The Power of Lifestyle medicine in Managing and Reversing Chronic Disease

Rajiv Misquitta MD, FACP, DipABLM, CHEF
The Permanente Medical Group
Disclaimer

The views and interpretations of data that are presented here are my own and do not necessarily represent any particular organization.
AHA Reccs at the time

- Less than 30% calories from fat
- Fish – At least two 3.5 oz a week
- Fiber rich whole grains – at least 1 oz equivalent a day

other

- Processed meats – less than 2 servings a week
Age-Adjusted Prevalence of Obesity and Diagnosed Diabetes Among U.S. Adults Aged 18 Years or older

Obesity (BMI ≥30 kg/m²)

1994

2000

2010

Diabetes

1994

2000

2010

• Someone has a heart attack every 34 seconds

• Every 60 seconds someone dies from event related to heart disease

• Heart disease is the #1 killer of women
Heart Disease Facts (CDC)

- Heart disease is the leading cause of death for men and women in the US.

- Every year 735,000 Americans have a heart attack.

- 647,000 Americans die from heart disease every year (1 in 4).

- Heart disease costs the US $219 billion each year.
The average restaurant meal today is more than four times larger than in the 1950s.
Chocolate covered Bacon
$2.99 each
Evolution of Lifestyle

RM

2020
Reversal Diet – Lifestyle Heart Trial
Dr. Dean Ornish

- Less than 10% calories (fat)
- Excludes avocados, nuts, seed
- High in fiber
- Excludes all oil except nonfat milk
- Allows egg whites
- Excludes caffeine
- Allows moderate use of salt and sugar
- Is not restricted in calories
From: Intensive Lifestyle Changes for Reversal of Coronary Heart Disease

- Figure Legend:

- Figure 1. Mean percentage diameter stenosis in treatment and control groups at baseline, 1 year, and 5 years. Error bars represent SEM; asterisk

From: Intensive Lifestyle Changes for Reversal of Coronary Heart Disease

- Figure Legend:

- Figure 2.—Changes in percentage diameter stenosis by 5-year adherence tertiles for the experimental group

Updating a 12-Year Experience with Arrest and Reversal Therapy For Coronary Heart Disease (An Overdue Requiem for Palliative Cardiology)

Esselstyn CB Jr. The American Journal of Cardiology 1999 Aug 1; 84:339-34

<table>
<thead>
<tr>
<th>Test</th>
<th>5 years</th>
<th>12 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total cholesterol</td>
<td>137 mg/dl</td>
<td>145 mg/dl</td>
</tr>
<tr>
<td>HDL</td>
<td>37 mg/dl</td>
<td>38 mg/dl</td>
</tr>
<tr>
<td>LDL</td>
<td>76 mg/dl</td>
<td>82 mg/dl</td>
</tr>
<tr>
<td>Triglycerides</td>
<td>143 mg/dl</td>
<td>143 mg/dl</td>
</tr>
</tbody>
</table>
Diabetes Facts (CDC)

- More than 34 million people in the US have diabetes
- Diabetes is the 7th leading cause of death in the US
- In the last 20 years the number of adults with diabetes in the US has doubled.
- 90-95% of these cases are type 2 diabetes
99 People with Type 2 diabetes - 22 weeks duration
49 followed a vegan diet low in fat with no limits on carbohydrates

After 14 weeks - After meal calorie burn was 16% higher (thermic effect of food)
Increased sensitivity to glucose
Calories released as body heat rather than stored as fat

80% or more of all healthcare spending in the U.S. is tied to the treatment of conditions rooted in poor lifestyle choices. Chronic diseases and conditions—such as hypertension, heart disease, stroke, type 2 diabetes, obesity, osteoporosis, multiple types of cancer—are among the most common, costly and preventable of all health conditions.
Lifestyle Medicine is the use of a whole food, plant-predominant dietary lifestyle, regular physical activity, restorative sleep, stress management, avoidance of risky substances and positive social connection as a primary therapeutic modality for treatment and reversal of chronic disease.
What Lifestyle Medicine is not:
  Alternative Medicine
  Complementary Medicine
  Integrated Medicine
  Homeopathic Medicine
  Herbal medicine
  Functional Medicine
• **Whole food** describes natural foods that are not heavily processed. That means whole, unrefined, or minimally refined ingredients.

**Plant-based** means food that comes from plants and doesn’t include animal ingredients such as meat, milk, eggs, or honey.

A whole-food, plant-based diet lets you meet your nutritional needs by focusing on natural, minimally-processed plant foods.
From SSVMS Medical Museum
Focus on the root cause of disease.
Association Between Plant and Animal Protein Intake and Overall and Cause-Specific Mortality

- July 13, 2020
- Jiaqi Huang, PhD; Linda M. Liao, PhD, MPH; Stephanie J. Weinstein, PhD; et al.

Prospective cohort study which included 237,036 men and 179,068 women (1995 -2011)
• Replacement of 3% energy from animal protein with plant protein –
• 10% reduced overall mortality in men and women
• 11% lower risk in men and 12% lower risk in women of cardiovascular mortality

• (Attributable to substitution of plant protein for egg protein and red meat protein)
Comparative effectiveness of plant-based diets for weight loss: A randomized controlled trial of five different diets. Nutrition. 2015 Feb; 31 (2) 350-358

Percent Weight Loss in 6 months

- Vegan diet – Largest reduction -7.7%
- Vegetarian – slightly over 6%
- Pesco-Vegetarian – 3.2%
- Semi-Vegetarian – 3.2%
- Omnivorous group – 3.1%
Lifestyle Medicine: A Brief Review of Its Dramatic Impact on Health and Survival

Balazs I Bodai, Therese E Nakata, William T Wong, Dawn R Clark, Steven Lawenda, Christine Tsou, Raymond Liu, Linda Shiue, Neil Cooper, Michael Rehbein, Benjamin P Ha, Anne McKeirnan, Rajiv Misquitta, Pankaj Vij, Andrew Klonecke, Carmelo S Mejia, Emil Dionysian, Sean Hashmi, Michael Greger, Scott Stoll, Thomas M Campbell
Steps in the pathogenesis of inflammation leading to progression of chronic diseases.

• “All disease begins in the gut.”

• - Hippocrates
Protein?
Calcium and vitamin D

- Fracture Risk similar to vegetarians
- tofu, mustard and turnip greens, bok choy, and kale
GRANTS
HYGIENIC
CRACKERS

SOLD IN PACKAGES ONLY

A DAILY REGULATOR

A WEEK'S DOSE WILL CONVENE YOU. IT IS ESSENTIAL
A PLACE OF BEARD WHERE BEEP KEEN TO IN
STOP DISEASES. RECOMMENDED AND TREATED BY
MANY LEADING PHYSICIANS AND DENTISTS.

MANUFACTURED AND SOLD ONLY TO THE
HYGIENIC HEALTH FOOD CO., INC.
RETAIL AND WHOLESALE

SOLD IN PACKAGES ONLY
Fiber Recommendation

According to the Institute of Medicine (IOM)

(Adults 50 years and younger)
Women need 25 gms a day
Men need 38 gms a day

Average adult eats only 15gms a day
• Ketogenic Diet

• Paleo Diet
Low-Carbohydrate Diets and All-Cause Mortality: A Systematic Review and Meta-Analysis of Observational Studies

Hiroshi Noto\textsuperscript{1,2}, Atsushi Goto\textsuperscript{1,2}, Tetsuro Tsujimoto\textsuperscript{1,2}, Mitsuhiko Noda\textsuperscript{1,2}

\textsuperscript{1}Department of Diabetes and Metabolic Medicine, Center Hospital, National Center for Global Health and Medicine, Tokyo, Japan. \textsuperscript{2}Department of Diabetes Research, Diabetes Research Center, Research Institute, National Center for Global Health and Medicine, Tokyo, Japan.

Abstract

Objective: Low-carbohydrate diets and their combination with high-protein diets have been gaining widespread popularity to control weight. In addition to weight loss, they may have favorable short-term effects on the risk factors of cardiovascular disease (CVD). Our objective was to elucidate their long-term effects on mortality and CVD incidence.

Data sources: MEDLINE, EMBASE, ISI Web of Science, Cochrane Library, and ClinicalTrials.gov for relevant articles published as of September 2012. Cohort studies of at least one year’s follow-up period were included.

Review methods: Identified articles were systematically reviewed and those with pertinent data were selected for meta-analysis. Pooled risk ratios (RRs) with 95% confidence intervals (CIs) for all-cause mortality, CVD mortality and CVD incidence were calculated using the random-effects model with inverse-variance weighting.

Results: We included 17 studies for a systematic review, followed by a meta-analysis using pertinent data. Of the 272,216 people in 4 cohort studies using the low-carbohydrate score, 15,981 (5.9%) cases of death from all-cause were reported. The risk of all-cause mortality among those with high low-carbohydrate score was significantly elevated: the pooled RR (95% CI) was 1.31 (1.07–1.59). A total of 3,214 (1.3%) cases of CVD death among 249,272 subjects in 3 cohort studies and 5,081 (2.3%) incident CVD cases among 220,691 people in different 4 cohort studies were reported. The risks of CVD mortality and incidence were not statistically increased: the pooled RRs (95% CIs) were 1.10 (0.98–1.24) and 0.98 (0.78–1.24), respectively. Analyses using low-carbohydrate/high-protein score yielded similar results.

Conclusion: Low-carbohydrate diets were associated with a significantly higher risk of all-cause mortality and they were not significantly associated with a risk of CVD mortality and incidence. However, this analysis is based on limited observational studies and large-scale trials on the complex interactions between low-carbohydrate diets and long-term outcomes are needed.
Low Carbohydrate Diet From Plant or Animal Sources and Mortality Among Myocardial Infarction Survivors

Shanahan Li, MD, MSc, ScD; Alan Flint, MD, DrPH; Jennifer K. Pai, ScD; John P. Forman, MD, MSc; Frank B. Hu, MD, PhD; Walter C. Willett, MD, DrPH; Kathryn M. Rexrode, MD, MPH; Kenneth J. Mukamel, MD, MPH; Eric B. Rimm, ScD

Background—The healthiest dietary pattern for myocardial infarction (MI) survivors is not known. Specific long-term benefits of a low-carbohydrate diet (LCD) are unknown, whether from animal or vegetable sources. There is a need to examine the associations between post-MI adherence to an LCD and all-cause and cardiovascular mortality.

Methods and Results—We included 2258 women from the Nurses’ Health Study and 1840 men from the Health Professional Follow-Up Study who had survived a first MI during follow-up and provided a pre-MI and at least 1 post-MI food frequency questionnaire. Adherence to an LCD high in animal sources of protein and fat was associated with higher all-cause and cardiovascular mortality (hazard ratios of 1.33 [95% CI: 1.06 to 1.65] for all-cause mortality and 1.51 [95% CI: 1.09 to 2.07] for cardiovascular mortality comparing extreme quintiles). An increase in adherence to an animal-based LCD prospectively assessed from the pre- to post-MI period was associated with higher all-cause mortality and cardiovascular mortality (hazard ratios of 1.30 [95% CI: 1.03 to 1.65] for all-cause mortality and 1.53 [95% CI: 1.10 to 2.13] for cardiovascular mortality comparing extreme quintiles). An increase in adherence to a plant-based LCD was not associated with lower all-cause or cardiovascular mortality.

Conclusions—Greater adherence to an LCD high in animal sources of fat and protein was associated with higher all-cause and cardiovascular mortality post-MI. We did not find a health benefit from greater adherence to an LCD overall after MI. (J Am Heart Assoc. 2014;3:e001169 doi: 10.1161/JAHA.114.001169)

Key Words: low-carbohydrate diet • mortality • myocardial infarction • secondary prevention
Case Study #1
70-year-old diabetic man period of 8 months

- 285 lbs to 235 lbs
- 50 lbs weight loss
- BMI drop: 40.9 o 36.4
- HgbA1c : 9.1 to 5.5
- Reversal of Diabetes
South Sacramento Kaiser Permanente Medical Center
Department of Lifestyle Medicine
• Health Achieved through Lifestyle Transformation (H.A.L.T.)

• Clinical Trial approved by department of research (D.O.R.)
Participants will learn

- Cook heart-healthy meals that are delicious and affordable
- Become smart grocery shoppers
- Order intelligently in restaurants
- Lose weight utilizing science-based skills
- Manage stress
- Improve personal and professional relationships
- Transform negative attitudes into positive ones
Measures of Success

1. Reach
2. Retention
3. Patient Satisfaction
4. Perceived Confidence and Sustainability
5. Improved Measures of Health
   • Weight
   • Blood Pressure
   • Lipids
   • HgA1C
6. Improvements in Mental Health
   • Addictive behaviors
   • Perceived confidence and health
7. Reduction of Prescription Medications
Participant Diagnosis

- DM2: 80%
- CAD: 11%
- Both: 9%

75% of Participants also diagnosed with Hypertension
HALT – Clinical Trial

Health Achieved through Lifestyle Transformation

- Target Audience:
  - Type 2 Diabetics
  - Cardiac Patients
- Piloted 2016
- 39 Cohorts-940 Interventions
- Outcomes at 6 months
  - 84% 6-month retention
  - 7.5% Body Weight (BMI >25)
  - 1.4 HgA1C reductions (HgA1C >8)
  - 2.4 in Waist Circumference (All)

1 year – 14 patients reversed their diabetes
- Reversal of CAD
All Weight - BMI ≥ 25

6 months
Max weight loss 72 lbs
92% lost weight

12 months
Max weight loss 99 lbs
83% lost weight

<table>
<thead>
<tr>
<th>N</th>
<th>Initial to 6 mo</th>
<th>Initial to 12 mo</th>
<th>Reduction of Body Weight %</th>
</tr>
</thead>
<tbody>
<tr>
<td>155</td>
<td>222.9</td>
<td>219.6</td>
<td>7.6%</td>
</tr>
<tr>
<td>98</td>
<td>206.6 (-16.3)</td>
<td>204.5 (-15.1)</td>
<td>6.9%</td>
</tr>
</tbody>
</table>

Reduction of Body Weight 6 month: 6.9%
African American: Weight - BMI $\geq 25$

**Reduction of Body Weight**

- **6 month**
  - Max weight loss: 37.2 lbs
  - 91% lost weight

- **12 month**
  - Max weight loss: 21.8 lbs
  - 86% lost weight

**Graphs**

- **Initial to 6 mo**
  - N=3
  - 5 lbs
  - (-11.9)

- **Initial to 12 mo**
  - N=1
  - 1 lbs
  - (-8.4)
Waist Circumference

6 months
89% decreased waist
Max reduction 9 inches.

12 months
87% decreased waist
Max reduction 9 inches.
All DM2: Change in A1c and Insulin

**A1c**
- Initial to 6 mo: 8.3 (HgA1c% N = 133)
- Initial to 12 mo: 7.5 (-0.8) (HgA1c% N = 100)

**Insulin**
- Initial to 6 mo: 87 (-26) (N=77)
- Initial to 12 mo: 89 (-21) (N=74)

6 months
- 75% reduced insulin
- 11 no longer using insulin

12 months
- 68% reduced insulin
- 11 no longer using insulin
A1c ≥ 8 DM2: Change in A1c and Insulin

**A1c ≥ 8**

- **Initial to 6 mo**
  - N = 63
  - HgA1c%
    - 9.8
    - 9.5
    - 8.4
    - 8.9
    - 7.5

- **Initial to 12 mo**
  - N = 40
  - HgA1c%
    - 9.5
    - 8.9
    - 8.4

**A1c ≥ 8: Insulin Change**

- **Initial to 6 mo**
  - N = 44
  - Insulin
    - 95
    - 72
    - 45

- **Initial to 12 mo**
  - N = 41
  - Insulin
    - 100
    - 72
    - 45

6 months
- 5 (A1c) Dropped Below 6.5
- 4 no longer using insulin

12 months
- 2 (A1c) Dropped Below 6.5
- 3 no longer using insulin
SF-20 Survey: Mental Health

Mental Health Score: 6 month

- Initial: 24
- 6 mo: 25
- N=82

Mental Health Score: 12 month

- Initial: 23
- 12 mo: 25
- N=46
SF-20 Survey: Physical Health

Physical Health Score: 6 month

- Initial: 14
- 6 mo: 15
- N=82

Physical Health Score: 12 month

- Initial: 14
- 12 mo: 16
- N=46
Average Change in Resting Energy Expenditure

Resting Energy Expenditure (calories/day)

N = 68
# DM2 Reversals

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>African American</td>
<td>3</td>
</tr>
<tr>
<td>Latin</td>
<td>1</td>
</tr>
<tr>
<td>White</td>
<td>7</td>
</tr>
<tr>
<td>Asian/Other Asian</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>14</strong></td>
</tr>
</tbody>
</table>
Images at 0, 6, 12 and 30 months

L: 70 lbs - 6 months 113 lbs - 1 yr 114 lbs - 2 ½ yrs
J: 59 lbs - 6 months 92.2 lbs - 1 yr 80 lbs - 2 ½ yrs
RACe – Clinical Trial
Resiliency After Cancer

• Target Audience:
  • Breast Cancer Survivors

• Piloted 2019

• 5 Cohorts-50 Interventions

• Outcomes at 6 months
  • 95% Retention
  • 4.3% Weight Loss (78% lost weight)
  • 60% reduced Waist Circumference
  • SF20 Score increase 8.2
COVID-19 Cases in Sacramento County by Zip Code
The role of visceral adiposity in the severity of COVID-19: Highlights from a unicenter cross-sectional pilot study in Germany


An increase in visceral fat area by 19 square cms was associated with a 1.37 fold higher likelihood of ICU treatment and a 1.25 fold higher likelihood of mechanical ventilation.
Pulmonary Vascular Endothelialitis, Thrombosis, and Angiogenesis in Covid-19

List of authors.

Maximilian Ackermann, M.D., Stijn E.Verleden, Ph.D., Mark Kuehnel, Ph.D., Axel Haverich, M.D., Tobias Welte, M.D., Florian Laenger, M.D., Arno Vanstapel, Ph.D., Christopher Werlein, M.D., Helge Stark, Ph.D., Alexandar Tzankov, M.D., William W. Li, M.D., Vincent W. Li, M.D., et al.
Health Care Disparity

- Black Americans compared to white Americans
- 1.3 times more likely to be obese as compared to non-Hispanic whites
- nearly 2 times as likely to develop diabetes than white adults
- 1.8 times greater rate of fatal stroke
- 1.5 times greater rate of heart disease death
- 50% higher frequency of heart failure

• “The good physician treats the disease; the great physician treats the patient who has the disease.”

• -Sir William Osler
The young **physician** starts life with twenty drugs for each disease, and the old **physician** ends life with one drug for twenty diseases.

- Sir William Osler
Three Phases of Truth

“All truth passes through three stages. First, it is ridiculed. Second, it is violently opposed. Third, it is accepted as being self evident.”

- Arthur Schopenhauer
- German Philosopher
- 1788-1866
“Who are you gonna believe, me or your own eyes?”
-Groucho Marx
US Healthcare
• “Nothing will benefit human health and increase chances for survival of life on earth as much as the evolution to a vegetarian diet.”

• Albert Einstein – Physicist, 1921 Nobel Prize recipient