Lifestyle Medicine for Seniors: Your Health Isn’t Everything, but Without Your Health, Everything is Nothing

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Diplomate, American Board of Lifestyle Medicine
5/4/18
OLLI
What is a senior citizen anyway?

sen·ior cit·i·zen
noun
plural noun: senior citizens
1 an elderly person, especially one who is retired and living on a pension.
2 synonyms: retired person; old person, elderly person, senior, geriatric, dotard, Methuselah, retiree, golden ager; informal old-timer, oldie, oldster, geezer, blue-hair
Amazing Mavis!

- Retired RN began running at age 62 (soon up to 50 miles/week)
- Loma Linda Univ. Human Performance Lab testing at age 80 (80 is the new 22!)
- Ran her 75th and final marathon at age 90 in her Air Mavis Nikes
Outline

- State of the Union
- What is Lifestyle Medicine?
- The Evidence of Benefit
- Our Experience in Asheville
- Where Do We Go From Here?
Leading Causes of Death in the US 2016

- Heart disease: 633,842
- Cancer: 595,930
- Chronic lower respiratory diseases: 155,041
- Accidents (unintentional injuries): 146,571
- Stroke (cerebrovascular diseases): 140,323
- Alzheimer’s disease: 110,561
- Diabetes: 79,535
- Influenza and pneumonia: 57,062
- Nephritis, nephrotic syndrome, and nephrosis: 49,959
- Intentional self-harm (suicide): 44,193

*CDC Vital statistics 2016*
Actual Causes of Death

- Tobacco 435,000
- Poor diet and physical inactivity 400,000
- Alcohol consumption 85,000
- Microbial agents 75,000
- Toxic agents 55,000
- Motor vehicle accidents 43,000
- Firearms 29,000

*Mokdad, Actual causes of Death in the U.S. 2000 and 2004*

80% of all deaths are caused by our lifestyles
Heart Disease... Less Than 100 Years Ago

“You can expect one heart attack per year in an average hospital in an average sized town”.
Prevalence of Coronary Heart Disease in North America, 1928
Medical Textbook by Sir William Osler, MD

Today, the number of heart attacks in the US is 1,460,000 a year!
Heart Disease Today...

- Bypass Surgery
  - 400,000/year
  - Averaging $60,000+ each
  - 37-46% of vein grafts failed (75% narrowing) within 12 to 18 months

  *NEJM 2009, 361 (3) 235*

- Angioplasties & Stents
  - 1,000,000/year
  - Averaging $35,000 each
Prescription Drugs Are NOT the Answer

180,000* serious or fatal adverse drug reactions reported to the FDA, making drugs a significant % of US deaths

* Properly or improperly prescribed FDA, reported in 2011
Which of the following statements is true about adverse drug reactions?

a) Total cost for ADRs ranks 6\textsuperscript{th} on annual national health care expenditures

b) Total costs for hospital patients with an ADR are 5 times those of patients without an ADR

c) ADRs are responsible for 1 in 25 injuries or deaths per year in the hospital

d) Hospitalized patients with an ADR have the same mortality as those without an ADR

e) The annual costs for ADRs are greater than total costs for cardiovascular or diabetic care
Which of the following statements is true?

a) ADRs are responsible for fewer deaths than pulmonary disease, DM, and pneumonia

b) There are enough prescriptions filled yearly in the US to average 10 prescriptions for every person in the US

c) On average, an increase in the number of concomitant drugs does not increase the risk of an interaction until 6 are given at the same time

d) 47% of patient visits result in a prescription

e) In general, patients have little concern about potential drug interactions
Someone has to stand up and say that the answer isn’t another pill. The answer is spinach.

-Bill Maher
Let food be thy medicine and medicine be thy food-

-Not Hippocrates
Because this does not make sense...
Lifestyle: The Cause and the Cure for Today's Medical Dilemma
Lifestyle Medicine Definition

• Lifestyle medicine is the evidence based practice of helping individuals and families adopt and sustain (natural) healthy behaviors that affect health and quality of life…
Lifestyle Medicine Pioneers

Dean Ornish, MD
*Ornish Lifestyle Medicine

Caldwell Esselstyn, Jr. MD
Cleveland Clinic Wellness Center
Lifestyle Interventions

1) Nutrition
2) Physical Activity
3) Stress Management
   Rest/Sleep/Meditation
4) Social supports
* Environmental Exposures
  Smoking cessation/Toxicology
Data for Lifestyle Efficacy

JACC 9/5/14 Akesson et al

• 20,721 men ages 45-79 followed for 11 years

• 5 lifestyle factors:
  • Healthy diet
  • Smoking
  • Moderate alcohol consumption
  • Physical activity
  • Abdominal adiposity
Data for Lifestyle Efficacy

**JACC 9/5/14 Akesson et al**

- 79% lower risk if met all lifestyle factors
- Only 1% of the study population
Data for Lifestyle Efficacy

*88,940 women in NHS2 ages 27-44 with no h/o cancer, CVD or DM

*6 lifestyle factors defined healthy living:
- no smoking
- diet in top 40% of healthy eating index
- physical activity at least 2.5 hrs/week
- TV watching <7 hrs/week
- BMI <25
- Alcohol not more than 1/day
Data for Lifestyle Efficacy

**JACC 1/5/15 (Chomistek et al)**

*At 20 yrs f/u, those who adhered to all 6 lifestyle factors had 92% lower CVD risk vs those with zero*

*Only 4.6% of the study population were optimal*
Experimental group (Ornish participants) had more regression after 5 years than after 1 year.

- 91% decrease in angina vs 165% increase in the control group.
- 7.9% relative improvement in the Ornish group.
- 20% LDL reduction in both groups, 60% on statins vs 0%.
- 99% stopped or reversed their CHD with average 300% increase in myocardial perfusion by PET scan.
- 7.9% relative improvement in the Ornish group.

### Ornish Lifestyle Medicine
#### National Outcomes Q1 2018

<table>
<thead>
<tr>
<th></th>
<th>Baseline</th>
<th>9 weeks</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight Loss</td>
<td>199.3</td>
<td>188.1</td>
<td>-5.6%</td>
</tr>
<tr>
<td>BMI</td>
<td>31.4</td>
<td>29.7</td>
<td>-5.6%</td>
</tr>
<tr>
<td>Total Cholesterol</td>
<td>169.4</td>
<td>142.8</td>
<td>-15.7%</td>
</tr>
<tr>
<td>LDL Cholesterol</td>
<td>92.4</td>
<td>72.8</td>
<td>-21.2%</td>
</tr>
<tr>
<td>HDL Cholesterol</td>
<td>48.4</td>
<td>44.1</td>
<td>-8.9%</td>
</tr>
<tr>
<td>Triglycerides</td>
<td>152.3</td>
<td>134.4</td>
<td>-11.7%</td>
</tr>
<tr>
<td>Systolic Blood Pressure</td>
<td>129.8</td>
<td>121.6</td>
<td>-6.3%</td>
</tr>
<tr>
<td>Diastolic Blood Pressure</td>
<td>76.0</td>
<td>70.8</td>
<td>-6.9%</td>
</tr>
<tr>
<td>HbA1c</td>
<td>6.7</td>
<td>6.2</td>
<td>-7.1%</td>
</tr>
<tr>
<td>Depression Score (CESD)</td>
<td>11.2</td>
<td>5.5</td>
<td>-50.3%</td>
</tr>
<tr>
<td>Exercise Capacity (Mets)</td>
<td>3.7</td>
<td>5.5</td>
<td>46.7%</td>
</tr>
</tbody>
</table>

73% reduction in reported angina

Data is based off participants thru Q4 2017 quarterly report. N=4213 participants.

Note: In addition to these results, many participants reduced or discontinued their medications by their physician.
So... I can avoid coronary bypass surgery just by not eating meat anymore? And dairy... yes.

SIGH... You know I'm an American, right?

OK! Surgery, rehab and lifelong medications it is... good choice!

All right, all right... I'll go vegan.

Oh, here's a bonus... that'll cure your diabetes, too.

Wait... my WHAT?!

Oh... sorry. I just assumed you knew.
The Evolution of the US Diabetes crisis
Before it’s too late…

Go Back, we up everything…
Age-Adjusted Prevalence of Obesity and Diagnosed Diabetes Among US Adults

1994

Obesity (BMI≥30 kg/m²)

- 14.0%–17.9%
- 18.0%–21.9%
- 22.0%–25.9%
- ≥26.0%

Diabetes

- <4.5%
- 4.5%–5.9%
- 6.0%–7.4%
- 7.5%–8.9%
- ≥9.0%

Missing Data

Age-Adjusted Prevalence of Obesity and Diagnosed Diabetes Among US Adults

1999

Obesity (BMI≥30 kg/m²)

Diabetes

Obesity (BMI≥30 kg/m²)

Diabetes

Age-Adjusted Prevalence of Obesity and Diagnosed Diabetes Among US Adults

2004

Age-Adjusted Prevalence of Obesity and Diagnosed Diabetes Among US Adults

2009

**Obesity (BMI≥30 kg/m^2)**

- Missing Data
- 14.0%–17.9%
- 18.0%–21.9%
- 22.0%–25.9%
- ≥26.0%

**Diabetes**

- Missing data
- 4.5%–5.9%
- 6.0%–7.4%
- 7.5%–8.9%
- ≥9.0%

Age-Adjusted Prevalence of Obesity and Diagnosed Diabetes Among US Adults

2014

Obesity (BMI ≥ 30 kg/m²)

- Missing Data
- 14.0%–17.9%
- 18.0%–21.9%
- 22.0%–25.9%
- ≥26.0%

Diabetes

- Missing data
- <4.5%
- 4.5%–5.9%
- 6.0%–7.4%
- 7.5%–8.9%
- ≥9.0%

Diabetes Prevention Program

• Landmark Study funded by NIH, published in 2002 in the New England Journal of Medicine
• Reduction in the Incidence of Type 2 Diabetes with Lifestyle Intervention or Metformin
• 3234 non diabetic patients with elevated fasting and post-load plasma glucose levels
• Randomly assigned to placebo, Metformin, or lifestyle intervention
Lifestyle Intervention Details

• Lose 7% of initial body weight
  – Low calorie, low fat diet
• 150 minutes of moderate intensity physical activity per week
• 16 lesson curriculum covering diet, exercise, and behavior modification
  – Taught by case managers
  – Flexible
  – Individualized
  – Subsequent - individual (monthly) and group sessions
Lifestyle Counseling: Does It Work?
Diabetes Prevention Program

71% in those >60 years old

31%

What Is Alzheimer’s Disease?

- Most common type of dementia
- Accounts for 60%-80% of cases
- Irreversible, progressive brain disorder
- Slowly destroys memory, thinking skills, and ability to carry out basic functions


National Institute on Aging. (2015) Alzheimer’s Disease Fact Sheet:
Scope of the Epidemic (U.S.)

- Over 5 million adults
- 1 in 9 adults age ≥65
- 1 in 3 adults age ≥85
- 2/3 are women

Growing Epidemic

- By 2030, population age ≥65 expected to double
- By 2050, 13.8 million with Alzheimer’s
- Today, one new case every 67 seconds
- By 2050, every 33 seconds
Health Disparities

- African-Amercians and Hispanics have higher rates:
  - African-Americans 2 times more likely
  - Hispanics 1.5 times more likely

Worldwide Epidemic

- Over 47 million with dementia (including Alzheimer’s) in 2015
- Projected to double every 20 years:
  - 76 million in 2030
  - 145 million in 2050
- New case of dementia every 4 seconds

Financial Burden: U.S. & Worldwide

- Alzheimer’s is the most expensive disease in US
- Annual cost of direct care over $200 billion
- Worldwide annual costs exceed $818 billion (2015)


The number of cases of AD is predicted to rise to ~13 million in the U.S. by 2050, with the cost of care increasing proportionately. 
Source: Alzheimer’s Study Group 2009
Modifiable Risk Factors: Lifestyle

- **Increases** risk
  - Current smoking
  - Midlife obesity

- **Decreases** risk
  - Physical activity
  - Heart-healthy diets: DASH, Mediterranean diet
  - Mental and social activity

Potential Number of AD cases that could be Prevented through Risk Factor Reduction in the US

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>10% Reduction</th>
<th>25% Reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical inactivity</td>
<td>89,949</td>
<td>232,366</td>
</tr>
<tr>
<td>Depression</td>
<td>67,580</td>
<td>172,827</td>
</tr>
<tr>
<td>Smoking</td>
<td>51,772</td>
<td>131,593</td>
</tr>
<tr>
<td>Mid-life hypertension</td>
<td>39,427</td>
<td>99,779</td>
</tr>
<tr>
<td>Mid-life obesity</td>
<td>36,071</td>
<td>91,181</td>
</tr>
<tr>
<td>Low education</td>
<td>36,019</td>
<td>91,049</td>
</tr>
<tr>
<td>Diabetes</td>
<td>16,877</td>
<td>42,403</td>
</tr>
<tr>
<td>Combined</td>
<td>184,166</td>
<td>492,332</td>
</tr>
</tbody>
</table>

![Graph showing potential number of AD cases prevented through reduction in risk factors](image-url)
Reversal of Cognitive Decline in Alzheimer’s Disease

- UCLA: 10 pts. treated with lifestyle changes aimed at optimizing metabolic parameters assoc. with AD (inflammation and insulin reduction)

- 9/10 had significantly improved cognition in 3-6 months (1 had late stage disease)
Reversal of Cognitive Decline in Alzheimer’s Disease

- Plant based diet
- Exercise
- Stress management
- Improved sleep
- Side effect of weight loss
What We Lose With Age

As we grow older, telomeres at the end of our chromosomes shrink. New research suggests major depression also is linked to shorter telomeres, a sign of ‘accelerated aging.’

As cells divide over time...

telomeres shorten, and eventually cell division stops.
Repercussions…


The epigenetic power of lifestyle -

Fingers…
Feet…
Forks…

Health
Diet/Nutrition

Low-
Carb Diet Beats Low-
Fat for Weight Loss

Mandy Oaklander
@mandyoaklander
Sept. 1, 2014
“Eat food, not too much, mostly plants.”

-Michael Pollan
The doctor of the future will give no medicine, but will instruct his patient in the care of the human frame, in diet and in the cause and prevention of disease.

—Thomas Edison
Overview

➢ **Lifestyle intervention education** program
  ➢ 100% **evidence** based
  ➢ **community** based (not residential)
  ➢ Regular **group sessions** over several weeks
  ➢ Blood draws and Health Risk Assessments
  ➢ Education, **practical experience**, reinforcement
  ➢ “Whole of Health” approach
  ➢ 60,000+ participants over 25 years and counting...
  ➢ 25+ peer reviewed articles in medical journals
A typical CHIP session

- 25 – 45 minutes of content delivery
- 25 - 45 minutes of facilitated group discussion, based on these recurring questions:
  - What was new to me?
  - What did I like?
  - What did I not like?
  - What will I change from now on?
- Food Sampling/cooking demos/
- exercise (some lectures)
CHIP
Efficacy
## Asheville CHIP 1
### 30 day results (N=22)

<table>
<thead>
<tr>
<th>DAY 1</th>
<th>DAY 30</th>
<th>Decrease</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average weight 228 lbs</td>
<td>218 lbs</td>
<td>4.4%</td>
</tr>
<tr>
<td>Ave. total chol 187 mg/dl</td>
<td>161 mg/dl</td>
<td>13.9%</td>
</tr>
<tr>
<td>Ave. LDL-C 110 mg/dl</td>
<td>93 mg/dl</td>
<td>16.1%</td>
</tr>
<tr>
<td>Ave TG 186 mg/dl</td>
<td>139 mg/dl</td>
<td>25.3%</td>
</tr>
<tr>
<td>Ave glucose 121 mg/dl</td>
<td>112 mg/dl</td>
<td>7.5%</td>
</tr>
<tr>
<td>Ave SBP 132 mmHg</td>
<td>122 mmHg</td>
<td>7.6%</td>
</tr>
</tbody>
</table>
Asheville CHIP 2
12 week results

• **Weight Loss**
  – 27 participants lost a total of 363.5 lbs
  – Average weight loss 13.5 lbs/person
  – 61.5 inches on waist circumference lost (2.25 in/pt). One man lost 8 inches

• **Glucose**
  – 17 people had a fasting glucose >100. 8 of the 17 lowered their glucose to <100 at 12 weeks
Asheville CHIP 2 results

- **Lipids**
  - Only 6 had a total cholesterol >200 at the start with an average TC of 242 mg/dl
    - At 30 days it dropped 20% to 194 mg/dl
  - 16 pts had an LDL >100 mg/dl with ave 134 mg/dl
    - At 30 days it dropped 24% to 102 mg/dl
  - 8 had TGs >150 mg/dl with ave 235 mg/dl
    - At 90 days 17% decrease to 195 mg/dl
POWER 9®

Nine healthy lifestyle habits shared by people who've lived the longest.

- Move Naturally
- Know Your Purpose
- Downshift
- Plant Slant
- Wine at 5
- Family First
- Belong
- Right Tribe
- 80% Rule

Blue Zones
How we can create our own “Blue Zones” The 9 keys to long life.

- Move naturally
- 80% rule
- Plant slant
- Wine at 5
- Know your purpose
How we can create our own “Blue Zones” The 9 keys to long life.

- Down shift
- Belong
- Family first
- Right tribe
Important Lifestyle Questions to Ask

- Am I within 5 pounds of my ideal body weight?
- Do I exercise 30 minutes or more most days of the week?
- Do I eat a plant based, whole food diet with 5 fruits/vegetables most days?
- Do I avoid tobacco products?
- Do I have no more than 2 alcoholic drinks per day?
- Do I get 7-8 hours of sleep most nights?

Only 8% of ALL Americans can say yes to all of these.
Summary

- Chronic diseases are not the cause of our healthcare crisis in our world. Our lifestyle choices are!
- We can in fact nurture nature. Our genes are not our destiny.
- This is a gradual process, any changes we make to be healthier will benefit us. Small incremental lifestyle changes will bring big results if given time (and significant changes can be seen in weeks to months).
Building Healthier Communities Through Lifestyle Medicine: The Asheville Project?
### CENTRAL ILLUSTRATION: Evidence for Cardiovascular Health Impact of Foods Reviewed

**Summary of heart-harmful and heart-healthy foods/diets**

<table>
<thead>
<tr>
<th>Evidence of harm; limit or avoid</th>
<th>Inconclusive evidence; for harm or benefit</th>
<th>Evidence of benefit; recommended</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coconut oil and palm oil are high in saturated fatty acids and raise cholesterol</td>
<td>Virgin coconut oil</td>
<td>Extra-virgin olive oil reduces some CVD outcomes when consumed in moderate quantities</td>
</tr>
<tr>
<td>Eggs have a serum cholesterol-raising effect</td>
<td>High-dose antioxidant supplements</td>
<td>Blueberries and strawberries (&gt;3 servings/week) induce protective antioxidants</td>
</tr>
<tr>
<td>Juicing of fruits/vegetables with pulp removal increases caloric concentration*</td>
<td>Juicing of fruits/vegetables without pulp removal*</td>
<td>30 g serving of nuts/day. Portion control is necessary to avoid weight gain.†</td>
</tr>
<tr>
<td>Southern diets (added fats and oils, fried foods, eggs, organ and processed meats, sugar-sweetened drinks)</td>
<td>Gluten-containing foods (for people without gluten-related disease)</td>
<td>Green leafy vegetables have significant cardioprotective properties when consumed daily</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Plant-based proteins are significantly more heart-healthy compared to animal proteins</td>
</tr>
</tbody>
</table>

Vegetable Intake in U.S.

Median **Daily Vegetable Intake**
Among Adults in the United States

Behavioral Risk Factor Surveillance System, 2011

American College of Lifestyle Medicine
Diabetes Trend (US 1945 to 2010)

cdc.gov/diabetes/stats

- Obesity has increased from 28% to 36%.
- Regular physical activity has decreased from 53% to 43%.
- Eating 5 or more fruits and vegetables a day has decreased from 42% to 26%.
- Adherence to all 5 healthy habits has gone from 15.8% to 8.2%.
- Adherence to healthy habits is no more likely in people with cardiovascular disease, hypertension, diabetes, or hypercholesterolemia.
Obesity Trends* Among U.S. Adults
BRFSS, 1990, 2000, 2010
(*BMI ≥30, or about 30 lbs. overweight for 5’4” person)

2010

1990

No Data          <10%           10% – 14%

15% – 19%           20% – 24%          25% – 29%           ≥30%

2000

142x18

www.cdc.gov/obesity/downloads/obesity_trends_2010.ppt
Eating 5 or more fruits and vegetables daily, exercising regularly (at least 12 times in a month), alcohol in moderation, not smoking
The reasonable man adapts himself to the world; the unreasonable man persists in trying to adapt the world to himself. Therefore all progress depends on the unreasonable man.

-George B Shaw
So now what, doctor?
Coronary bypass. Don't worry, it's one of the most common surgeries in the world today.

Uh... any alternative?
Yes, but it's considered too radical by modern medicine... go on a plant-based diet.

...and by hospital regulations, I must advise against it.

Really? Why?
$200,000 per surgery, ZILCH for the diet. Do the math.
Age-adjusted Prevalence of Obesity and Diagnosed Diabetes Among US Adults

Obesity (BMI ≥30 kg/m²)

<table>
<thead>
<tr>
<th>Year</th>
<th>1994</th>
<th>2000</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;14.0%</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
</tr>
<tr>
<td>14.0%–17.9%</td>
<td>&lt;4.5%</td>
<td>4.5%</td>
<td>4.5%</td>
</tr>
<tr>
<td>18.0%–21.9%</td>
<td>5%–5.9%</td>
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</tr>
<tr>
<td>22.0%–25.9%</td>
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</tr>
<tr>
<td>&gt;26.0%</td>
<td>7%–8.9%</td>
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</tbody>
</table>

Diabetes

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CDC's Division of Diabetes Translation, United States Surveillance System available at http://www.cdc.gov/diabetes/data
Obesity, the common denominator of chronic disease

- Overweight – 32%
  - Obese - 34%
  - Morbidly Obese - 6%

- Obese men use 5.9 sick days
- Obese women use 9.4 sick days

- Obese men cost an extra $1152 in medical cost
- Obese women cost an extra $3613 in medical costs

Source: Begley, Sharon. As America's Waistline Expands, Costs Soar, Reuters, 2012
1) The **Chronic Disease Epidemic**
   fueled by...
   - food processing/preserving/shipping
   - modern transportation/communication tech
Four Lifestyle Medicine Growth Drivers

1) The **Chronic Disease Epidemic** fueled by...
   - food processing/preserving/shipping
   - modern transportation/communication tech

2) Increasing **Health Care Costs**
Four Lifestyle Medicine Growth Drivers

1) The **Chronic Disease Epidemic**
   fueled by...
   ➢ food processing/preserving/shipping
   ➢ modern transportation/communication tech

2) Increasing **Health Care Costs**

3) **Dissatisfaction** with the Status Quo
   ➢ patients
   ➢ physicians/providers
Discontent is the first necessity of progress.
-Thomas Edison
Four Lifestyle Medicine
Growth Drivers

1) The **Chronic Disease Epidemic** fueled by...
   - food processing/preserving/shipping
   - modern transportation/communication tech

2) Increasing **Health Care Costs**

3) **Dissatisfaction** with the Status Quo
   - patients
   - physicians/providers

4) **Science**
   - epidemiology, basic science, clinical trials
The information below represents sample outcomes from the most recent Healthways clinical outcomes report.

<table>
<thead>
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<tr>
<td>BMI</td>
<td>29.8</td>
<td>28.6</td>
<td>-3.9%</td>
</tr>
<tr>
<td>Total Cholesterol</td>
<td>167.6</td>
<td>136.0</td>
<td>-18.9%</td>
</tr>
<tr>
<td>LDL Cholesterol</td>
<td>94.8</td>
<td>71.1</td>
<td>-25%</td>
</tr>
<tr>
<td>Triglycerides</td>
<td>164.7</td>
<td>141.1</td>
<td>-14.3%</td>
</tr>
<tr>
<td>Systolic Blood Pressure</td>
<td>121.3</td>
<td>119.5</td>
<td>-1.5%</td>
</tr>
<tr>
<td>Diastolic Blood Pressure</td>
<td>73.4</td>
<td>67.8</td>
<td>-7.7%</td>
</tr>
<tr>
<td>Exercise capacity (METS)</td>
<td>4.3</td>
<td>5.5</td>
<td>27.9%</td>
</tr>
<tr>
<td>HbA1c</td>
<td>6.7</td>
<td>6.4</td>
<td>-4.7%</td>
</tr>
<tr>
<td>Depression Score (CESD)</td>
<td>14.6</td>
<td>6.2</td>
<td>-57.7%</td>
</tr>
</tbody>
</table>
## Physical and Dietary Behavior Adherence Over 18 Months

<table>
<thead>
<tr>
<th>Physical and Dietary Behavior</th>
<th>Mean change at 18 mo</th>
<th>% of participants who improved over 18 mo</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Activity (steps/wk)</td>
<td>5,596</td>
<td>63</td>
</tr>
<tr>
<td>Kcal/day</td>
<td>-391</td>
<td>75</td>
</tr>
<tr>
<td>Vegetables servings/day</td>
<td>2.6</td>
<td>59</td>
</tr>
<tr>
<td>Dietary saturated fat g/day</td>
<td>-8</td>
<td>83</td>
</tr>
<tr>
<td>Dietary fiber g/day</td>
<td>4</td>
<td>67</td>
</tr>
<tr>
<td>Sweets kcal/day %</td>
<td>-3</td>
<td>69</td>
</tr>
</tbody>
</table>


Average about 70%
Medication continuation after myocardial infarction in the community


About 70% at 18 mo
What are we to do?

• **Barriers to success**
  • Most providers are used to guideline driven medicine.
  • They don’t have time
  • Lifestyle medicine data is not widely known
  • Not trained in behavioral medicine techniques
  • The whole world is against us?
What are we to do?

• **Possible solutions**
  • Educate providers about the power of lifestyle medicine
  • Development of wellness referral programs employing team based care
    • Hospital
    • Business
    • Local government
  • Advocacy at local, state and national level
  • Start to talk about this!
A heart attack?! Yeesh... where'd THAT come from? A blocked artery, actually.

*SIGH* I better work on putting my affairs in order...

Oh, lots of time for that, Bob.

You just need to rest... can I get you anything?

I'm DYIN' for a cheeseburger right now. Let's work on your epitaph later, ok?

hmm... let's see...
I'm with the doctor, Mom...he says Bob is fine, that he had a blockage in his artery...Ok, I'll ask...

What's the prognosis, doctor? Is there permanent damage to his heart? Is it congenital?

Well...

First...no. Second...that depends

Uh...depends on WHAT?

On if you consider the American diet as being a cultural or inherited trait.
I've been doing some research on the effects of a plant-based diet, doctor, and it goes back to Hippocrates!

So HE knew that most diseases can be avoided by just eating the right foods

Oh, that's not taught in med school

Why not?

Well...Hippocrates didn't have to maintain a medical industry or answer to stockholders

Treat the symptoms, not the cause, eh?

Hey, like any industry, cash flow trumps ethics
Hey, Joe... I need a ride from the hospital.

Whoa... what happened to the bypass surgery?

I did research while laid up here, watched a documentary called "Forks Over Knives"* and found a better alternative, so I'm checking out.

They let you DO that?

It's a hospital, Joe, not a prison.

NO, NO, NO, NO-0-0! YOU CAN'T GO!!

...although their board of directors doesn't quite see it that way, so hurry up.
USHHS Physical Activity Guidelines for Americans: Adults

150 minutes of moderate intensity physical activity per week
   or

75 minutes of vigorous physical activity per week
   (In bouts of at least 10 minutes)

60 minutes per day for children
More Extensive Health Benefits

300 minutes of moderate intensity physical activity

OR

150 minutes of vigorous intensity physical activity
Strength Training Twice a Week on Nonconsecutive Days

- All major muscle groups
- 2-4 sets
- Repetition (reps)
  - Ranges:
    - 8-12 reps for strength and power
    - 10-15 reps for middle-age and older persons starting to exercise
    - 15-20 reps for endurance
Exercise Frequency and Relative Risk of All Cause Mortality

Flexibility

- At least two or three days each week to improve range of motion.
- Each stretch should be held for 10-30 seconds to the point of tightness or slight discomfort.
- Repeat each stretch two to four times, accumulating 60 seconds per stretch.
- Static, dynamic, ballistic and PNF (proprioceptive neuromuscular facilitation) stretches are all effective.
- Flexibility exercise is most effective when the muscle is warm. Try light aerobic activity or a hot bath to warm the muscles before stretching.

From ACSM at acsm.org