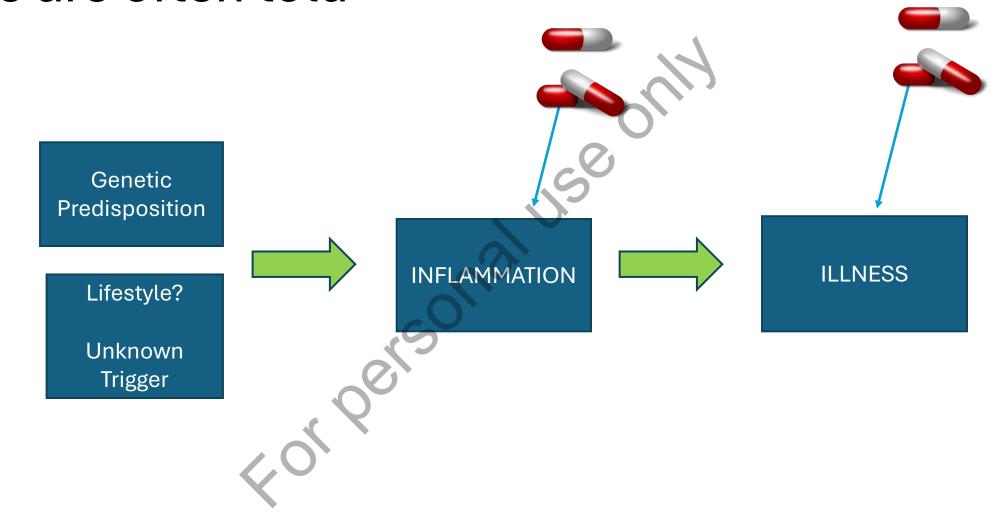
Fragile

Unable to understand how this had happened

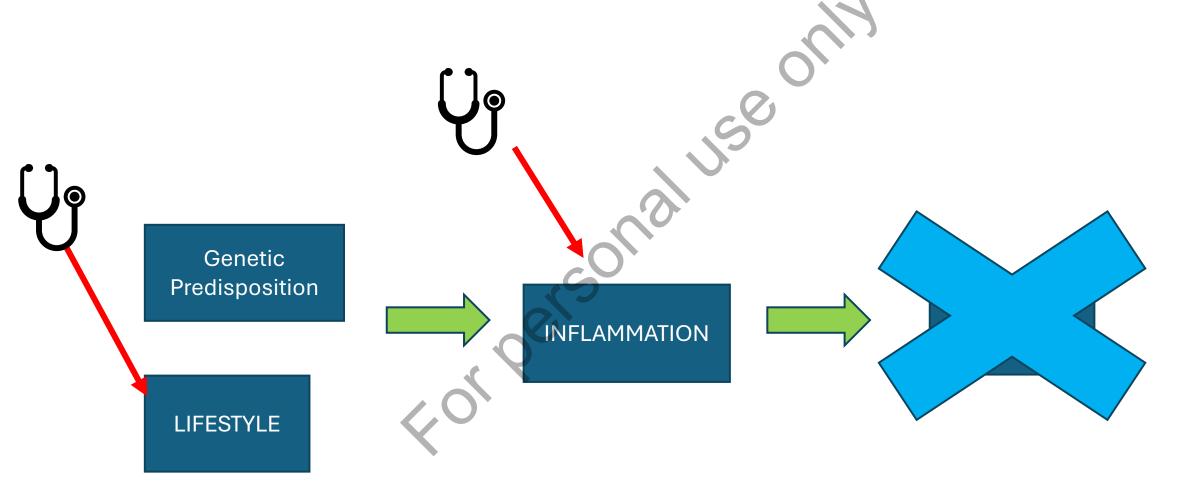
Not in control

Keenly aware of my mortality

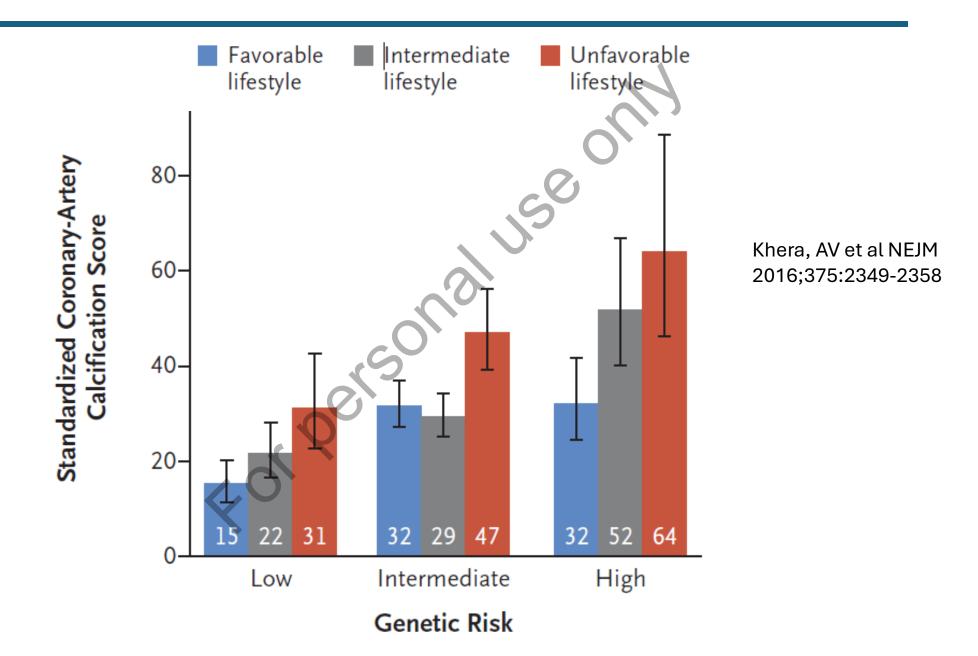
We are often told



Another way to look at it



Genetic Predisposition



if lifestyle matters, why aren't we talking about it?

Noncommunicable diseases are Responsible for 74% of deaths worldwide



HEART DISEASE



STROKE



CANCER



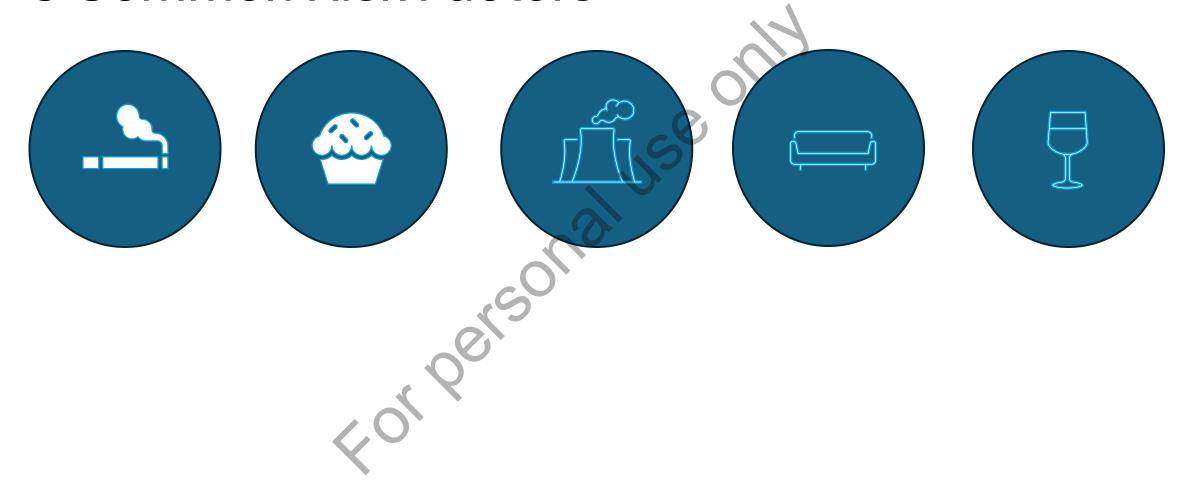
DIABETES



CHRONIC LUNG DISEASE

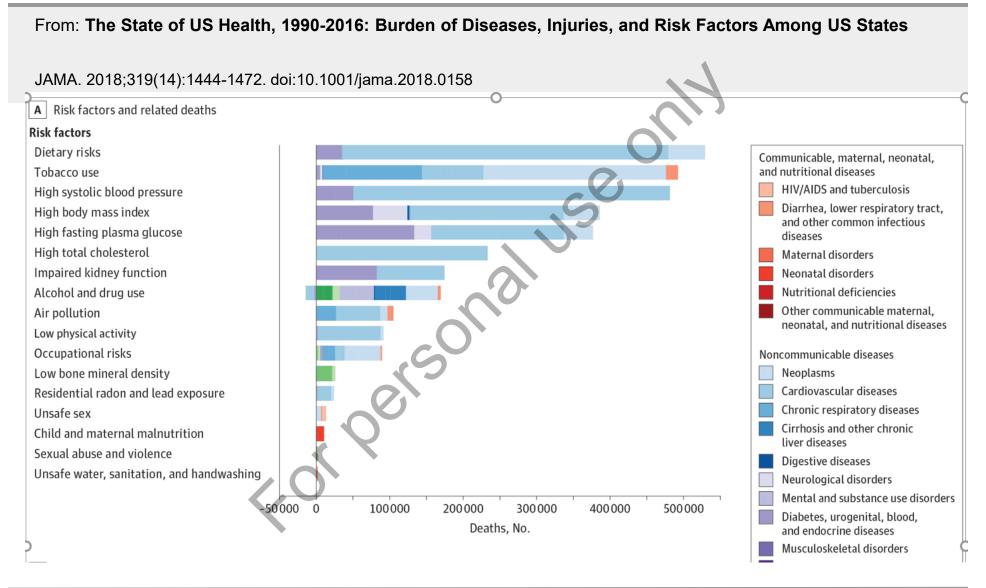
World Health Organization

5 Common Risk Factors



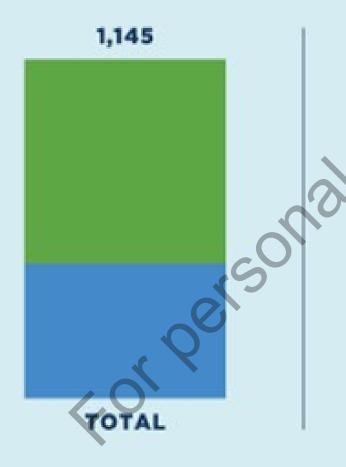


Date of download: 12/14/2021



ECONOMIC BURDEN FROM DIETARY RISK IN THE U.S. MASSIVE ANNUAL HEALTH COSTS (TRILLIONS, USD)





The food system causes more than \$1.1 trillion in health care costs annually. This figure includes direct medical costs and/or productivity loss from overweight/obesity; other non-communicable diseases such as cardiovascular disease, hypertension, cancer, and diabetes; food insecurity; and the impact of pollution (e.g., air, water).

Source: The Rockefeller Foundation, 2021.

DIETARY FACTORS LINKED TO CARDIOMETABOLIC MORTALITY

10 FACTORS
ACCOUNT FOR
MOST OF RISK

Micha R. Peñalvo J. L. Cudhea F. Imamura F. Rehm C. D. Mozaffarian, D. JAMA 2017, 317(9), 912-92

Proportions of the 702,308 Deaths from CVD+DM Due to 10 Dietary Factors - NHANES - 2012

HIGH SODIUM >2000 mg/d

LOW NUTS/SEEDS <20.2 g/d

HIGH PROCESSED MEAT >0 g/d

LOW MARINE O-3-FA <250 mg/d

LOW VEGETABLES <400 g/d

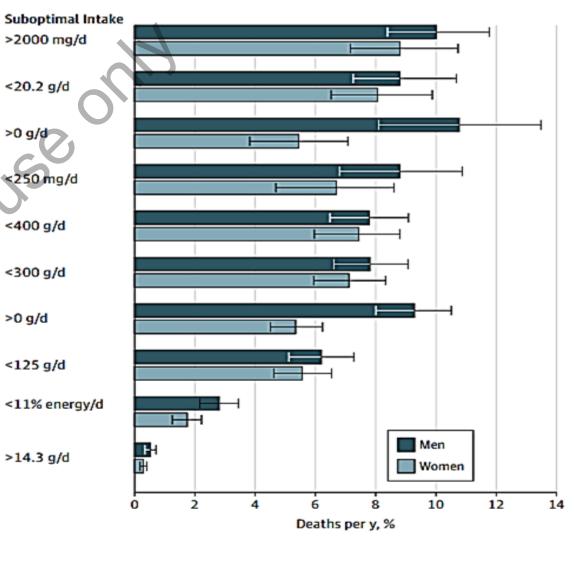
LOW FRUIT <300 g/d

HIGH SUGAR BEVERAGES >0 g/d

LOW WHOLE GRAINS <125 q/d

LOW PUFA VS. SFA <11% energy/d

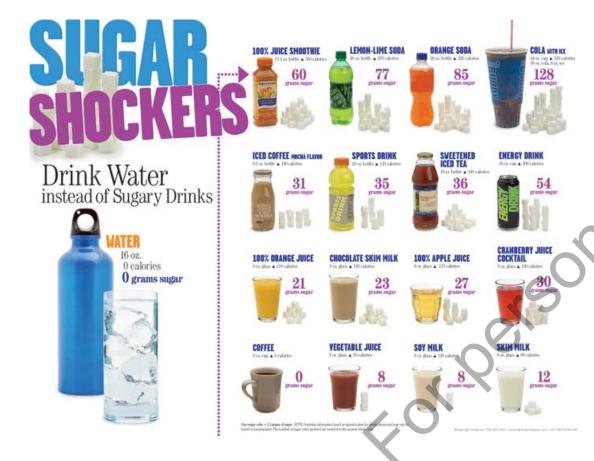
HIGH RED MEAT >14.3 g/d







Almost 75% of packaged foods in the U.S. now contain added sugars, and much also comes from consumption of sugar-sweetened beverage (SSBs)



Daily Added Sugar Limit
MEN WOMEN





No more than:

9 teaspoons36 grams150 calories

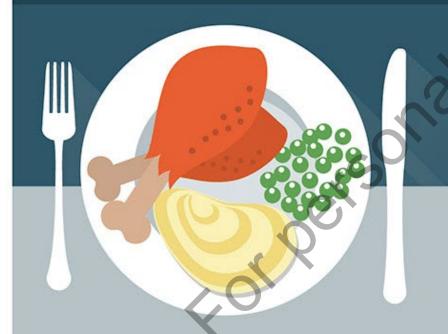
6 teaspoons 25 grams 100 calories

©2019 American Heart Association, Inc.

EATING A SOUTHERN DIET

substantially increases health risks





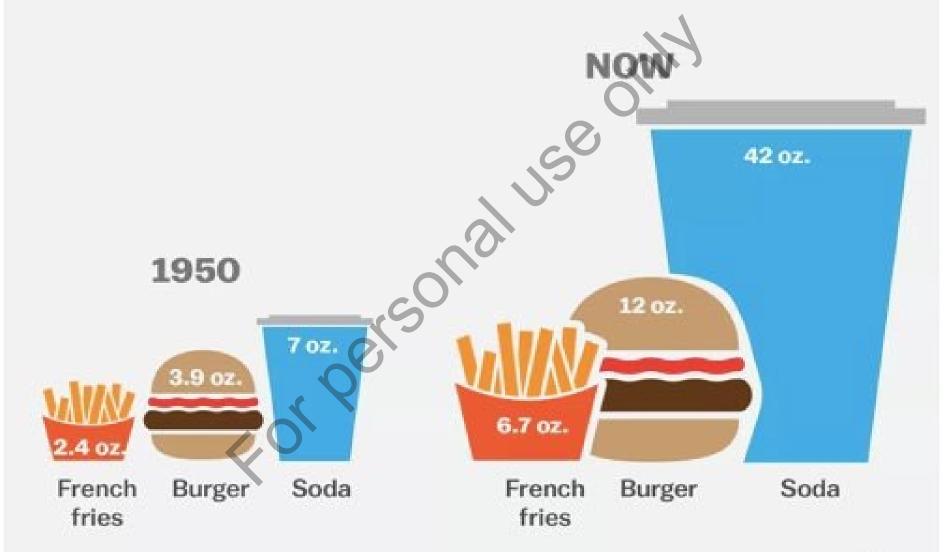


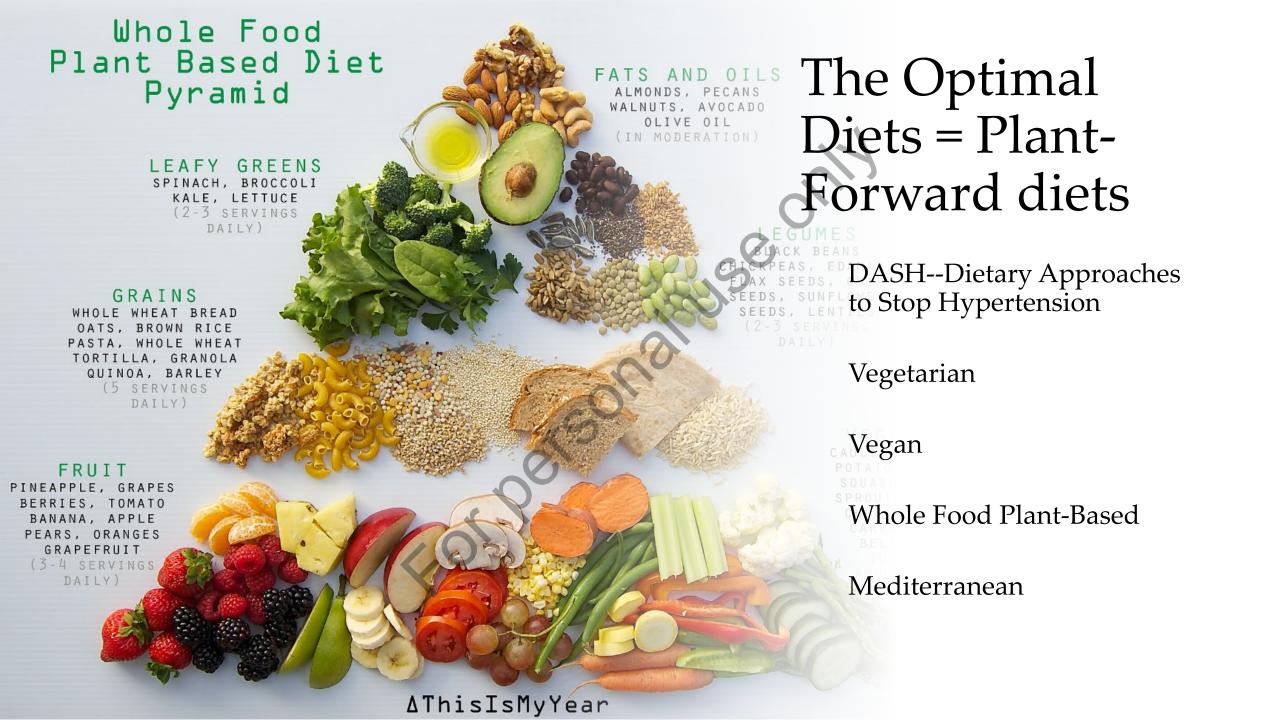
50% INCREASE

of death in patients with kidney disease



The average restaurant meal today is more than four times larger than in the 1950s





Plant based Diets

Reduce Cholesterol

Reduce Weight

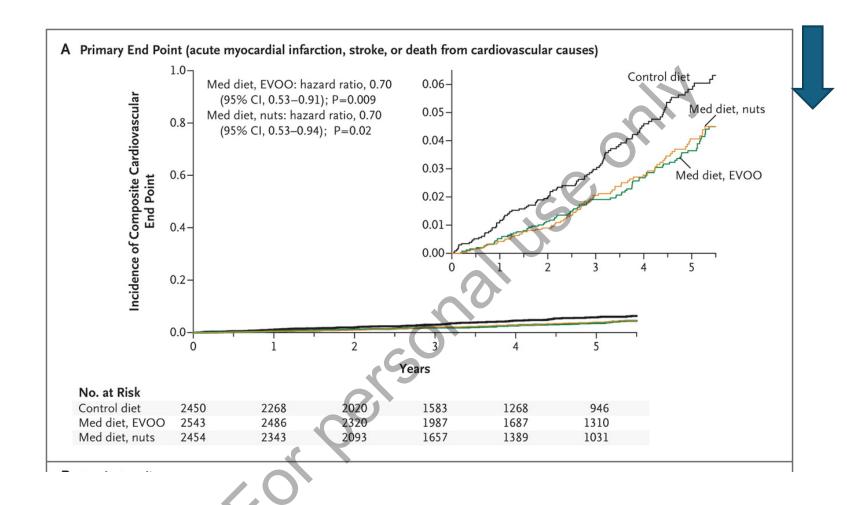
Reduce Diabetes

Reduce inflammation

Reduce Blood pressure

Heal Gut

Reduce Heart disease



30%
End point driven
by reduction in
strokes

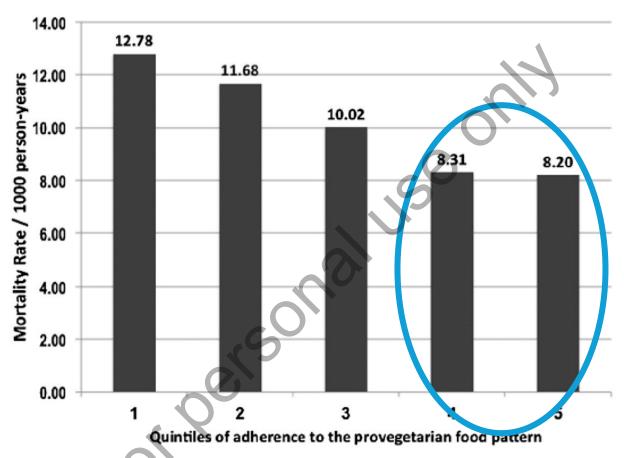
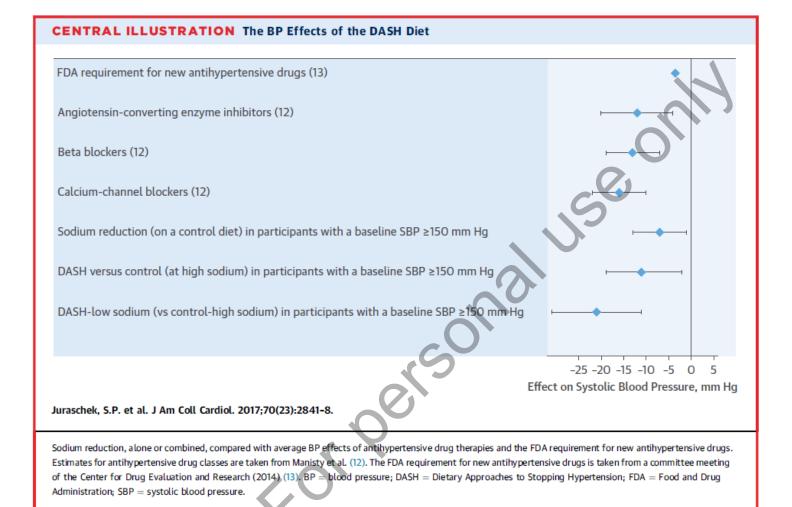


FIGURE 1. Absolute risk of death across baseline quintiles of the provegetarian food pattern: the Prevención con Dieta Mediterránea trial, 2003–2010. Quintile score limits were as follows for quintiles 1–5: <33, 33–35, 36–37, 38–40, >40, respectively.



- FDA requirement
 - 3-4 mm Hg
- ACE inhibitors
 - 12 mm Hg
- Beta-blockers
 - 13 mm Hg
- Calcium channel blockers
 - 16 mm Hg
- Sodium reduction
 - 7 mm Hg
- DASH diet
 - 11.4 mm Hg
- DASH + low Na diet
 - 20.8 mm Hg

It Doesn't matter which one you pick as long as its not this



Guidelines Versus Practice

3.1. Nutrition and Diet

Recommendations for Nutrition and Diet

Referenced studies that support recommendations are summarized

in Online Data Supplements 4 and 5.		
COR	LOE	Recommendations
1	B-R	 A diet emphasizing intake of vegetables, fruits, legumes, nuts, whole grains, and fish is recommended to decrease ASCVD risk factors. 53.1-1-53.1-11
lla	B-NR	 Replacement of saturated fat with dietary monounsaturated and polyunsaturated fats can be beneficial to reduce ASCVD risk. 53.1-12,53.1-13
lla	B-NR	3. A diet containing reduced amounts of cholesterol and sodium can be beneficial to decrease ASCVD risk. 53.1-9,53.1-14-53.1-16
lla	B-NR	 As a part of a healthy diet, it is reasonable to minimize the intake of processed meats, refined carbohydrates, and sweetened beverages to reduce ASCVD risk. 53.1-17-53.1-23
III-Harm	B-NR	 As a part of a healthy diet, the intake of trans fats should be avoided to reduce ASCVD risk. 53.1-12,53.1-17,53.1-25-53.1-27

Circulation

ACC/AHA CLINICAL PRACTICE GUIDELINE

2019 ACC/AHA Guideline on the Primary **Prevention of Cardiovascular Disease**

A Report of the American College of Cardiology/American Heart **Association Task Force on Clinical Practice Guidelines**

WRITING COMMITTEE MEMBERS

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Endorsed by the American Association of Cardiovascular and Pulmonary Rehabilitation, the American Geriatrics Society, the American Society of Preventive Cardiology, and the Preventive Cardiovascular Nurses Association

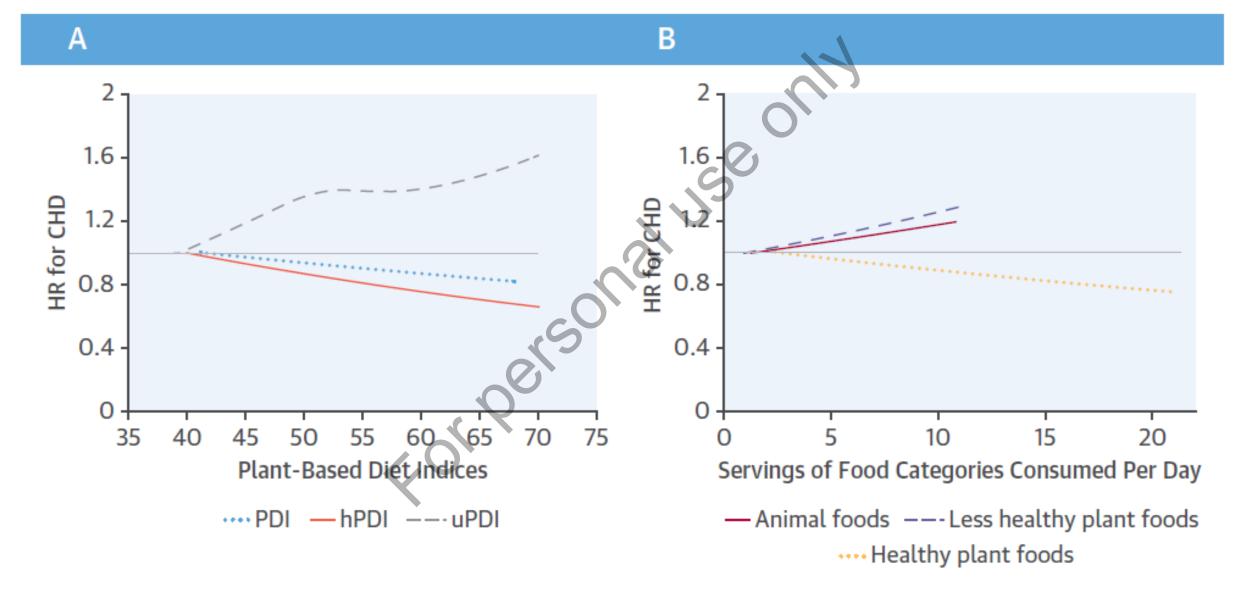
ACC/AHA Task Force Members. see page e623

Key Words: AHA Scientific Statements ■ guidelines ■ antihypertensive agents aspirin atherosclerosis atherosclerotic cardiovascular disease atrial fibrillation behavior modification ■ behavior therapy ■ blood cholesterol ■ blood pressure ■ body mass index cardiovascular team-based care cardiovascular a cardiovascular disease ■ cholesterol ■ chronic kidney disease ■ coronary artery calcium score ■ coronary disease ■ coronary heart disease ■ cost ■ diet ■ dietary patterns ■ dietary

Arnett, D. K., Blumenthal, R. S., Albert, M. A., Buroker, A. B., Goldberger, Z. D., Hahn, E. J., ... & Ziaeian, B. (2019). 2019 ACC/AHA guideline on the primary prevention of cardiovascular disease: a report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines. Journal of the American College of Cardiology, 74(10), e177-e232.



CENTRAL ILLUSTRATION Dose-Response Relationship of Plant-Based Diet Indices and Animal, Healthy Plant, and Less Healthy Plant Foods With CHD Incidence



Satija, A. et al. J Am Coll Cardiol. 2017;70(4):411-22.

















PURE TRIAL

Fruit, vegetable, and legume intake, and cardiovascular disease and deaths in 18 countries (PURE): a prospective cohort study

135,335 individuals was recorded using validated food frequency questionnaires

Interpretation

High carbohydrate intake was associated with higher risk of total mortality, whereas total fat and individual types of fat were related to lower total mortality. Total fat and types of fat were not associated with cardiovascular disease, myocardial infarction, or cardiovascular disease mortality, whereas saturated fat had an inverse association with stroke. Global dietary guidelines should be reconsidered in light of these findings.





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Public

Intake of individual saturated fatty acids and risk of coronary heart disease in US men and women: two prospective longitudinal cohort studies

BMJ 2016;355:i5796

Geng Zong,1 Yanping Li,1 Anne J Wanders,2 Marjan Alssema,2 Peter L Zock,2 Walter C Willett,3

CONCLUSIONS

Higher dietary intakes of major SFAs are associated with an increased risk of coronary heart disease. Owing to similar associations and high correlations among individual SFAs, dietary recommendations for the prevention of coronary heart disease should continue to focus on replacing total saturated fat with more healthy sources of energy.

Department of Medicine, Brigham and Women's Hospital and Harvard Medical School, 665 Huntington Avenue, Boston, MA 02115, USA Correspondence to: Q Sun

Correspondence to: Q Sun qisun@hsph.harvard.edu

Additional material is published

diseases at baseline.

MAIN OUTCOME MEASURE

Incidence of coronary heart disease (n=7035) was self-reported, and related deaths were identified by searching National Death Index or through report of next of kin or postal authority. Cases were confirmed by medical records review

0.94 (0.91 to 0.97; P<0.001) for whole grain carbohydrates, and 0.93 (0.89 to 0.97; P=0.001) for plant proteins. For individual SFAs, the lowest risk of coronary heart disease was observed when the most abundant SFA, 16:0, was replaced. Hazard ratios of coronary heart disease for replacing 1% energy from 16:0 were 0.88 (95% confidence interval 0.81 to 0.96).

west

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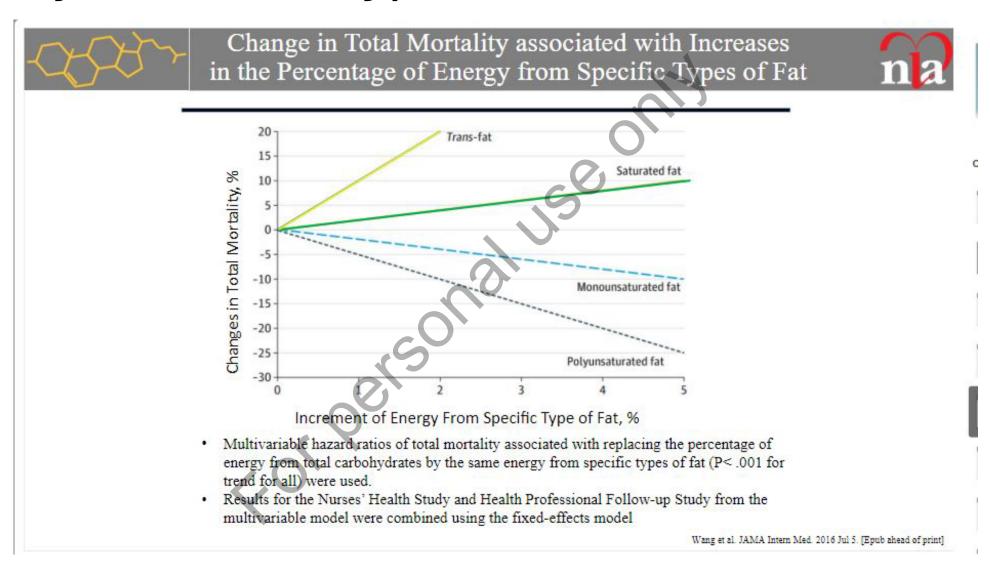
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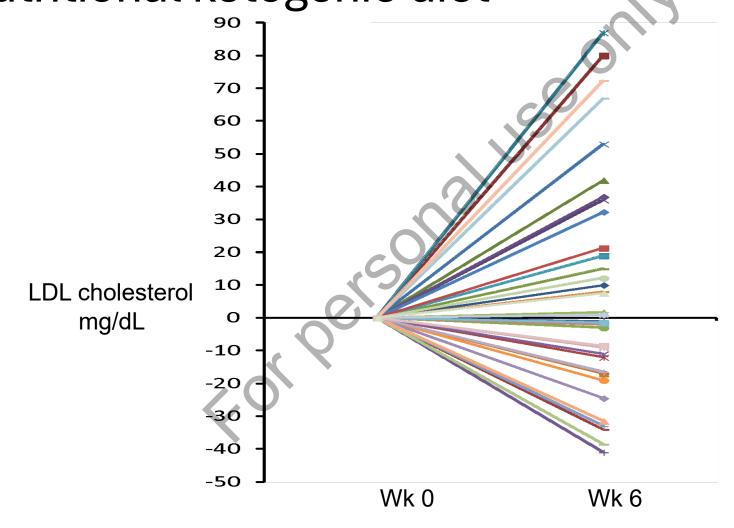
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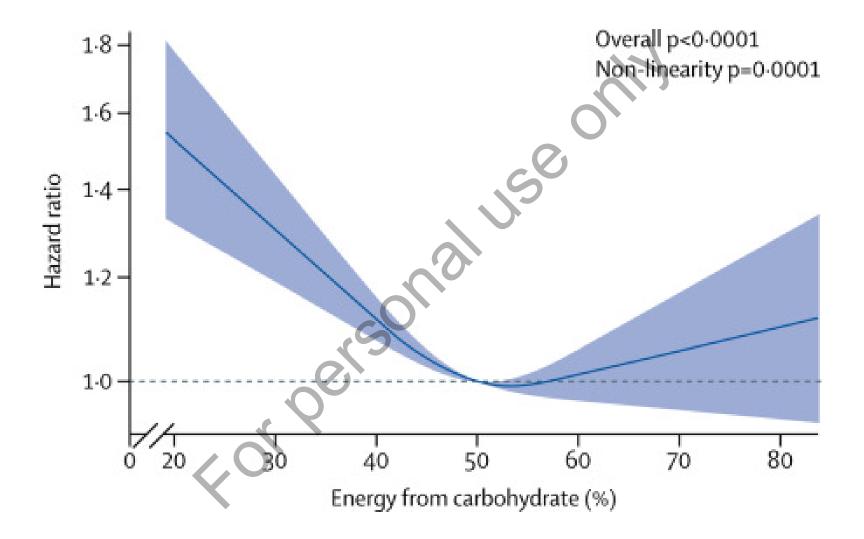
d fat,

Mortality based on Type of Fats



Variable increases in LDL-C with nutritional ketogenic diet





Depends what you replace it with



Li Y, Hruby A, Bernstein AM, Ley SH, Wang DD, Chiuve SE, Sampson L, Rexrode KM, Rimm EB, Willett WC, Hu FB. Saturated fats compared with unsaturated fats and sources of carbohydrates in relation to risk of coronary heart disease: a prospective cohort study. Journal of the American College of Cardiology. 2015 Oct 6;66(14):1538-48.

Our Editorial

PERSPECTIVE



Monica Aggarwal, MD, FACC

The original PURE data suggests that the carbohydrate is the enemy. In our editorial regarding PURE in the American Journal of Medicine (Gianos E, et al. Am J Med.

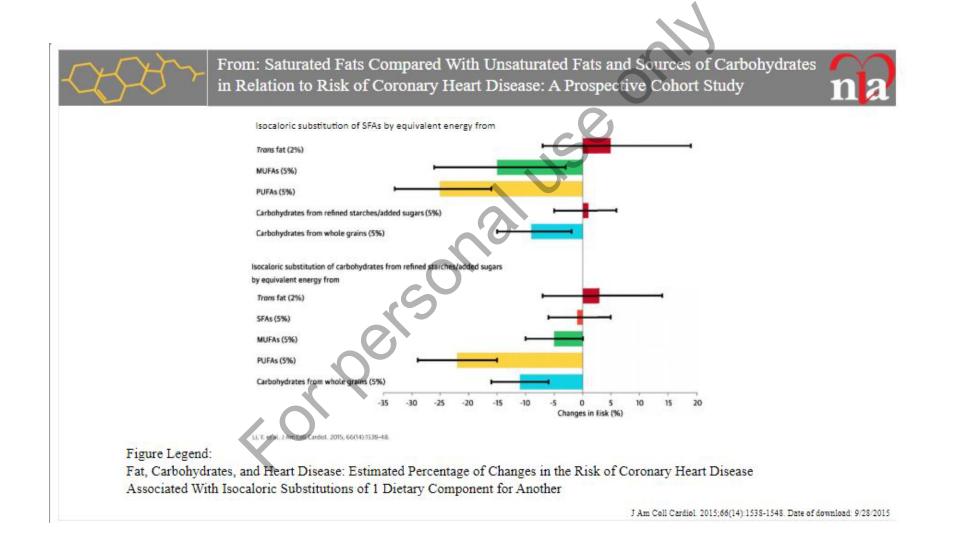
BACK TO TOP \wedge

2017;doi:10.1016/j.amjmed.2017.11.024), we wrote that the likely problem is the type of carbohydrate.

It is not that saturated fat is good and carbs are bad.

But rather, that, saturated fat is bad and refined, simple carbohydrates are as bad, if not worse.

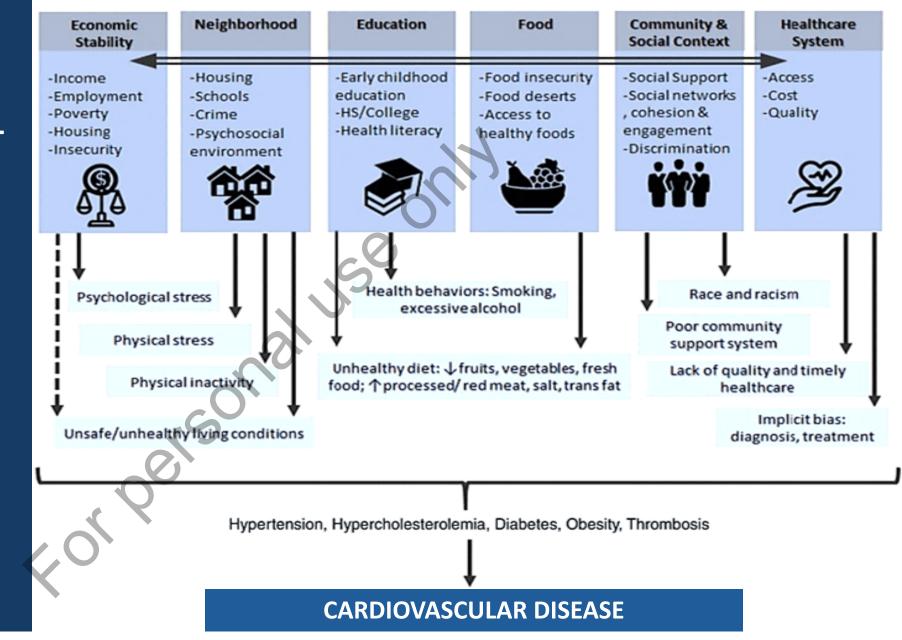
Saturated Fats vs Unsaturated fats vs Carbs



Awareness

DIET AS A SOCIAL DETERMINANT OF HEALTH

FOOD INSECURITY
AND POOR ACCESS
TO HEALTHY FOODS
DRIVE CVD RISK



FOOD INSECURITY IN CVD PATIENTS HIGHER PREVALENCE - NHANES DATA 1999-2018

AMONG BLACKS

High food insecurity overall and in those with CVD with NARROWING of the gap

AMONG HISPANICS

Higher food insecurity overall and in those with CVD with SOME NARROWING of the gap

AMONG WHITES

Higher food insecurity
In those with CVD
with WIDENING of the gap

20-25%

had food insecurity in 2018, with non-significant differences between those with and without CVD 40% with CVD had food insecurity in 2018 versus

30% without CVD

45% with CVD had food insecurity in 2018 versus

15% without CVD

Measured by the USDA Adult Food Security Survey Module. Modified from: Brandt EJ et al. JAMA Cardiology 2022 Dec 1;7(12):1218-1226

NUTRITION SECURITYA NEW AND BETTER METRIC VS. FOOD SECURITY

WHAT IS NUTRITION SECURITY?

Consistent access to nutritious foods that promote optimal health and well-being for all Americans, throughout all stages of life.



Source: Cinicaladvisor.com/home/topics/diet-and-nutrition-information-center/aha-outlines-strategies-to-improve-nutrition-security-in-the-us/

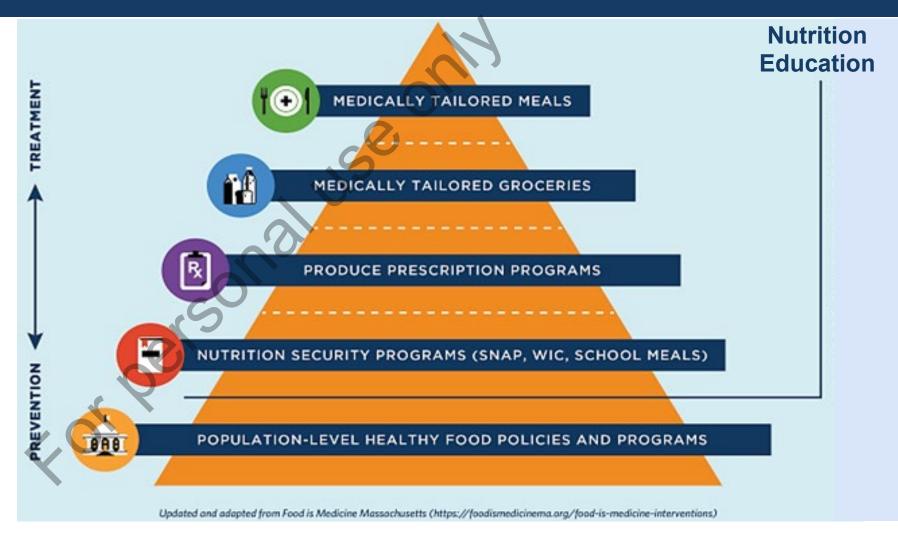
RATIONALE AS A METRIC

Food security is a measure of access to enough food for overall health. **Nutrition security** is a measure access to foods associated with reduced risk of chronic disease.

FOOD IS MEDICINE DEFINITION AND INTERVENTIONS

Food is Medicine is a tiered "spectrum of services and health interventions that recognize and respond to the critical link between nutrition and chronic illness," 1 especially due to food and nutrition insecurity. It also encompasses nutrition screening and education.

www.foodismedicinema.org



ORGANIZE DIET INTERVENTIONS IN CLINICAL PRACTICE THE CHRONIC CARE MODEL CAN PROVIDE A FRAMEWORK

SELF MANAGEMENT SUPPORT

Patient Diet Education and Counseling [Verbal Messages, Smart Phrases, Print Materials, Cookshops, Videos]

DELIVERY SYSTEM DESIGN

Diet-Related Team Care
 +/- Group Visits
[via RDNs, APPs, CDOE]



HEALTH SYSTEM LEVEL

Diet QI thru Food Services, Food Pharmacy's and Community Outreach

CLINICAL INFO SYSTEMS EMR Diet Tracking and QI

DECISION SUPPORT EMR Dietary Screeners, Guidelines + BPAs

Improved health outcomes

Aggarwal M, Ornish D, Josephson R, Brown TM, Ostfeld RJ, Gordon N, Madan S, Allen K Khetan A, Mahmoud M, Freeman A, Aspry KE.

Amer Jour Cardiol Jan 2021

Starting the Conversation

Starting The Conversation: Diet

(Scale developed by: the Center for Health Promotion and Disease Prevention, University of North Carolina at Chapel Hill, and North Carolina Prevention Partners)

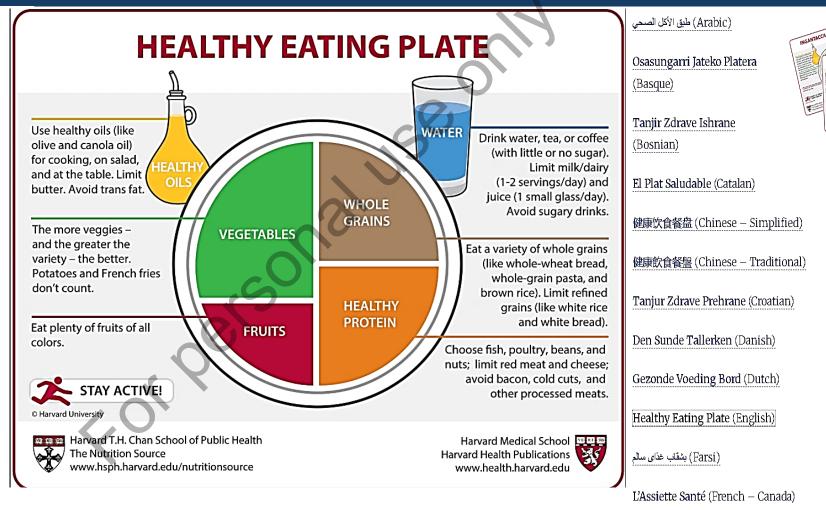
Ove	r the past few months:			
1.	How many times a week did you eat fast food meals or snacks?	Less than 1 time	1-3 times 1	4 or more times
2.	How many servings of fruit did you eat each day?	5 or more	3–4 _ 1	2 or less
3.	How many servings of vegetables did you eat each day?	5 or more	3–4	2 or less
4.	How many regular sodas or glasses of sweet tea did you drink each day?	Less than 1	1–2 _ 1	3 or more
5.	How many times a week did you eat beans (like pinto or black beans), chicken, or fish?	3 or more times	1-2 times	Less than 1 time
6.	How many times a week did you eat regular snack chips or crackers (not low-fat)?	1 time or less	2-3 times	4 or more times
7.	How many times a week did you eat desserts and other sweets (not the low-fat kind)?	1 time or less	2-3 times 1	4 or more times
8.	How much margarine, butter, or meat fat do you use to season vegetables or put on potatoes, bread, or corn?	Very little	Some 1	A lot
	SUMMARY SCORE (sum of all items):			

PROVIDE PATIENT SELF-MANAGEMENT SUPPORT EVIDENCE-BASED EVEN WHEN BRIEF, ESPECIALLY IF TAILORED

Provide Patient Counseling in Outpatients via Verbal Messages

Reinforce spoken messages
with EHR Smart Phrases,
EHR Diet Info,
and Other Print Materials
[Consider Harvard
Healthy Eating Plate
Available in 20 Languages]

Develop Cookshops, Videos





REDESIGN CARE DELIVERY TO INCORPORATE RDN IN CLINIC MANY BENEFITS

RDN services are evidence-based per meta-analysis.¹

Can be via In-person, Phone-Video, or Group Visits with or without Culinary Education

Reduces CVD Risk Factors via improved diet quality

Reduces downstream health costs

Conveys importance of diet to cardiac patients

Offers opportunity to refer food insecure patients to federal/local nutrition assistance

Sikand G, Cole RE, Handu D, deWaal D, Christald J, Johnson EQ, Arpino LM, Ekvall SM.
Jour Clin Lipid 2018;12:1113-1122.

TIPS

Get Administrator
Buy-in

Ask RDNs from Cardiac Rehab

Ensure Referrals are For Covered Patients

Encourage Telehealth if Covered

Encourage Group Visits-Cookshops

DEVELOP HOSPITAL WIDE DIET Q.I. INITIATIVES BROADENS IMPACT - EDUCATES COLLEAGUES



PLANT-BASED

The healthiest diets are those that are high in lentils, fruits and vegetables, beans, and whole grains. Eating these foods puts you on a path to lowering your risk of heart disease. We hope you enjoy this plant-based menu: for your health, for your future.

How many fruits and vegetables do I need to eat?

The American Heart Association recommends eight or more servings of fruits and/or vegetables per day. Eating more fruits and vegetables may help keep you at a healthy weight, live longer, and help lower your cholesterol and blood pressure.

What is a serving size?

- 4-5 servings per day 1 medium fruit
- (about the size of a baseball)
- · 1/4 cup dried fruit 1/2 cup fresh, frozen or canned fruit

Beverages

() HOT TEA

() APPLE JUICE

VEGETABLES:

- 4-5 servings per day
- 1 cup raw leafy vegetables (about the size of a small fist)
- · 1/2 cup cut-up raw or

() ORANGE JUICE () CRANBERRY JUICE

cooked vegetables 1/2 cup vegetable juke

() GRAPE JUICE

Breakfast

- () STEAMING OATMEAL With raisins, almonds and brown sugar
- OVERNIGHT OATS Oatmeal rolled oats, chia seeds and fruit
- CHEERIOS

Lunch

- WHOLE WHEAT TOAST With peanut butter or avocado spread
- () FRESH FRUIT PLATE With bran muffin

- () BLACK BEAN BURGER Hearty black bean patty over a warm bun with option of lettuce, tomato and onlon
- () HUMMUS TOMATO SANDWICH Fresh hummus over whole grain sandwich thins topped with tomato and spinach
- FRESH VEGETABLE WRAP Tomatoes, carrots, cucumbers, olives and lettuce wrapped in an avocado spread whole grain wrap

Dinner

- () VEGETABLE PASTA PRIMA VERA A mix of sautéed fresh vegetables in a light sauce over penne pasta
- () TOFU VEGETABLE STIR FRY Seasoned grilled tofu with sautéed green & red peppers, onions and broccoli
- BLACK BEANS & YELLOW RICE seasoned black beans over fluffy vellow rice



Chef Specials

- () SWEET POTATO & KALE OVER BARLEY
- () LENTIL BOLOGNESE OVER PASTA
- () CHICKPEA POTATO COCONUT CURRY





ELEMENTS OF HOSPITAL SYSTEM DIET INTERVENTIONS

Discharge Nutrition Education packet/materials

Nursing involvement in diet education

Required Dietician visit pre-discharge

Required viewing of nutrition education documentaries

Plant based menus

EHR-based diet screening for food insecurity

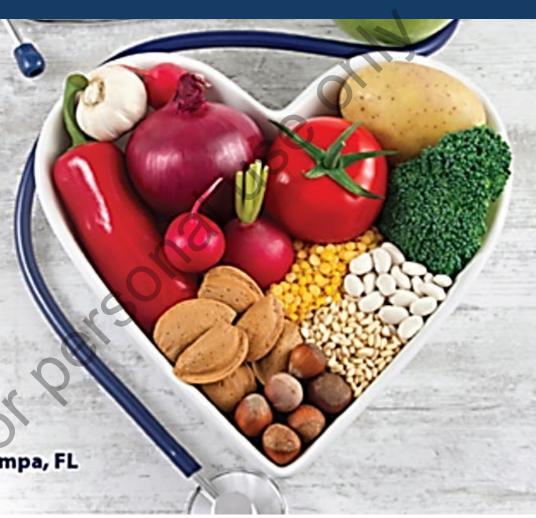
PROMOTE CULINARY EDUCATION-OUTREACH BENEFITS COMMUNITY, TRAINEES AND HEALTH SYSTEM



CULINARY MEDICINE CONFERENCE

When Food Becomes Medicine

February 29, 2020 | Epicurean Hotel | Tampa, FL CulinaryMed.cme.ufl.edu



Best way to teach nutrition is through experiential techniques

Invite patients, trainees and community members

Start small and build it bigger!

CHOOSE AN EVIDENCE-BASED DIETARY PATTERN

MEDITERRANEAN – VEGETARIAN/VEGAN – DASH – HEALTHY U.S.-STYLE



Emphasize

- Whole fruits
- Vegetables
- Whole grains
- Healthy proteins
 - Nuts, seeds, legumes
 - Fish and other seafood
 - Low-fat or fat-free dairy
 - Lean poultry
- **Healthy Fats**
- Non-tropical, plant oils

Limit

- Foods high in saturated and trans fatty acids
- Refined grains and added sugars
- Processed meats
- Highly processed foods
- Foods high in sodium
- Alcohol



ACC.25



