A Preliminary Method for Estimating Program-related Reduction in Employee Health Care Expenditures for the Massachusetts Working on Wellness (WoW) Program

Wen-Chieh Lin
University of Massachusetts Medical School
Massachusetts Working on Wellness Evaluation Team

Follow this and additional works at: https://escholarship.umassmed.edu/chr_symposium

Part of the Civic and Community Engagement Commons, Community-Based Research Commons, Community Health and Preventive Medicine Commons, Health Economics Commons, and the Translational Medical Research Commons

This work is licensed under a Creative Commons Attribution-Noncommercial-Share Alike 3.0 License.

Repository Citation

This material is brought to you by eScholarship@UMMS. It has been accepted for inclusion in Community Engagement and Research Symposia by an authorized administrator of eScholarship@UMMS. For more information, please contact Lisa.Palmer@umassmed.edu.
A Preliminary Method for Estimating Program-related Reduction in Employee Health Care Expenditures for the Massachusetts Working on Wellness (WoW) Program

Wen-Chieh Lin, PhD, on behalf of the MA WoW Evaluation Team

Introduction

- The WoW program is designed to improve employee health outcomes through workplace support of healthy behaviors
- Healthy behaviors are expected to achieve health care cost savings through:
  - Cost reduction: improving health by changing unhealthy behaviors to reduce health care services
  - Cost avoidance: maintaining healthy people at the same level without incurring new medical expenses
- Most of the literature addressing cost savings has not differentiated these two components. The quantified savings are typically represented as cost reduction.
- This approach was developed to estimate potential health care expenditure reduction for the WoW program based on:
  - Employee characteristics at baseline
  - Employer plans for new activities and policies
  - Evidence in the scientific literature on expected program benefits

Methods

- Collect baseline data from participating organizations and their employees
- Categorize intervention activities planned by employers
- Review scientific literature for documented effects from similar worksite interventions and summarize
- Factors for estimating potential health care expenditure reduction:
  - Number of organizations targeting the specific area
  - Number of employees in the study
  - Prevalence of specific risk factors for employees
  - Ranges of success in risk mitigation
  - Program-associated decrease in health care expenditures
- Estimate health care expenditure reduction:
  - Health care expenditure reduction
  - Reported program investment amount

Results

Selected Literature Review for Healthy Eating

<table>
<thead>
<tr>
<th>Intervention Activities</th>
<th>Examples of Published Literature</th>
<th>Changes in Behaviors and Health Condition Prevalence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information only</td>
<td>Gieaney (2016): One study arm = nutrition education only</td>
<td>7.9 months follow-up: +0.7% in mean BMI, 5.9% in systolic BP, and -4.1% in diastolic BP</td>
</tr>
<tr>
<td>Financial access/support</td>
<td>French (2003): Prices lowered by 50%</td>
<td>+93% purchases of lower-fat snacks; increased intake of fresh fruit (4-fold) and baby carrots (2-fold).</td>
</tr>
<tr>
<td>Financial incentives, staff competitions</td>
<td>Racette (2009): on-site Weight Watchers program, team competitions, rewards, incentives (&amp; other components)</td>
<td>Change at 12 months: +30% fruit/vegetable intake +25% of participants in lowest risk group</td>
</tr>
<tr>
<td>Multi-component programs</td>
<td>Bandoni (2010): menu planning, food presentation, motivational strategies</td>
<td>Increased intake of fruits and vegetables after 6 months: +17.3% crude estimate, +11.3% adjusted</td>
</tr>
</tbody>
</table>

- An improvement of as much as 30% of baseline value is plausible from a well-conducted intervention
- We assume that a 5% change in a measured outcome, e.g., change in behaviors, is roughly equivalent to 5% of the population changing risk category

Selected Potential Cost Reduction Estimations

<table>
<thead>
<tr>
<th>Annual Cost Reduction ($100 per risk decreased)</th>
<th># of Employees (N=74,000)</th>
<th>Success Rate (%)</th>
<th>Employees to Benefit (N)</th>
<th>Cost Reduction ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health Eating</td>
<td>5%</td>
<td>2,081</td>
<td>$312,132</td>
<td></td>
</tr>
<tr>
<td>- Employees not eating sufficient</td>
<td>10%</td>
<td>4,162</td>
<td>$624,264</td>
<td></td>
</tr>
<tr>
<td>fruits/vegetables</td>
<td>20%</td>
<td>8,324</td>
<td>$1,248,528</td>
<td></td>
</tr>
<tr>
<td>- Employees including this target in their Action Plans</td>
<td>30%</td>
<td>12,485</td>
<td>$1,872,792</td>
<td></td>
</tr>
<tr>
<td>Exercise (I)</td>
<td>5%</td>
<td>800</td>
<td>$119,991</td>
<td></td>
</tr>
<tr>
<td>- Employees not getting sufficient exercise</td>
<td>10%</td>
<td>1,600</td>
<td>$239,982</td>
<td></td>
</tr>
<tr>
<td>- Employees including this target in their Action Plans</td>
<td>20%</td>
<td>3,200</td>
<td>$479,964</td>
<td></td>
</tr>
<tr>
<td>- Employees including this target in their Action Plans</td>
<td>30%</td>
<td>4,800</td>
<td>$719,946</td>
<td></td>
</tr>
<tr>
<td>Exercise (II)</td>
<td>5%</td>
<td>1,739</td>
<td>$260,850</td>
<td></td>
</tr>
<tr>
<td>- Employees overweight or obese (50%)</td>
<td>10%</td>
<td>3,478</td>
<td>$521,700</td>
<td></td>
</tr>
<tr>
<td>- Employees including this target in their Action Plans</td>
<td>20%</td>
<td>5,217</td>
<td>$782,550</td>
<td></td>
</tr>
<tr>
<td>- Employees including this target in their Action Plans</td>
<td>30%</td>
<td>6,956</td>
<td>$1,043,400</td>
<td></td>
</tr>
<tr>
<td>Stress Reduction</td>
<td>5%</td>
<td>478</td>
<td>$71,706</td>
<td></td>
</tr>
<tr>
<td>- Employees’ stress interfering with health</td>
<td>10%</td>
<td>956</td>
<td>$143,412</td>
<td></td>
</tr>
<tr>
<td>- Employees including this target in their Action Plans</td>
<td>20%</td>
<td>1,912</td>
<td>$286,824</td>
<td></td>
</tr>
<tr>
<td>- Employees including this target in their Action Plans</td>
<td>30%</td>
<td>2,886</td>
<td>$430,236</td>
<td></td>
</tr>
</tbody>
</table>

Estimated Cost Savings

- Cost reduction: $0.76 million to $4.07 million with these assumptions:
  - Risk mitigation success rates from 5% to 30% are plausible for each target area: healthy eating, leisure-time exercise and stress reduction
  - $150 saved per risk decrease per person

Estimated Return on Investment

- Return on investment: $0.38 to $2.04 reduction in health care expenditures for every $1 invested by the WoW program
  - Based on $2 million WoW investment (June 2015-Dec 2016)
  - Employers’ monetized costs not available

Discussion and Conclusions

- Cost reduction varies among risk factors because of their baseline prevalence
- Current estimation focuses solely on cost reduction from improving unhealthy behaviors of employees
- The magnitude of cost saving could be greater if savings from other areas are also considered, including:
  - Cost avoidance by maintaining healthy people from engaging in new unhealthy behaviors
  - Preventing chronic disease complications
  - Synergistic effects when targeting multiple areas
  - Increased productivity and reduced absenteeism
- Higher return on investment is possible with further WoW program expansion since upfront costs for program development and data processes are likely non-recurrent or very low in the future

Acknowledgements

Evaluation Team members: Laura Punnett, ScD, Wen-Chieh Lin, PhD, Wenjun Li, PhD, Suzanne Nobrega, MS, Kevin Kane, MS, Laura Sefton, MPP, Robin Toof, EdD, Melissa Wall, MA

Working on Wellness is a program of the Massachusetts Department of Public Health, developed and managed in partnership with Health Resources in Action and Advancing Wellness. Funding is provided by the Prevention and Wellness Trust Fund as established by Chapter 224 of the Acts of 2012. Project evaluation is being conducted by researchers at UMass Lowell and UMass Medical School.