

Finding a path to healthy and sustainable diets for all

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https://eatforum.org/eat-lancet-commission/

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The EAT-*Lancet* Commission on Healthy Diets From Sustainable Food Systems

Food Planet Health

EAT/Lancet Commission

The Challenge: How to feed 9.8 billion people in 2050 a diet that is healthy and sustainable

https://www.thelancet.com/commissions/EAT

42.012-GLF





The scale of the challenge



2 billion people lack key micronutrients like iron and vitamin A

155 million children are stunted

2 billion adults are overweight or obese



Figure 4. Trends in age-adjusted obesity and severe obesity prevalence among adults aged 20 and over: United States, 1999–2000 through 2017–2018



¹Significant linear trend.

NOTES: Estimates were age adjusted by the direct method to the 2000 U.S. Census population using the age groups 20-39, 40-59, and 60 and over. Access data table for Figure 4 at: https://www.cdc.gov/nchs/data/databriefs/db360_tables-508.pdf#4. SOURCE: NCHS, National Health and Nutrition Examination Survey, 1999-2018.



Changes in Prevalence of Overweight/Obesity from 1980 to 2012



Ng, M, Lancet, 2014



Global Health Observatory data repository: Risk factors (http://apps.who.int/gho/data/node.main.A867?lang=en)

(Tsugane S, Eur J Clin Nutr 2020)

Death rates for cancer and heart disease among adults aged 45-64: United States, 1999-2017



(*Curtin SC, NVSS May 22, 2019*)

Trends in Obesity-Related Cancers by U.S. Birth Cohorts



(Sung H et al., Lancet Public Health, 2019)

Annual trends of life expectancy at birth (years) in selected countries



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https://www.oecd.org/health/health-data.htm



(Tsugane S, Eur J Clin Nutr 2020)

Effect of COVID on life expectancy



46.005



Geographical distribution of Alternate Healthy Eating Index in men and women aged 25 years or older in 190 countries/territories in 2017



(*D* Wang, *J* Nutr 2019)

Turning up the heat





A Climate Change Vicious Circle

Forests burn Permafrost melts Arctic icecap shrinks **Air conditioning increases**



EAT-Lancet Commission Approach

Define a healthy reference diet using the best available evidence

(controlled feeding studies, long-term cohort studies, randomized trials).

Define planetary boundaries for 6 key environmental systems and processes (GHG, cropland use, water use, nitrogen and phosphorus application, extinction rate).

Apply a global food systems modeling framework to analyze what combinations of readily implementable measures are needed to stay within food production boundaries while still delivering healthy diets by 2050.

Outline Strategies to achieve the changes needed to meet the goal of healthy diets from sustainable food systems for all by 2050.

Ratio of Polyunsaturated Fat to Saturated Fat (P/S Ratio) for Major Protein Sources



Type of Food



Meta-analysis assessing the effects of red meat on LDL cholesterol (mmol/L) from RCTs by type of comparison diet (Guasch-Ferre M et al. Circulation 2019)





Usual diet

Network meta-analysis of 66 randomized trials of food group effects on risk factors for cardiometabolic disease (LDL-C, TG, TC, HDL-C, FG, HbA1c, HOMA-IR, SBP, DBP, CRP)



14.080

(Schwingschakl L, Am J Clin Nutr 2017)

70

Nurses' Health Study (n=121,700)



1986 '88 '90 '92 '94 '96 '98 2000 '02 '04 '06 '08 '10 '12 '14 '16



Nurses' Health Study II (n=116,000)

1989 '91 '93'95 '97 '99 2001 '03 '05 '07 '09 '11 '13 '15



Investigators: Frank Speizer, Bernie Rosner, Meir Stampfer, Graham Colditz, David Hunter, JoAnn Manson, Eric Rimm, Edward Giovannucci, Alberto Ascherio, Gary Curhan, Charles Fuchs, Michelle Holmes, Donna Spiegelman, Frank Hu, Heather Eliassen, Lorelei Mucci, Jae Hee Kang, Andy Chan, Qi Sun, +



Relation of red meat to risk of Type 2 diabetes in NHS, NHSII, and HPFS (204,156 men and women, 13,759 incident cases)



Quintiles of red meat intake, servings/day

*Servings are average for 3 cohorts, considering 85 g/svg (3%) **N.B. Intake of red meat in "optimal diet" = 19 g/day (Micha R et al. PLoS One 2017)

Q4 (svgs=1.3) Q5 (SV8S=2.0)

(Pan A et al. AJCN 2011)

Types of Fat and Total Mortality

MV-adjusted results, isocaloric comparison is CHO





SCHOOL OF PUBLIC HEALTH

Powerful ideas for a healthier world



(Wang D et al. JAMA Intern Med 2016)

Kaplan-Meier Estimates of the Incidence of Outcome Events in the Total Predimed Study Population



(Estruch R et al. NEJM 2013)

Food group	Food subgroup	Reference diet (g/day)	Possible ran (g/day)
Whole Grains	All grains	232	0 to 60% of e
Tubers/Starchy Vegetables	Potatoes, cassava	50	0 to 100
Vegetables	All vegetables	300	200 to 60
Fruits	All Fruits	200	100 to 30
Dairy Foods	Dairy Foods	250	0 to 500
	Beef, lamb, pork	14	0 to 28
	Chicken, other poultry	29	0 to 58
	Eggs	13	0 to 25
Protein Sources	Fish	28	0 to 100
	Dry beans, lentils, peas	50	0 to 100
	Soy	25	0 to 50
	Nuts	50	0 to 75
Added fats	Unsaturated oils	40	20-80
	Saturated oils	12	0 to 7
Added sugars	All sweeteners	31	0 to 31



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Planetary Health Diet Bottom Line (Flexitarian)

Servings/Day of Animal Source Foods (Optional)





Base: Nuts, soy, beans, fruit, vegetables, whole grains, plant oils



28.049

Other (fish, poultry, eggs, red meat)



Reality Check: Protein Sources in **Traditional Mediterranean Diet**

Total of red meat plus poultry:

Greek men living in Crete in 1960s: 35 grams per day

(Willett WC et al. Am J Clin Nutr 1995)

EAT-Lancet reference diet: 43 grams per day





Mai Pham, STAR GINGER | LEMON GRASS KITCHEN



14.102

Nutrient Composition of Healthy Reference Diet (Daily Values)

Total calories	2500	
	Kcal	
Protein	90 g	
Protein	14%E	
Total fat	106 g	
Total fat	38%E	
Carbohydrate	317 g	
Carbohydrate	51%E	
Calcium	718 mg	
Iron	20 mg	
Magnesium	733 mg	
Potassium	4101 mg	
Zinc	14 mg	
Vitamin C	129 mg	
Vitamin B ₁	2.4 mg	
Vitamin B ₂	1.7 mg	
Niacin	26 mg	

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Vitamin B ₆	2.8 mg
Folate	741 mcg
Vitamin B ₁₂	2.3 mcg
Beta-carotene	9858 IU
Retinol equivalents	1068
Vitamin D	195 IU
Saturated fat	23 g
Saturated fat	8%E
Mono fat	45 g
Mono fat	16%E
Polyunsaturated fat	31 g
Polyunsaturated fat	11%E
ALA	2.5 g
ALA	1%E
EPA & DHA	200 mg
Cholesterol	125 mg

*Supplement needed if animal foods are lower

Current Intakes vs Planetary Health Diet



14.037



- East Asia Pacific
- **South Asia**
- Sub-Saharan Africa
- Latin America & Caribbean
- Middle East & North Africa
- Europe & Central Asia
- North America

Substantial Health Benefits

Approach 1 Comparative Risk	19%	or	11 adu
Approach 2 Global Burden of Disease	22.4%	or	1C adu
Approach 3 Empirical Disease Risk	23.6%	or	11 adu

1.1 million ult deaths per year

0.8 million ult deaths per year

I.6 million ult deaths per year

Environmental Effects per Serving of Food Produced

Greenhouse gases (g CO₂-eq/serving)





Scenarios for Control of Green House Gas Emission

Estimated Green House Gas Emissions (Gty)

Food Production Boundary

Baseline 2010

Business as Usual, 2050

Adopt Planetary Diet Targets

+ production improvement

+ 50% waste reduction

- 5.0
- 5.2
- 9.8
- 5.0
- 4.4
- 4.0









GHG Emissions: IPCC Path to less than 2° C Increase



Feeding 10 billion people a healthy diet within safe planetary boundaries is possible and will improve the health and well being of billions of people. This could allow us to pass onto our children a viable planet.



National Disease Prevention and Health Promotion Initiative

Schools Health Care Providers Work Sites Media **Physical Environment Food Environment** Monitoring & Evaluation **Economic Analysis/Policy**

Vision: Healthy Choices Are Easy Choices for All



www.neconinfo.org

Physicians can help promote healthy eating

- **1. Practice healthy eating themselves**
- 2. Track patient's BMI and weight change since age 20
- **3.** Assess patient's diet, even if crudely
- 4. Develop and offer a simple menu of options for weight control and improvement in diet quality
- 5. Engage directly in dietary enhancement with patients
- 6. Take advantage of teachable moments
- **7.** Consider expanding your influence, in your institution or beyond
- **8. Avoid nihilism about dietary change**



NUTRITIONAL EPIDEMIOLOGY





20.489

NATIONAL BESTSELLER

EAT, DRINK, AND BE HEALTHY

The Harvard Medical School Guide to Healthy Eating

UPDATED AND EXPANDED

WALTER C. WILLETT, MD, DRPH, WITH PATRICK J. SKERRETT CO-DEVELOPED WITH THE HARVARD T.H. CHAN SCHOOL OF PUBLIC HEALTH



- 1. What would be a healthier choice as a snack?
 - a. Walnuts
 - b. Low fat pretzel
 - c. Apple juice

2. What food is associated with the largest greenhouse gas emissions per serving? a. Chicken? b. Pork c. Milk d. Beef