Craig McDougall MD reports no relationship with industry to disclose relative to this CME activity.

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GOALS

- Recognize the economic impact of poor lifestyle choices
- Identify the commonalities about different weight loss techniques
- Understand how someone can eat more and lose weight
- Discuss long term health benefits of eating more whole plant foods

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PHOTOWONDER

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CDC

---
COST OF HEALTH

- $3.2 trillion dollars spent per year on healthcare
- 86% goes toward treating those with chronic disease
- 7 in 10 deaths are caused by chronic disease
- Most chronic conditions are often preventable

Exhibit 1. Health Care Spending as a Percentage of GDP, 1980–2013

Exhibit 5. Diagnostic Imaging Supply and Use, 2013
ABSOlute RISK REDuCTION FOR PRIMARY PREvENTION

The effects of lowering LDL cholesterol with statin therapy in people at low risk of vascular disease: meta-analysis of individual data from 27 randomised trials

Lancet 2012; 380: 581–90

Figure 5. Effects on any death per 1.0 mmol/L reduction in LDL cholesterol at different levels of risk, by history of vascular disease and overall

<table>
<thead>
<tr>
<th>1-year MRR risk at baseline</th>
<th>Deaths (%) per annum</th>
<th>RR (CI per 1.0 mmol/L reduction in LDL cholesterol)</th>
<th>Trend test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participants without vascular disease</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;5%</td>
<td>184 (1.96)</td>
<td>177 (1.86)</td>
<td>0.94 (0.71 – 1.26)</td>
</tr>
<tr>
<td>&gt;5% -&lt;10%</td>
<td>371 (2.77)</td>
<td>446 (2.98)</td>
<td>0.85 (0.60 – 1.20)</td>
</tr>
<tr>
<td>&gt;10% -&lt;20%</td>
<td>701 (1.86)</td>
<td>779 (1.98)</td>
<td>0.88 (0.76 – 1.02)</td>
</tr>
<tr>
<td>&gt;20% -&lt;30%</td>
<td>382 (1.53)</td>
<td>348 (1.75)</td>
<td>1.06 (0.96 – 1.16)</td>
</tr>
<tr>
<td>&gt;30%</td>
<td>402 (1.06)</td>
<td>402 (1.16)</td>
<td>0.94 (0.70 – 1.25)</td>
</tr>
<tr>
<td>Subtotal</td>
<td>1794 (1.33)</td>
<td>1842 (1.42)</td>
<td>0.83 (0.58 – 1.17)</td>
</tr>
</tbody>
</table>

Participants with vascular disease

| 5% -<10%                  | 40 (3.19)           | 67 (5.15)                                     | 1.60 (1.15 – 2.22) |
| >5% -<10%                 | 40 (3.19)           | 64 (5.03)                                     | 1.50 (0.99 – 2.26) |
| >10% -<20%                | 144 (2.97)          | 206 (2.79)                                    | 1.20 (0.94 – 1.53) |
| >20% -<30%                | 232 (2.62)          | 284 (2.95)                                    | 1.20 (0.98 – 1.48) |
| >30%                      | 573 (2.47)          | 501 (2.31)                                    | 1.08 (0.93 – 1.26) |
| Subtotal                  | 6074 (2.83)         | 7165 (2.99)                                   | 0.90 (0.67 – 1.23) |

NNT 384

STATIN USERS DIET

PERCEPTION OF EFFICACY


JUST LOSE WEIGHT!

“METABOLIC ADVANTAGE”

Gastroenterology 2007;132:1178-1179

Obesity Energetics: Body Weight Regulation and the Effects of Diet Composition

A CALORIE IS A CALORIE
WEIGHT LOSS COMPARISON

Comparison of Weight Loss Among Named Diet Programs in Overweight and Obese Adults
A Meta-analysis

• Braden C., Johnston, PhD, Steven Karanja, MSc, Kristin Randskopf, MPH, Ping Wu, MBBCh, MSc; Pediatric Nephrology, BM
• Reed A., Samaranah, MD; Geoff C. R., BA, BS, PhD; Aaron W. Bass, DC, PhD; Kristian Thorkel, PhD

HEALTH PROMOTION

GOOD FOOD \(\Rightarrow\) GOOD HEALTH
GOOD LIFE

FOUR PILLARS OF HEALTH

Nutrition
Movement
Rest
Social

5 HEALTHY HABITS

✓ >5 servings of fruits and veggies per day
✓ >12 times per month regular exercise
✓ Maintaining a healthy weight (BMI 18.5 to 29.9)
✓ Moderate alcohol consumption (up to 1 per day women and 2 per day men)
✓ Not smoking
### HOW MANY PEOPLE MEET ALL 5?

**Clinical Research Study**

**Adherence to Healthy Lifestyle Habits in US Adults, 1988-2006**

Dana E. King, MD, MS, Arch G. Malpass III, PhD, Mark Corsoutta, BS, Charles J. Everett, PhD  
Department of Family Medicine, Medical University of South Carolina, Charleston.

<table>
<thead>
<tr>
<th>Table 1: Characteristics of Adult Men and Women Ages 45-74 Years</th>
<th>1994-1996</th>
<th>1996-2000</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Total</td>
</tr>
<tr>
<td>BMI (kg/m²) (%)</td>
<td>25.2</td>
<td>24.8</td>
</tr>
<tr>
<td>≥1500 mg/d</td>
<td>25.2</td>
<td>24.8</td>
</tr>
<tr>
<td>Physical activity (%)</td>
<td>31.2</td>
<td>31.5</td>
</tr>
<tr>
<td>Sleep (%)</td>
<td>31.2</td>
<td>31.5</td>
</tr>
<tr>
<td>Smoking (%)</td>
<td>31.2</td>
<td>31.5</td>
</tr>
<tr>
<td>Alcohol (%)</td>
<td>31.2</td>
<td>31.5</td>
</tr>
<tr>
<td>• Never</td>
<td>31.2</td>
<td>31.5</td>
</tr>
<tr>
<td>Smoking (%)</td>
<td>31.2</td>
<td>31.5</td>
</tr>
<tr>
<td>Alcohol (%)</td>
<td>31.2</td>
<td>31.5</td>
</tr>
</tbody>
</table>

**American Heart Association 7 Healthy Habits**

1) Smoking status  
2) BMI  
3) Physical activity  
4) Diet (Fruits & Veggies)  
5) Total serum cholesterol  
6) BP  
7) Fasting blood glucose

**Trends in Cardiovascular Health Metrics and Associations With All-Cause and CVD Mortality Among US Adults**

Daniel Tang, MD  
Kwan E. Coughlin, PhD  
W. Dean Rader, MD, PhD  
Y. Hsiang, MD, PhD  
F. Leong-Manning, MD, PhD  
E. L. Gordon, MD, PhD  
S. S. Johnson, MD, PhD  
R. D. W. Wannamethee, MD  
R. W. Blaha, MD, PhD  
K. B. Hu, MD, PhD

**Centers** Recent recommendations from the American Heart Association are to improve cardiovascular health by encouraging the general population to meet 7 cardiovascular health metrics: not smoking, being physically active, having normal blood pressure, blood glucose and total cholesterol levels, and eating a diet rich in fruits and vegetables.

**Objective:** To examine trends in cardiovascular health metrics and to estimate joint associations and population attributable fractions of these metrics in relation to all-cause and cardiovascular disease (CVD) mortality risk.

Diet #1 Risk of Death and Chronic Disease

Lifestyle Medicine in Practice

- Minimal education in most medical schools today regarding human nutrition
  - Less than 25 hours on average
- 34% of obese patients have never been told by their doctor they are obese
  - Medical Provider support improves weight loss

“Doc, I Eat Healthy”

75 percent of Americans say they eat healthy — despite evidence to the contrary

Stages of Change
DISEASES ASSOCIATED WITH WESTERN LIFESTYLE

- Allergies
- Arthritis
- Atherosclerosis
- Diabetes
- Gout
- Hypertension
- Kidney Failure
- Kidney Stones
- Multiple Sclerosis
- Obesity
- Osteoporosis
- Strokes
- Appendicitis

AM I GETTING ENOUGH?

- Protein
- Calcium
- Omega-3
- Vitamins A, B, C, D, E, K
- Fiber
- Iron
- etc.
THE SALAD TRAP

PORTION CONTROL

MORE

DISPLACEMENT

Effects of a high fiber bread diet on weight loss in college-age males

Olej Mikkelson, Ph.D., D. Wolodkin, Ph.D., Robert H. Carey, Ph.D.,
Stanley T. Tezcon, J. C. Cabot, Ph.D., and Ronald G. Ph.D.

ABSTRACT - Intrastates enrolling in a weight reducing program often experience hunger

and fatigue, and often find it difficult to adhere to the diet. This study was conducted to

assess the effects of consuming a diet that included a high fiber bread on weight loss and

self-reported hunger sensations. The study was conducted in a randomized, controlled

manner with subjects being divided into two groups. The first group consumed a diet that

included a high fiber bread, while the second group consumed a diet that included a

low fiber bread. The results of the study indicated that the group consuming the high fiber

bread lost an average of 2.5 kg more than the group consuming the low fiber bread.

SATISFACTION IS KEY

A satiety index of common foods

SHA Holt1, JC Brand Miller2, P Pesce2 and E Farmaklidis3

1Human Nutrition Unit, Department of Biochemistry, The University of Sydney, 2School of Mathematical Sciences, The University of Technology, Sydney and 3Rohlig’s Pty Ltd, Australia

SATIETY INDEX SCORE (%)

BEANS: THE MAGICAL FOOD

Meals based on vegetable protein sources (beans and peas) are more satiating than meals based on animal protein sources (veal and pork) — a randomized cross-over meal test study.

Marlene D. Kristensen1,2, Nathalie T. Bendtsen1, Sheena M. Christensen1, Anne Astrup2 and Anne Raben4

1Department of Nutrition, Exercise and Sports, Faculty of Science, University of Copenhagen, Copenhagen, Denmark, 2Research Nordic AB, Bagno, Denmark, 3Novo Nordisk AA, Bagno, Denmark and 4Rohlig’s Pty Ltd, Australia

“Vegetable-based meals (beans/peas) influenced appetite sensations favorably compared to animal-based meals (veal/pork) with similar energy and protein content, but lower fiber content.”

The Atlantic

If Everyone Ate Beans Instead of Beef

With one dietary change, the U.S. could almost meet greenhouse-gas emission goals.

JAMES HAMBLY | AUG 2, 2017 | HEALTH
49  Doctor turns tables on what¹ good food vs. what's not so good

LEGUMES AND CARDIOVASCULAR DISEASE

Legume Consumption and Risk of Coronary Heart Disease in US Men and Women

NIHANES I Epidemiologic Follow-up Study

Lydia A. Razana, PNG; Jiang X, MD; PhD; Laverne G. Ogden, MS; Catherine Loris, PhD, MS; Sana Hayatnur, PhD, MPH; Leon Myers, PhD; Paul K. Whelton, MD, PhD.

Original Article

Legumes: the most important dietary predictor of survival in older people of different ethnicities

Irime Darmadi-Blackberry, MD, PhD²; Mark L. Wahiqvist, MD, PhD²; Antigone Kousis-Biancon, MD²; Hertil Steen, MD, PhD²; Wolfpaj Lukito, MD, PhD²; Yoshiminta Horie, MD³ and Kacyno Horie, MD³.

¹Public Health Division, National Aged Research Institute, Melbourne, Australia
²Laus Pacific, Health & Human Sciences, Monash Asia Institute, Monash University, Australia
³Department of Geriatric Medicine, Goteborg University, Goteborg, Sweden
⁴Departments of Internal Medicine, University of Indonesia, Jakarta, Indonesia
⁵School of Health and Social Sciences, Nagoya City University, Nagoya, Japan
⁶Faculty of Home Economics, Aichi Gakushin, Aichi, Japan

"...a higher legume intake is the most protective dietary predictor of survival amongst the elderly, regardless of ethnicity."

WHOLE GRAINS AND MORTALITY

Whole grain consumption and risk of cardiovascular disease, cancer, and all cause and cause specific mortality: systematic review and dose-response meta-analysis of prospective studies

Dagfinn Asma,¹ Naufa Keum,² Edward Giovannucci,²,³,⁴ Lars T.Filnes,⁵ Paolo Boffetta,⁶ Darren C Greenwood,⁷ Serena Tomstbu,⁷ Lars Vatten,⁷ Elko Riboli,⁷ Teresa Koral⁷.
GLUTEN-FREE CRAZE

Long term gluten consumption in adults without celiac disease and risk of coronary heart disease: prospective cohort study

Benjamin Lebwohl,1,2,3 Yitao Cao,4,5 Geng Zong,5 Frank B Hu,3,4 Peter H R Green,3,4 Alfred I Neugut,1,2 Erick B Bermann,5,6 Laura Sampson1 Lauren W Doughterty,7 Edward Giovannucci1,8,9 Walter C Willett,1,8 Qi Sun,1,8 Andrew T Chan1,8

BMJ 2017;357:j1892

Eat More Weigh Less:

CALORIE DENSITY

WEIGHT OF FOOD VS CALORIE DENSITY

WE EAT 2.5–5 LBS OF FOOD PER DAY
EAT MORE TO LOSE WEIGHT

1 cup of jelly beans
877 Calories
0.5 g of fiber

1 cup of cooked pinto beans
244 Calories
15 g of fiber
97% OF AMERICANS HAVE INADEQUATE INTAKE OF DIETARY FIBER, <30G

Mean Fiber Consumption

Dietary fibre intake and mortality from cardiovascular disease and all cancers: A meta-analysis of prospective cohort studies

Youngmi Kim, Youjin Je*

Department of Preventive Medicine, Pusan National University, Pusan, Republic of Korea

Received 27 May 2015; revised version received 25 August 2015; accepted 16 September 2015

Keywords: Dietary fibre intake, cardiovascular disease, all cancers, mortality

...high fiber intake, especially fibre from cereals, is significantly associated with lower mortality from CVD, CHD, and all cancers.

1 cup of cooked pinto beans
244 Calories
15 g of fiber

+ 2 tablespoons of olive oil
239 Calories
0 g of fiber

483 Calories
15 g of fiber

Differing effects of high-fat or high-carbohydrate meals on food hedonics in overweight and obese individuals

Mark Hopkins1,2, Catherine Gibbons3,4, Phillipa Caudwell5,6, John E. Blundell7,8, and Graham Weightman1,2

1School of Sport and Human Activity, Faculty of Health and Wellbeing, Staffordshire University, Stafford ST19 5SH, UK
2Centre for Obesity and Human Nutrition, University of Loughborough, Loughborough LE11 3TU, UK
3School of Psychology, University of Leeds, Leeds LS2 9JT, UK
4Department of Psychology, University of Oxford, Oxford OX1 3UD, UK
5Department of Psychology, University of Cambridge, Cambridge CB2 3NT, UK
6Institute for Social and Economic Research, University of Essex, Colchester CO4 3SQ, UK
7Nutritional Epidemiology Unit, MRC Human Nutrition Research, Cambridge CB2 2QE, UK
8Department of Psychology, University of York, York YO10 5DD, UK

Received 19 October 2015; revised version received 28 December 2015; accepted 17 February 2016; first published online 25 March 2016

“When consumed under ad libitum and isoenergetic feeding conditions, high fat, low carbohydrate foods have a weaker action on satiety and promote greater energy intake compared with low fat, high carbohydrate foods.”
Article

Link between Food Energy Density and Body Weight Changes in Obese Adults

Małgorzata Stelmach-Morawska\textsuperscript{1,2,3}, Tomasz Bogucki\textsuperscript{1}, Jastyna Dobrowolska-Szwejk\textsuperscript{1}, Anna Różycka\textsuperscript{1}, Jarosław Walkowiak\textsuperscript{2}, Agnieszka Wojtaczko-Koszutka\textsuperscript{1}, Paweł Zagrocki\textsuperscript{1}, Angelika Berchtold\textsuperscript{4}, Marek Manasia\textsuperscript{5} and Heiner Römer\textsuperscript{1}

1 Department of Epidemiology, German Institute of Human Nutrition, Potsdam-Berlin, Nuthetal, 14991, Germany. hrom@iwh.de
2 Department of Pediatric Gastroenterology and Metabolic Disease, Pomeranian University of Medical Sciences, Pomorska 49/7, Gdańsk, gks.mkm@pum.pomorska.pl
3 Department of Food Chemistry and Nutrition, Medical College Jagiellonian University, Krakow, 30-688, Poland, woldakim@wp.pl (C.E.L.), jastyna.dobrowolska@mpw.gov.pl (D.R.), m.stelmach-morawska@mpw.gov.pl (D.R.), m.stelmach-morawska@e-mail.poznan.pl (D.R.), m.stelmach-morawska@iwh.de (D.R.), m.stelmach-morawska@mpw.poznan.pl (D.R.)
4 Department of Human Nutrition, Warsaw University of Life Sciences-GWIES, Warsaw, 02-776, Poland, a.zagrocki@pg.waw.pl
5 German Nutrition Society, Rhöntal 9, 63178, Germany, hrom@iwh.de

Correspondence: m.stelmach-morawska@e-mail.poznan.pl; Tel. +48 72 306 8072; Fax: +48 72 306 46266

Restrict: 12 March 2016; Accepted: 12 April 2016; Published: 20 April 2016

“…consumption of foods with low energy density is associated with a beneficial decrease of body weight in obese subjects.”

Original Research: Brief

Association between Dietary Energy Density and Incident Type 2 Diabetes in the Women’s Health Initiative

Melanie D. Hingle, MD, MPH, RN; Berg C. Wertheim, MD, Marian L. Neufeld, PhD, RN; Leidy Y. Teitel, PhD, RN; Sarah R. Howard, PhD, Anne Johnson, MD, MPH; Dunita L. Mehta, MD, MPH; Lawrence T. Phillips, MD, MPH; Gretel Sims, MD, PhD, San Terri, MD, MBA; Emily J. Wine, PhD; Cynthia A. Thomson, PhD, RN

“…higher baseline dietary energy density was prospectively associated with incident diabetes risk in post menopausal women.”

Research

Association between Dietary Energy Density and Obesity-Associated Cancer: Results from the Women’s Health Initiative

Cynthia A. Thomson, PhD, BD, Tracy E. Crane, PhD, BD; David D. Garcia, PhD, BD; Berg C. Wertheim, MD; Melanie D. Hingle, MD, MPH, RN; Linda Frassetto, PhD, Wendie Davis, PhD, BD; Thomas Haiman, MD, MPH, BD; Ellen J. Frisch, MD, MPH; Rowan T. Chasenski, PhD; Wendy L. Thompson, PhD, RN

“Among normal weight women, higher dietary energy density may be a contributing factor for obesity related cancers.”

What does 200 calories look like?
<table>
<thead>
<tr>
<th>Food</th>
<th>Calories</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peanut butter</td>
<td>31g</td>
</tr>
<tr>
<td>Bacon</td>
<td>37g</td>
</tr>
<tr>
<td>Mars bar</td>
<td>45g</td>
</tr>
<tr>
<td>Cheddar Cheese</td>
<td>50g</td>
</tr>
<tr>
<td>Chocolate Donut</td>
<td>53g</td>
</tr>
<tr>
<td>Potato</td>
<td>286g</td>
</tr>
<tr>
<td>Raspberries</td>
<td>377g</td>
</tr>
<tr>
<td>Cherry tomatoes</td>
<td>1.11 kg</td>
</tr>
<tr>
<td>Spinach</td>
<td>869g</td>
</tr>
</tbody>
</table>

**WHAT DOES 2000 CALORIES LOOK LIKE?**

New York Times

- December 22, 2014
- BY JOSH BARRO, TROY GRIGGS, DAVID LEONHARDT AND CLAIRE CAIN MILLER
- PHOTOGRAPHS BY TONY CENICOLA
SO, WHAT SHOULD PEOPLE EAT INSTEAD?

[Images of healthy meals]
BIG CHANGES LEAD TO RESULTS FAST

RESEARCH
Effects of 7 days on an ad libitum low-fat vegan diet: the McDougall Program cohort

John McDougall,1 Laurie E Thomas,2 Craig McDougall,1 Gavin Maloney1, Bradley Saul3, John S Finnell3, Kelly Richardson3 and Katein M Petrecon3

WEIGHT LOSS 7 DAYS

N=1615

TOTAL CHOLESTEROL REDUCTION

N=1615

BLOOD PRESSURE REDUCTION

N=1615
**SUSTAINABILITY**

![Graph showing sustainability](image)

<table>
<thead>
<tr>
<th>Group</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
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<tbody>
<tr>
<td>Control</td>
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<tr>
<td>Low Fat diet</td>
<td>32</td>
<td>31</td>
<td>26</td>
<td>30</td>
<td>28</td>
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<td>26</td>
<td>25</td>
<td>26</td>
<td></td>
</tr>
</tbody>
</table>

**WEIGHT LOSS**

Original Article

The BROAD study: A randomised controlled trial using a whole food plant-based diet in the community for obesity, ischaemic heart disease or diabetes

N Weight, L. Nishiyama, M. Sabin, E. Duncan and P. McDougall

**LEADING CAUSES OF DEATH IN US**

![Graph showing leading causes of death](image)

**PLANTBASEDRESEARCH.ORG**

Download their free guide to incorporating more plant-based foods into your diet.
Association Between a DASH-Like Diet and Mortality in Adults With Hypertension: Findings From a Population-Based Follow-Up Study

Ardis Parsh1,2, Stuart R. Pirtle2, and Sundar Natarajan1,3

Mediterranean Diet, Lifestyle Factors, and 10-Year Mortality in Elderly European Men and Women
The HALE Project

Context: Dietary patterns and lifestyle factors are associated with mortality from all causes, coronary heart disease, cardiovascular diseases, and cancer, but few studies focused on Mediterranean diet patterns. The present study aimed to investigate the relationship between diet, lifestyle, and all-cause mortality in elderly European men and women.

Methods: A longitudinal study of elderly individuals in Europe (EPIC-IT project), comprising individuals residing in the South of Italy on a Mediterranean diet and the elderly of a Concerned Action (GIMNA) and the Roland, Italy, by

LONG TERM BENEFITS

A provegetarian food pattern and reduction in total mortality in the Prevención con Dieta Mediterránea (PREDIMED) study14

Miguel J. Martinez-González, Ana, Selma Stano, Dedemus Castilla, Iliana Santos, Emilio Ro, Fernando Arter, Enrique Gómez-García, Miguel J. Pint, Ross M. Lemario-Montes, Reinaldo Sánchez, Joan Lupers, Dato Sanni, Jef, and the PREDIMED Group

“Among omnivorous subjects at high cardiovascular risk, better conformity with a food pattern that emphasized plant-derived foods was associated with a reduced risk of all-cause mortality.”
Healthful and Unhealthful Plant-Based Diets and the Risk of Coronary Heart Disease in U.S. Adults

“Higher intake of a plant-based diet index rich in healthier plant foods is associated with substantially lower coronary heart disease risk, whereas a plant-based diet that emphasizes less healthy plant foods is associated with higher coronary heart disease risk.”

SUMMARY

- Most of health care expenditure is spent on chronic conditions which are largely preventable with a healthy lifestyle
- Weight loss can be achieved through multiple different strategies, which produce similar results over 1 year
- Lowering dietary caloric density allows someone to eat more food and still lower caloric intake
- Eating more whole plant foods over long periods of time may lower risk of cardiovascular disease, diabetes, obesity, cancer and overall mortality

QUESTIONS?