The Complete Health Improvement Program

Healthnetwork Foundation Webinar
November 2013
Amy Mechley, M.D.
The Christ Hospital Health Network
Current State Of Affairs
Health Care Costs
Chronic Diseases

Absenteeism
Presenteeism

Productivity
Optimal Health
Americans with 3+ chronic diseases in % for different ages 1996 vs 2005

<table>
<thead>
<tr>
<th>Age</th>
<th>% 1996</th>
<th>% 2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>45-64</td>
<td>13</td>
<td>22</td>
</tr>
<tr>
<td>61-79</td>
<td>28</td>
<td>45</td>
</tr>
<tr>
<td>80+</td>
<td>54</td>
<td>38</td>
</tr>
</tbody>
</table>
Why Is It So?...
or how did we get here?!
Obesity

- Overweight 32%, obese 34%, morbidly obese 6%
- SO ONLY 1/3 OF OUR POPULATION IS OF NORMAL WEIGHT
- Obese men 5.9 more sick days, women 9.4
- Very obese lose 1 month of productive work per annum
- Obese men $1152 in extra medical costs, women $3613

Source: Reuters, April 30, 2012
Obesity (BMI >40) increases the risk of:

- Diabetes—7x, escalating at 5% per year
- High Blood Pressure—6x
- Heart Disease—5x
- Arthritis—4x
- Asthma—3x
- Sleep Apnea—6x
- Cancer of the Breast, Prostate, Colon, Cervix

Source: Reuters, April 30, 2012
What We Eat

- 51% Refined, Processed Foods
- 42% Dairy & Animal Foods
- 7% Fruits, Vegetables, Grains and Legumes

USDA Agriculture Fact Book
Meat Consumption (lbs/capita)
US Trends (1909-2009)

Includes beef, veal, pork, lamb, and chicken

N Barnard, 2010  USDA, Econ. Res. Service
Cheese Consumption (lbs/capita)
US Trends (1909-2009)

LBS.

4 lbs.  31 lbs.

USDA, Econ. Res. Service
U.S. Sugar Consumption

Teaspoons of sugar per person per day

1825: 2
1875: 11
1900: 22
1975: 35
2010: 45
Food Refining

= 1 Tablespoon of oil
Diabetes Trends (US 1945-2010)

% of people with diabetes by age

- 1945: 5%
- 1965: 6%
- 1985: 9%
- 2005: 13%

- Age 40-59
- Age 60+

Arrows indicate a 900% increase in diabetes prevalence.
Heart Disease .....  
Less than 100 Years Ago

“You can expect one heart attack/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 U.S....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

180,000* fatal Adverse Drug Reactions

7.5% of all US deaths

*Properly or improperly prescribed
(cdc.gov/data/statistics/drug/)

(enguirer.com)
US Medical Cost Trends

- Medical Spending (in $ Billions) 75% on Chronic Diseases

- In % of GDP

<table>
<thead>
<tr>
<th>Year</th>
<th>1960</th>
<th>1980</th>
<th>2000</th>
<th>2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spending</td>
<td>28</td>
<td>75</td>
<td>717</td>
<td>2,887</td>
</tr>
<tr>
<td>GDP</td>
<td>5 %</td>
<td>7 %</td>
<td>9 %</td>
<td>16 %</td>
</tr>
</tbody>
</table>
Why target lifestyle behavior?
Lifestyle accounts for 75% of national medical costs and associated chronic diseases.

1. Centers for Disease Control, 2006

Sources: Stampfer, 2000; Platz, 2000; Hu, 2001
Causes of Premature Death and Major Illness in the U.S.

- Lifestyles
- Heredity
- Environment
- Lack of Med Rx
HEALTH

75% Lifestyle
10% Medical Care
10% Environment
5% Genetics
Influence of Behavior-Related Risk Factors on Medical Costs

Excess Medical Costs due to Excess Risks

- Low Risk (0-2 Risks): $2,199
- HRA Non-Participant: $3,039
- Medium Risk (3-4 Risks): $3,460
- High Risk (5+ Risks): $5,520

Risk Factors in Heart Disease

- Cholest LDL
- High BP
- Trigl
- Sloth
- Stress
- Gender
- Genes
- Age
- Obesity
- Diabetes
- Smoking

Diet
Lifestyle
Uncontrollable
Ideal Cholesterol

“Over 90% of heart attacks would be eliminated if blood cholesterol levels would be maintained below 150 mg%.”

-Scott Grundy, MD, PhD
Ntl. Cholesterol Education Program
Deadly Plaques

Stable
- Small Lipid Core
- Thick Fibrous Cap

Unstable
- Large Lipid Core
- Thin Fibrous Cap
Etiology of Chronic Inflammation

Examples:

- Stress: Cortisol
- Obesity
- Hypertension
- Animal products, saturated fats, refined carbohydrates ("carbs"), and sugars, and trans fats (the type so prevalent in processed foods).
- Tobacco
In the Sept. 15, 2010 issue of the *American Journal of Cardiology*, Cleveland Clinic surgeon Caldwell Esselstyn, Jr., MD . . .

“Stents and bypass surgeries may have their place, but for the vast majority of patients they are not as effective as a low fat, plant-based diet.”
The Solution: Lifestyle Intervention
Diseases Influenced by Lifestyle:

- Type 2 Diabetes
- High Blood Pressure
- Overweight and Obesity
- Depression
- Cancer
- High Cholesterol
- Coronary Disease
- Arthritis
CHIP was designed to: educate, motivate, and inspire individuals to make wiser lifestyle decisions to facilitate the prevention & reversibility of many of our chronic diseases.
Complete Health Improvement Program 2013

- Lifestyle intervention program
- Corporate - 8 sessions @ 45 mins, group setting
- Community - 18 sessions @ 90 mins, group setting
- Practical Experience, Reinforcement, Behavior Change Focus
- “Whole of Health” approach
- Biometric pre/post data capture to prove results
VIDEO:

http://www.youtube.com/watch?v=y90LQtWML8A
Does CHIP work?
Peer Reviewed Journal articles on lifestyle medicine: nutrition therapy effective for chronic disease management

Over 1170 peer-reviewed journal articles in Medline:
- Ornish
- Esselstyn
- Barnard
- Collins
- Diehl
CHIP Results

- 50,000+ graduates
- CHIP clinical results published over 20 peer reviewed journals
  - American Journal of Cardiology
  - The Journal of the American Dietetic Association
  - Preventive Medicine
  - Journal of Occupational & Environmental Medicine
- significant ROI
PREVENTING CHRONIC DISEASE
PUBLIC HEALTH RESEARCH, PRACTICE, AND POLICY
VOLUME 5: NO. 1
JANUARY 2008

ORIGINAL RESEARCH
Can Newly Acquired Healthy Behaviors Persist? An Analysis of Health Behavior Decay

Ray M. Merrill, PhD, MPH, Steven O. Atdana, PhD, Roger L. Greenlaw, MD, Hans A. Diehl, DBHSc, MPH, Audrey Sabeneg, RN, Helene Engiert, PhD, MPH


PEER REVIEWED

Abstract

Introduction

We evaluated data from the Coronary Health Improvement Program (CHIP) to determine whether improved health behaviors associated with this intervention persisted or decayed during 18 months of follow-up.

Methods

Participants were 546 volunteers aged 24 to 81 years from the Rockford, Illinois, metropolitan area enrolled in CHIP. A 4-week educational course was delivered as lectures and group meetings. Participants were assessed at baseline, and changes in behaviors were assessed at 6 weeks and 18 months. Changes were evaluated according to quartile groupings of each variable at baseline.

Results

No baseline differences were found between participants who dropped out and participants who provided data through 18 months. Mean changes significantly improved through 6 weeks for each of the 21 selected physical activity and dietary behavior variables except percentage of daily calories from carbohydrates. Mean changes significantly improved through 18 months for each of the 21 variables except percentage of daily calories from alcohol and whole grain servings. The percentage of participants who improved their physical or dietary behavior at 6 weeks ranged from 49% for percentage of daily calories from carbohydrates (56%) at 18 months) to 34% for intake of dietary cholesterol per day (84% at 18 months). The level of change through 18 months for all variables was significantly influenced by quartile groupings at baseline. Physical activity improved significantly through 18 months only for participants in the lowest two quartiles of physical activity at baseline. Exercise decreased significantly through 18 months for participants in the highest quartile of physical activity at baseline.

Conclusion

During an 18-month period, participants' physical activity and dietary behaviors improved significantly. Even though behavioral improvement tended to be greater at 6 weeks, most healthy behaviors did not return to baseline levels after 18 months.

Introduction

Benefits associated with a healthy diet, proper caloric intake, and participation in regular physical activity can be realized only if these healthy behaviors are maintained. When the healthy behaviors cease, the health benefits end. However, the adoption of new behaviors typically follows a predictable pattern. High adherence and dramatic maintenance through 6 weeks...

The opinions expressed by authors contributing to this journal do not necessarily reflect the opinions of the U.S. Department of Health and Human Services, the Public Health Service, the Centers for Disease Control and Prevention, or the authors' affiliated institutions. Use of trade names is for identification only and does not imply endorsement by any of the groups named above.

www.cdc.gov/pcd/issues/2008/jan07_0051.htm • Centers for Disease Control and Prevention
Table 2: Changes in risk factor levels within 30 days according to initial risk factor classification.

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>N Baseline</th>
<th>N Post-intervention</th>
<th>χ²* (p)</th>
<th>Baseline Mean (SD)</th>
<th>Post-intervention Mean (SD)</th>
<th>Mean Change</th>
<th>% Mean Change</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cholesterol (mg/dL)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Optimal (&lt;160)</td>
<td>631</td>
<td>1,862</td>
<td>1,950 (&lt;0.001)</td>
<td>141.0 (18.7)</td>
<td>133.2 (24.8)</td>
<td>-7.8</td>
<td>-5.6</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Elevated (160–199)</td>
<td>2,116</td>
<td>1,781</td>
<td></td>
<td>182.5 (15.7)</td>
<td>165.5 (24.4)</td>
<td>-17.0</td>
<td>-9.3</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>High (200–239)</td>
<td>1,261</td>
<td>756</td>
<td></td>
<td>215.6 (10.5)</td>
<td>188.5 (25.5)</td>
<td>-27.1</td>
<td>-12.6</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Very High (240–280)</td>
<td>478</td>
<td>183</td>
<td></td>
<td>254.7 (10.7)</td>
<td>215.2 (30.7)</td>
<td>-39.5</td>
<td>-15.5</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Dangerous (&gt;280)</td>
<td>126</td>
<td>30</td>
<td></td>
<td>306.6 (27.2)</td>
<td>245.9 (43.4)</td>
<td>-60.7</td>
<td>-19.8</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td><strong>Triglycerides (mg/dL)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Optimal (&lt;100)</td>
<td>3,053</td>
<td>3,232</td>
<td>109 (&lt;0.001)</td>
<td>95.5 (29.7)</td>
<td>99.7 (41.8)</td>
<td>4.2</td>
<td>4.4</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Above Optimal (100-199)</td>
<td>753</td>
<td>765</td>
<td></td>
<td>171.9 (13.9)</td>
<td>158.1 (53.0)</td>
<td>-13.8</td>
<td>-8.1</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Borderline (200-500)</td>
<td>820</td>
<td>663</td>
<td></td>
<td>270.5 (62.4)</td>
<td>220.1 (81.8)</td>
<td>-50.3</td>
<td>-18.6</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Very High (&gt;500)</td>
<td>45</td>
<td>11</td>
<td></td>
<td>634.7 (114.2)</td>
<td>354.8 (158.5)</td>
<td>-279.9</td>
<td>-44.1</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td><strong>Fasting Glucose (mg/dL)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Normal (&lt;110)</td>
<td>3,716</td>
<td>4,026</td>
<td>265 (&lt;0.001)</td>
<td>90.7 (9.9)</td>
<td>88.6 (10.9)</td>
<td>-2.1</td>
<td>-2.3</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Impaired (110-125)</td>
<td>390</td>
<td>304</td>
<td></td>
<td>116.1 (15.5)</td>
<td>106.0 (15.5)</td>
<td>-10.1</td>
<td>-8.7</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Diabetes (&gt;125)</td>
<td>525</td>
<td>301</td>
<td></td>
<td>164.0 (42.2)</td>
<td>131.4 (34.5)</td>
<td>-32.6</td>
<td>-19.9</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

* McNemar chi-square test, SD – Standard deviation.
Return on Investment (ROI)

Year 1 ROI

<table>
<thead>
<tr>
<th></th>
<th>Diabetic savings</th>
<th>*Elevated Risk savings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Program cost per member $600</td>
<td>$3558.80</td>
<td>$1411.00</td>
</tr>
<tr>
<td>ROI</td>
<td>5.9:1</td>
<td>2.3:1</td>
</tr>
</tbody>
</table>

Year 2 ROI

<table>
<thead>
<tr>
<th></th>
<th>Diabetic savings</th>
<th>*Elevated Risk savings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>$6717.60</strong></td>
<td>$3577.00</td>
</tr>
<tr>
<td>ROI over 2 years (no additional cost)</td>
<td>11.2:1</td>
<td>5.9:1</td>
</tr>
</tbody>
</table>

*elevated risk members included both high risk and diabetic members
**2 year savings were calculated by doubling year 1 savings for this group

Additional Notes:
- Based on 2 formal analyses of healthcare costs
- ROI is calculated as investment divided by savings and is expressed as a ratio
- Savings are the actual claims dollars difference between the participants in the CHIP intervention and the non-participants that were in the study with similar risks (the control group)
- Program cost (investment) is $600; the retail tuition price per participant for corporate programs
Quick 5 takeaways to start

1. Be **intentional** about your food, make sure it is food, consider giving up processed foods.
2. More **plants**, less meat and dairy. (veggies, fruits, beans whole grains and legumes…..lowers inflammation)
3. **Move** more every day by integrating activity into your daily schedule (stand-up or walking meetings, 10 flights daily, get and use a pedometer.)
4. Seek **silence** in your day.
5. Invest in your health.
RESOURCES

• CHIP@thechristhospital.com

• www.chiphealth.org

• The China Study by Colin Campbell

• Forks Over Knives,
  • Documentary....free on HULU or on netflix

• The Spectrum, by Dean Ornish
  www.ornishspectrum.com
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amy.mechley@thechristhospital.com