Worksite Health Promotion

Sharing Data and Evidence about Making Wellness Programs Effective

Ron Z. Goetzel, Ph.D. Emory University & Truven Health Analytics
WHAT PROBLEM ARE WE ATTEMPTING TO SOLVE? WE’RE SPENDING A BOATLOAD OF MONEY ON SICK CARE

- The United States spent $2.7 trillion in healthcare in 2010, or $8,680 for every man, woman and child.

- Per enrollee spending
  - Private sector - $4,786
  - Medicare - $11,610
  - Medicaid - $7,434

- Government paid $1.2 trillion (45% of total), private businesses financed $558 billion (21%), and households incurred $749 billion (28%) in costs.

- Health expenditures as percent of GDP:
  - 7.2% in 1970
  - 17.9% in 2011

Source: Hartman et al., Health Affairs, 32:1, January 16, 2013, 87-99
EMPLOYERS’ AND EMPLOYEES’ COSTS ARE RISING RAPIDLY

Average Annual Health Insurance Premiums and Worker Contributions for Family Coverage, 2005-2010

<table>
<thead>
<tr>
<th></th>
<th>2005</th>
<th>2010</th>
<th>Percent Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Worker Contribution</td>
<td>$2,713</td>
<td>$3,997</td>
<td>47%</td>
</tr>
<tr>
<td>Employer Contribution</td>
<td>$8,167</td>
<td>$9,773</td>
<td>20%</td>
</tr>
<tr>
<td>Total</td>
<td>$10,880</td>
<td>$13,770</td>
<td>27%</td>
</tr>
</tbody>
</table>

A RENEWED EMPHASIS ON INCREASING WORKER PRODUCTIVITY

- Introduce new technology
- Get workers to work more hours
- Make sure workers show up for work
- Make sure workers are mentally at work (presenteeism)
- Increase motivation to achieve at peak performance
KNOWLEDGE WORKERS

- Productivity is at an all time high – especially since businesses now need to do more with fewer workers

- But, $260B is wasted each year in the U.S. on health-related productivity losses

THE FALLOUT FROM A PUSH FOR HIGHER PRODUCTIVITY

- Increased job demands
- Detachment and depersonalization
- Increased health care usage
- Increased absenteeism
- Low job morale
- Increased disability rates
- On the job accidents
- Work - life imbalance
- High stress
INCcreased Health and Productivity Risks

**Medical**
Chest/back pain, heart disease, GI disorders, headaches, dizziness, weakness, repetitive motion injuries.

**Psychological**
Anxiety, aggression, irritability, apathy, boredom, depression, loneliness, fatigue, moodiness, insomnia.

**Behavioral**
Accidents, drug/alcohol abuse, eating disorders, smoking, tardiness, “exaggerated” diseases.

**Organizational**
Absence, work relations, turnover, morale, job satisfaction, productivity.
WHY IS HEALTH CARE SO EXPENSIVE?

Rise in spending for treated diseases (37%)

Innovation/advancing technology (pharmacologic, devices, treatments)

- Newborn delivery costs – five-fold increase from 1987-2002
  - NICU, incubators, ventilators, C-sections
- New/better medicines for treating disease
  - Depression (SSRI introduction – 45% treated in 1987 to 80% treated in 1997
  - Allergies (Claritan, Allegra, …)
- New treatment thresholds
  - Blood pressure
  - High blood glucose
  - Hyperlipidemia

WHY IS HEALTH CARE SO EXPENSIVE? (THORPE - PART 2)

Rise in the prevalence of disease (63%)

- About $\frac{3}{4}$ of all health care spending in the U.S. is focused on patients who have one or more chronic health conditions.

- Chronically ill patients only receive 56% of clinically recommended preventive health services.

And 27% of the rise in healthcare costs is associated with increases in obesity rates…
<table>
<thead>
<tr>
<th>Year</th>
<th>Prevalence of Obesity (Among US adults; BRFSS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990</td>
<td>No Data</td>
</tr>
<tr>
<td>1996</td>
<td>No Data</td>
</tr>
<tr>
<td>2006</td>
<td>No Data</td>
</tr>
</tbody>
</table>
ENVIRONMENTAL CORRELATES OF OBESITY

More driving
- Rise in car ownership
- Increase in driving shorter distances
- Less walking and bicycling

At home, more convenience
- Increase use of “labor saving” devices
- Increase in ready-made foods
- Increase in television viewing, computers, and video games

At work
- Sedentary occupational fields (“knowledge workers”)

In public
- More elevators, escalators, automatic doors and moving sidewalks
AWAY-FROM-HOME FOOD CONSUMPTION HAS DOUBLED

Source: Food Consumption (per capita) Data System, USDA, Economic Research Service
SO, WHAT’S THE SOLUTION? IT SEEMS SO LOGICAL…

If you improve the health and well being of your employees…

...quality of life improves
...health care utilization is reduced
...disability is controlled
...productivity is enhanced
WHAT IS THE EVIDENCE BASE?


- Improvements in the health risk profile of a population can lead to reductions in health costs (Edington et al., 2001, Goetzel et al., 1999, Carls et al., 2011))

POOR HEALTH COSTS MONEY

Drill Down…

• Medical
• Absence/work loss
• Presenteeism
• Risk factors
THE COST OF CHRONIC DISEASE

TOP 10 MOST COSTLY PHYSICAL HEALTH CONDITIONS

Medical, Drug, Absence, STD Expenditures (1999 annual $ per eligible), by Component

THE BIG PICTURE: OVERALL BURDEN OF ILLNESS BY CONDITION

Using Average Impairment and Prevalence Rates for Presenteeism

($23.15/hour wage estimate)

Ten Modifiable Health Risk Factors Are Linked To More Than One-Fifth Of Employer-Employee Health Care Spending

Abstract

An underlying premise of the Affordable Care Act provisions that encourage employers to adopt health promotion programs is an association between workers’ modifiable health risks and increased health care costs. Employers, consultants, and vendors have cited risk cost estimates developed in the 1990s and wondered whether they still hold true. Examining ten of these common health risk factors in a working population, we found that similar relationships between such risks and total medical costs documented in a widely cited study published in 1996 still hold. Based on our sample of 12,908 employees at seven organizations over an average of three years, $220,073,456, or 22.4 percent, of the $1046,373,301 spent annually by the seven employers and their employees in the study was attributed to the ten risk factors studied. This amount was similar to almost a quarter of spending linked to risk factors (24.8 percent) in the 1996 study. High risk for depression remained most strongly associated with increased per capita annual medical spending (48 percent, or $23,484 higher). High blood glucose, high blood pressure, and obesity were strongly related to increased health care costs (21.8 percent, 21.6 percent, and 27.4 percent, respectively), as were tobacco use, physical inactivity, and high stress. These findings indicate ongoing opportunities for well-designed and properly targeted employer-sponsored health promotion programs to produce substantial savings.
## RISK-COST IMPACTS – HERO II

### EXHIBIT 1 Average Unadjusted And Adjusted Medical Expenditures, In 2009 Dollars, By Risk Levels

<table>
<thead>
<tr>
<th>Risk measure</th>
<th>Risk level</th>
<th>Unadjusted means ($)</th>
<th>Adjusted means ($)</th>
<th>Unadjusted difference (%)</th>
<th>Adjusted difference (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depression</td>
<td>High</td>
<td>6,207</td>
<td>6,738</td>
<td>59.1</td>
<td>48.0</td>
</tr>
<tr>
<td></td>
<td>Lower</td>
<td>3,902</td>
<td>4,553</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blood glucose</td>
<td>High</td>
<td>6,532</td>
<td>6,849</td>
<td>70.0</td>
<td>31.8</td>
</tr>
<tr>
<td></td>
<td>Lower</td>
<td>3,842</td>
<td>5,196</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blood pressure</td>
<td>High</td>
<td>5,264</td>
<td>5,734</td>
<td>27.4</td>
<td>31.6</td>
</tr>
<tr>
<td></td>
<td>Lower</td>
<td>4,132</td>
<td>4,356</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Body weight</td>
<td>High</td>
<td>4,956</td>
<td>5,078</td>
<td>41.7</td>
<td>27.4</td>
</tr>
<tr>
<td></td>
<td>Lower</td>
<td>3,498</td>
<td>3,988</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tobacco use</td>
<td>High</td>
<td>4,192</td>
<td>4,184</td>
<td>10.8</td>
<td>16.3</td>
</tr>
<tr>
<td></td>
<td>Lower</td>
<td>3,784</td>
<td>3,597</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical inactivity</td>
<td>High</td>
<td>4,477</td>
<td>4,582</td>
<td>26.6</td>
<td>15.3</td>
</tr>
<tr>
<td></td>
<td>Lower</td>
<td>3,537</td>
<td>3,976</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stress</td>
<td>High</td>
<td>5,024</td>
<td>5,249</td>
<td>13.0</td>
<td>8.6</td>
</tr>
<tr>
<td></td>
<td>Lower</td>
<td>4,444</td>
<td>4,836</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cholesterol</td>
<td>High</td>
<td>4,780</td>
<td>4,913</td>
<td>2.0</td>
<td>-2.5</td>
</tr>
<tr>
<td></td>
<td>Lower</td>
<td>4,688</td>
<td>5,037</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nutrition and eating habits</td>
<td>High</td>
<td>3,245</td>
<td>3,261</td>
<td>-23.2</td>
<td>-5.2</td>
</tr>
<tr>
<td></td>
<td>Lower</td>
<td>4,226</td>
<td>3,440</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alcohol consumption</td>
<td>High</td>
<td>3,857</td>
<td>3,843</td>
<td>-3.94</td>
<td>-9.48</td>
</tr>
<tr>
<td></td>
<td>Lower</td>
<td>4,015</td>
<td>4,246</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The Relationship Between Modifiable Health Risk Factors and Medical Expenditures, Absenteeism, Short-Term Disability, and Presenteeism Among Employees at Novartis

Ron Z. Goetzel, PhD
Ginger Smith Carlb, MA
Shachung Wang, PhD
Emily Kelly, MA
Edward Mauceri, MD
Daniel Columbus, MBA
Ann Cavaioti, CEBS

Objectives: To quantify the impact of health risks on medical care and productivity costs in an employed population. Methods: Health risk, medical care, and productivity data were obtained for 5825 Novartis employees in 2005-2006. Factor analysis was performed to identify relationships among health risks. Multiple regression analyses were applied to estimate relationships between combined risk factors and costs. Results: We found a significant and consistent association among three factors (high biometric laboratory values, cigarette and alcohol use, and poor emotional health) and increased expenditures for both men and women and increased absenteeism for women. Medical care expenditures were 13-22% higher for men and women at risk for the high biometric laboratory values and the emotional health factor. Conclusions: There is a potential for medical and productivity savings for employers able to reduce health risks among their workers. (J Occup Environ Med. 2009;51:687-699.)
RISK FACTORS AND PRESENTEEISM (N = 5,875)

<table>
<thead>
<tr>
<th>Outcomes and group of health risks</th>
<th>Predicted Scenario</th>
<th>Predicted Mean</th>
<th>Impact on dollars or days (95% CI)</th>
<th>Impact as percent difference from scenario without the risk (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Presenteeism</td>
<td>Annual Unproductive Days</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>females</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High Biometric Lab Values</td>
<td>Without risk(s)</td>
<td>0.73</td>
<td>0.95</td>
<td>130.3%</td>
</tr>
<tr>
<td>Alcohol / Tobacco Use</td>
<td>With risk(s)</td>
<td>1.69</td>
<td>(0.85, 1.05)</td>
<td>(116.7%, 144.0%)</td>
</tr>
<tr>
<td>Emotional Health</td>
<td>Without risk(s)</td>
<td>0.77</td>
<td>1.67</td>
<td>217.0%</td>
</tr>
<tr>
<td></td>
<td>With risk(s)</td>
<td>2.44</td>
<td>(1.56, 1.78)</td>
<td>(203.1%, 230.9%)</td>
</tr>
<tr>
<td>males</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High Biometric Lab Values</td>
<td>Without risk(s)</td>
<td>0.49</td>
<td>0.80</td>
<td>162.3%</td>
</tr>
<tr>
<td>Alcohol / Tobacco Use</td>
<td>With risk(s)</td>
<td>1.29</td>
<td>(0.70, 0.90)</td>
<td>(142.2%, 182.3%)</td>
</tr>
<tr>
<td>Emotional Health</td>
<td>Without risk(s)</td>
<td>0.55</td>
<td>1.43</td>
<td>258.6%</td>
</tr>
<tr>
<td></td>
<td>With risk(s)</td>
<td>1.99</td>
<td>(1.16, 1.71)</td>
<td>(209.4%, 307.8%)</td>
</tr>
</tbody>
</table>
The Relationship Between Health Risks and Health and Productivity Costs Among Employees at Pepsi Bottling Group

Rachel M. Henke, PhD, Ginger S. Carls, PhD, Meghan E. Short, MPH, Xiaofei Pei, PhD, Shaohang Wang, PhD, Susan Moley, BBA, Mark Sullivan, BA, and Ron Z. Goettel, PhD

Objectives: To evaluate relationships between modifiable health risks and costs and measure potential cost savings from risk reduction programs.

Methods: Health risk information from 13,237 active Pepsi Bottling Group employees who completed health risk assessments between 2004 and 2006 were linked to medical care, workers’ compensation, and short-term disability cost data. Ten health risks were examined. Multivariate analyses were performed to estimate costs associated with having high-risk, holding demographic, and other risks constant. Potential savings from risk reduction were estimated.

Results: High-risk for weight, blood pressure, glucose, and cholesterol had the greatest impact on total costs. A one-percentage point annual reduction in the health risks assessed would yield annual per capita savings of $33.02 to $103.39.

Conclusions: Targeted programs that address modifiable health risks are expected to produce substantial cost reductions in multiple benefit categories.

Employees with modifiable health risks have higher medical care and productivity expenses when compared to lower risk employees. Employers seeking to contain health and productivity costs are turning to workplace health promotion programs to reduce the prevalence of risk factors among their workers. Knowledge of the association between health risks and costs can help employers determine where to target workplace programs and estimate cost savings resulting from interventions. This information, in turn, can help them calculate a potential return-on-investment before making program investments.

Additional research has found that costs associated with health risks increase when productivity losses are included. Annual costs due to lost productivity have been estimated at $13.92 to $25.92 per employee at risk. Employees tend to have multiple risk factors, which can impact the magnitude of these productivity costs. As the direct and indirect costs associated with having health risks can be high, further research on workplace programs that aim to lower health risks and better manage health care expenditures is warranted.

This study examined the relationship between modifiable health risks and health and productivity costs among U.S. employees at the Pepsi Bottling Group (PBG). PBG is the world’s largest manufacturer, seller, and distributor of Pepsi-Cola beverages and has a workforce with a large number of male, blue-collar employed. PBG has implemented various health improvement programs over the years and was awarded the C. Everett Koop National Health Award for its “Healthy Living Program” in 2007. Among PBG’s Healthy Living initiatives are its offerings of comprehensive preventive care benefits, on-site medical clinics and screenings, lifestyle management programs, flu shot campaigns, and a local wellness champions program that works with volunteer employee leaders at each worksite to facilitate local engagement. Meaningful incentives have enhanced participation rates, and marketing and branding techniques are used to sell “health” as a product.

Study Objectives
We sought to determine the relationships between individual health risks and costs across multiple benefit program categories and to predict the cost savings from improvement in the health risk...
BMI BREAKDOWN BY CATEGORY

- Normal BMI < 25: 25%
- Overweight BMI 25-30: 44%
- Class I BMI 30-35: 22%
- Class II BMI 35-40: 7%
- Class III BMI 40+: 3%
PEPSICO – OVERWEIGHT / OBESE ANALYSIS (N=11,217)

*At least one difference significant at the 0.05 level

Difference between combined overweight/obese categories and normal weight is displayed

GOOD NEWS – WORKSITE HEALTH PROMOTION WORKS!
A Systematic Review of Selected Interventions for Worksite Health Promotion

The Assessment of Health Risks with Feedback

Robin E. Soier, PhD, Kimberly D. Leeks, PhD, MPH, Sima Razl, MPH,
David P. Hopkins, MD, MPH, Matt Griffin, MPH, Adam Allen, MPH,
Sajal K. Chattopadhyay, PhD, Susan C. Smith, MPA, MLIS, Nancy Habarta, MPH,
Ron Z. Goetzel, PhD, Nicolaas P. Pronk, PhD, Dennis L. Richting, MD,
Deborah R. Bauer, MPH, RN, CHES, Leigh Ramsey Buchanan, PhD, MPH,
Curtis S. Florence, PhD, Lisa Kooren, MN, MPH, Debbie MacLean, BS, ATC/L,
Abbey Rosenblatt, MPH, Dyane Matson Hoffman, DRPH, MPH,
James V. Gritzell, MBA, MA, CHES, Andrew M. Walker, MPH, CHES, the Task Force on
Community Preventive Services

Background: Many health behaviors and physiologic indicators can be used to estimate one's likelihood of illness or premature death. Methods have been developed to assess this risk, most notably the use of a health risk assessment or biometric screening tool. This report provides recommendations on the effectiveness of interventions that use an Assessment of Health Risks with Feedback (AHRF) when used alone or as part of a broader worksite health promotion program to improve the health of employees.

Evidence acquisition: The Guide to Community Preventive Services' methods for systematic reviews were used to evaluate the effectiveness of AHRF when used alone and when used in combination with other intervention components. Effectiveness was assessed on the basis of changes in health behaviors and physiologic indicators, but was also informed by changes in risk estimates, health care use, and productivity.

Evidence synthesis: The review team identified strong evidence of effectiveness of AHRF when used with health education alone or without other intervention components for five outcomes. There was sufficient evidence of effectiveness for four additional outcomes assessed. There is insufficient evidence to determine effectiveness for others such as changes in body composition and fruit and vegetable intake. The team also found insufficient evidence to determine the effectiveness of AHRF when implemented alone.

Conclusions: The results of these reviews indicate that AHRF is useful as a gateway intervention to a broader worksite health promotion program that includes health education lasting 1-2 hours or repeating multiple times during a year, and that may include an array of health promotion activities. These reviews form the basis of the recommendations by the Task Force on Community Preventive Services presented elsewhere in this supplement.
## SUMMARY RESULTS AND TEAM CONSENSUS

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Body of Evidence</th>
<th>Consistent Results</th>
<th>Magnitude of Effect</th>
<th>Finding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcohol Use</td>
<td>9</td>
<td>Yes</td>
<td>Variable</td>
<td>Sufficient</td>
</tr>
<tr>
<td>Fruits &amp; Vegetables</td>
<td>9</td>
<td>No</td>
<td>0.09 serving</td>
<td>Insufficient</td>
</tr>
<tr>
<td>% Fat Intake</td>
<td>13</td>
<td>Yes</td>
<td>-5.4%</td>
<td>Strong</td>
</tr>
<tr>
<td>% Change in Those Physically Active</td>
<td>18</td>
<td>Yes</td>
<td>+15.3 pct pt</td>
<td>Sufficient</td>
</tr>
<tr>
<td>Tobacco Use</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prevalence</td>
<td>23</td>
<td>Yes</td>
<td>-2.3 pct pt</td>
<td>Strong</td>
</tr>
<tr>
<td>Cessation</td>
<td>11</td>
<td>Yes</td>
<td>+3.8 pct pt</td>
<td></td>
</tr>
<tr>
<td>Seat Belt Non-Use</td>
<td>10</td>
<td>Yes</td>
<td>-27.6 pct pt</td>
<td>Sufficient</td>
</tr>
</tbody>
</table>
### SUMMARY RESULTS AND TEAM CONSENSUS

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Body of Evidence</th>
<th>Consistent Results</th>
<th>Magnitude of Effect</th>
<th>Finding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diastolic blood pressure</td>
<td>17, 19, 12</td>
<td>Yes</td>
<td>Diastolic:–1.8 mm Hg</td>
<td>Strong</td>
</tr>
<tr>
<td>Systolic blood pressure</td>
<td></td>
<td>Yes</td>
<td>Systolic:–2.6 mm Hg</td>
<td></td>
</tr>
<tr>
<td>Risk prevalence</td>
<td></td>
<td>Yes</td>
<td>–4.5 pct pt</td>
<td></td>
</tr>
<tr>
<td>BMI</td>
<td>6, 12, 5</td>
<td>Yes</td>
<td>–0.5 pt BMI</td>
<td>Insufficient</td>
</tr>
<tr>
<td>Weight</td>
<td></td>
<td>No</td>
<td>–0.56 pounds</td>
<td></td>
</tr>
<tr>
<td>% body fat</td>
<td>5</td>
<td>Yes</td>
<td>–2.2% body fat</td>
<td></td>
</tr>
<tr>
<td>Risk prevalence</td>
<td></td>
<td>No</td>
<td>–2.2% at risk</td>
<td></td>
</tr>
<tr>
<td>Total Cholesterol</td>
<td>19, 8, 11</td>
<td>Yes</td>
<td>–4.8 mg/dL (total)</td>
<td>Strong</td>
</tr>
<tr>
<td>HDL Cholesterol</td>
<td></td>
<td>No</td>
<td>+.94 mg/dL</td>
<td></td>
</tr>
<tr>
<td>Risk prevalence</td>
<td></td>
<td>Yes</td>
<td>–6.6 pct pt</td>
<td></td>
</tr>
<tr>
<td>Fitness</td>
<td>5</td>
<td>Yes</td>
<td>Small</td>
<td>Insufficient</td>
</tr>
</tbody>
</table>
## SUMMARY RESULTS AND TEAM CONSENSUS

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Body of Evidence</th>
<th>Consistent Results</th>
<th>Magnitude of Effect</th>
<th>Finding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estimated Risk</td>
<td>15</td>
<td>Yes</td>
<td>Moderate</td>
<td>Sufficient</td>
</tr>
<tr>
<td>Healthcare Use</td>
<td>6</td>
<td>Yes</td>
<td>Moderate</td>
<td>Sufficient</td>
</tr>
<tr>
<td>Worker Productivity</td>
<td>10</td>
<td>Yes</td>
<td>Moderate</td>
<td>Strong</td>
</tr>
</tbody>
</table>
WHAT ABOUT ROI?
CRITICAL STEPS TO SUCCESS

- Awareness
- Participation
- Increased Knowledge
- Improved Attitudes
- Behavior Change
- Risk Reduction
- Reduced Utilization
- Financial ROI
HEALTH AFFAIRS ROI LITERATURE REVIEW

Workplace Wellness Programs Can Generate Savings

ABSTRACT Amid soaring health spending, there is growing interest in workplace disease prevention and wellness programs to improve health and lower costs. In a critical meta-analysis of the literature on costs and savings associated with such programs, we found that medical costs fell by about $3.27 for every dollar spent on wellness programs and that absenteeism costs fell by about $2.73 for every dollar spent. Although further exploration of the mechanisms at work and broader applicability of the findings is needed, this return on investment suggests that the wider adoption of such programs could prove beneficial for budgets and productivity as well as health outcomes.

It is an environment of soaring health care spending, policymakers, insurers, and employees express growing interest in methods of improving health while lowering costs. Much discussion has taken place about investment in disease prevention and health promotion as a way of achieving better health outcomes at lower costs. President Barack Obama has highlighted prevention as a crucial component of health reform, as have major congressional reform proposals. Work-based wellness programs, which could all be protected, have been showcased in these reform proposals, the popular press, and congressional hearings.

This enthusiasm for workplace programs stems in part from the fact that more than 60 percent of Americans get their health insurance coverage through an employer-based plan, as well as from the recognition that many employees spend the majority of their waking hours in the workplace—which makes it a natural venue for investments in health. There are several reasons that employers might benefit from investments in employee wellness. First, such programs might lead to reductions in health care costs and thus health insurance premiums. Second, healthier workers might be more productive and miss fewer days of work. These benefits may accrue at least partially to the employer (such as through improved ability to attract workers), even if the primary benefits accrue to the employee.

These factors may motivate the increasing interest in such programs among employers—and especially large employers. In 2006, 30 percent of companies with 500 or more workers reported offering wellness programs, while a 2008 survey of large manufacturing employers reported that 77 percent offered some kind of formal health and wellness program. Combined with the evidence presented below, small firms seem slower to offer such programs, and many of the programs offered are still quite limited in scope.

Several well-publicized case studies have suggested a positive return to employers’ investments in prevention. For every dollar invested in the program, the employer saves more than the dollar spent. The Gilead Health Management Program reported an estimated savings of $4.50 in medical expenditures per dollar spent on the program. Studies from the California Public Employee Retirement System (CalPERS), Bank of America, and Johnson and Johnson have similarly estimated sizable health care savings from wellness programs.

"Despite..."
## RESULTS - MEDICAL CARE COST SAVINGS

<table>
<thead>
<tr>
<th>Description</th>
<th>N</th>
<th>Average ROI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Studies reporting costs and savings</td>
<td>15</td>
<td>$3.37</td>
</tr>
<tr>
<td>Studies reporting savings only</td>
<td>7</td>
<td>Not Available</td>
</tr>
<tr>
<td>Studies with randomized or matched control group</td>
<td>9</td>
<td>$3.36</td>
</tr>
<tr>
<td>Studies with non-randomized or matched control group</td>
<td>6</td>
<td>$2.38</td>
</tr>
<tr>
<td>All studies examining medical care savings</td>
<td>22</td>
<td>$3.27</td>
</tr>
</tbody>
</table>
## RESULTS – ABSENTEEISM SAVINGS

<table>
<thead>
<tr>
<th>Description</th>
<th>N</th>
<th>Average ROI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Studies reporting costs and savings</td>
<td>12</td>
<td>$3.27</td>
</tr>
<tr>
<td>All studies examining absenteeism savings</td>
<td>22</td>
<td>$2.73</td>
</tr>
</tbody>
</table>
CASE STUDIES
<table>
<thead>
<tr>
<th>TITLE</th>
<th>Citibank Health Management Program (HMP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>INDUSTRY</td>
<td>Banking/Finance</td>
</tr>
<tr>
<td>TARGET POPULATION</td>
<td>47,838 active employees eligible for medical benefits</td>
</tr>
</tbody>
</table>
| DESCRIPTION | • A comprehensive multi-component health management program  
• Aims to help employees improve health behaviors, better manage chronic conditions, and reduce demand for unnecessary and inappropriate health services,  
• And, in turn, reduce prevalence of preventable diseases, show significant cost savings, and achieve a positive ROI. |
PROGRAM COMPONENTS

80% Low Risk

Questionnaire 1 (Program Entry and Channeling beginning January 1994)

20% High Cost Risk

Timeline (months)

Letter/Report 1

Self-Care Materials

High-Risk Letter/Report 1

Books, Audiotapes, Videotapes

High-Risk Questionnaire Letter/Report 2

Books, Audiotapes, Videotapes

High-Risk Questionnaire Letter/Report 3

Books, Audiotapes, Videotapes

High-Risk Questionnaire Letter/Report 4

Books, Audiotapes, Videotapes
All 47,838 active employees were eligible to participate. The participation rate was 54.3 percent. Participants received a $10 credit for Citibank’s Choices benefit plan enrollment for the following year. Approximately 3,000 employees participated in the high risk program each year it was offered.
CITIBANK RESULTS

Percent of Program Participants at High Risk at First and Last HRA by Risk Category (N=9,234 employees tracked over an average of two years)

## CITIBANK RESULTS

### Impact of improvement in risk categories on medical expenditures per month

<table>
<thead>
<tr>
<th>Impact Description</th>
<th>Unadjusted Impact**</th>
<th>Adjusted Impact**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net improvement* of at least 1 category versus others (N = 1,706)</td>
<td>-$1.86†</td>
<td>-$1.91</td>
</tr>
<tr>
<td>Net improvement* of at least 2 categories versus others (N = 391)</td>
<td>-$5.34</td>
<td>-$3.06</td>
</tr>
<tr>
<td>Net improvement* of at least 3 categories versus others (N = 62)</td>
<td>-$146.87†</td>
<td>-$145.77‡</td>
</tr>
</tbody>
</table>

**Net Improvement** refers to the number of categories in which risk improved minus number of categories in which risk stayed the same or worsened.

**Impact** = change in expenditures for net improvers minus change for others. Negative values imply program savings, since expenditures did not increase as much over time for those who improved, compared to all others.

† p < 0.05, ‡ p < 0.01
Total savings associated with program participation for 11,219 participants over an average of 23 months post-HRA is $8,901,413*

* Based on $34.03 savings and 23.31054 months post-HRA for 11,219 participants
CITIBANK HEALTH MANAGEMENT PROGRAM ROI

<table>
<thead>
<tr>
<th>PROGRAM COSTS</th>
<th>$1.9 million*</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROGRAM BENEFITS</td>
<td>$8.9 million*</td>
</tr>
<tr>
<td>PROGRAM SAVINGS</td>
<td>$7.0 million*</td>
</tr>
</tbody>
</table>

ROI = $4.70 in benefits for every $1.00 in costs

Notes:
1996 dollars @ 0 percent discount.
Slightly lower ROI estimates after discounting by either 3% or 5% per year.
PROCTER & GAMBLE

Total Annual Medical Costs For Participants and Non-Participants In Health Check (1990 - 1992)
Adjusted for age and gender; Significant at p < .05

*In year 3 participant costs were 29% lower producing an ROI of 1.49 to 1.00

HIGHMARK ROI STUDY

• Regional health plan with approximately 12,000 workers
• Headquartered in Pittsburgh, with a major operating facility in Camp Hill, PA and other locations in Johnstown, Erie, and Williamsport, PA.
• Worksite Health Promotion Program (introduced in 2002)
  – health risk assessments (HRAs)
  – online programs in nutrition, weight management and stress management
  – tobacco cessation programs
  – on-site nutrition and stress classes
  – individual nutrition and tobacco cessation coaching
  – biometric screenings
  – six- to twelve-week campaigns to increase fitness participation and awareness of disease prevention strategies
  – state-of-the-art fitness centers (Pittsburgh and Camp Hill, PA)

CHARACTERISTICS USED IN MATCHING SUBJECTS – AIM IS TO SHOW PARTICIPANTS AND NON-PARTICIPANTS ARE NOT STATISTICALLY DIFFERENT

### Overall Comparison

<table>
<thead>
<tr>
<th>Calendar Year 2001</th>
<th>All Participants</th>
<th>Non-Participants</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N = 1890</td>
<td>N = 1890</td>
<td></td>
</tr>
<tr>
<td>Male, n (%)</td>
<td>484 (25.6)</td>
<td>484 (25.6)</td>
<td>0.98</td>
</tr>
<tr>
<td>Age, 2001 mean years</td>
<td>41.7</td>
<td>41.6</td>
<td>0.94</td>
</tr>
<tr>
<td>Net payments for healthcare expenditures in 2001, mean</td>
<td>$1,414</td>
<td>$1,318</td>
<td>0.94</td>
</tr>
</tbody>
</table>

| Comorbidity Prevalence, %       |                  |                  |         |
| Heart disease, n(%)             | 183 (9.7)        | 184 (9.7)        |         |
| Diabetes, n(%)                  | 13 (0.7)         | 13 (0.7)         | 0.99    |
| CCI Group 1 comorbidity, n(%)   | 849 (44.9)       | 849 (44.9)       | 0.98    |
| CCI Group 2 comorbidity, n(%)   | 528 (27.9)       | 528 (27.9)       | 0.98    |
| CCI, median (range)             | 1.75 (0-17)      | 1.75 (0-18)      | 0.97    |

CCI = Charlson comorbidity index; Group 1 comorbidity includes presence of any of these: chronic obstructive pulmonary disease, rheumatologic disease stomach ulcer or dementia, all as coded by using the Charlson index; Group 2 comorbidity includes presence of any of these: cancer, renal failure, liver disease or cirrhosis, autoimmune disease.
ANNUAL GROWTH IN NET PAYMENTS

Annual growth in costs, Highmark, Inc.
For matched-participants and non-participants over four years.
## ESTIMATED ANNUAL SAVINGS AFTER FOUR YEARS OF FOLLOW-UP — PARTICIPANTS VERSUS NON-PARTICIPANTS — ADJUSTED FOR CONFOUNDERS

**Participants versus Non-participants**

<table>
<thead>
<tr>
<th>Factor</th>
<th>Net Payments β Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>-964.51</td>
</tr>
<tr>
<td>All participants, (n=1892)</td>
<td>-176.47</td>
</tr>
<tr>
<td>Male gender</td>
<td>497.09</td>
</tr>
<tr>
<td>Age, per year</td>
<td>46.05</td>
</tr>
<tr>
<td>Heart disease at baseline</td>
<td>576.59</td>
</tr>
<tr>
<td>Diabetes at baseline</td>
<td>1704.01</td>
</tr>
<tr>
<td>Group 1 comorbidity</td>
<td>1133.20</td>
</tr>
<tr>
<td>Group 2 comorbidity</td>
<td>397.80</td>
</tr>
<tr>
<td>Annual savings estimate from participation (β*n)</td>
<td>$333,881</td>
</tr>
<tr>
<td>Per person estimate</td>
<td>176.47</td>
</tr>
</tbody>
</table>
Cost-Benefit (ROI) Analysis

<table>
<thead>
<tr>
<th></th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>GD Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td># Used</td>
<td>Total</td>
<td># Used</td>
<td>Total</td>
<td># Used</td>
</tr>
<tr>
<td>HRA &amp; Incentive</td>
<td>1892</td>
<td>$243,731</td>
<td>1303</td>
<td>$143,111</td>
<td>1308</td>
</tr>
<tr>
<td>Online</td>
<td>201</td>
<td>$1,142</td>
<td>247</td>
<td>$1,372</td>
<td>248</td>
</tr>
<tr>
<td>Group</td>
<td>34</td>
<td>$1,544</td>
<td>56</td>
<td>$3,077</td>
<td>56</td>
</tr>
<tr>
<td>Nutrition Coaching</td>
<td>2</td>
<td>$66</td>
<td>23</td>
<td>$740</td>
<td>51</td>
</tr>
<tr>
<td>10,000 Steps</td>
<td></td>
<td></td>
<td>244</td>
<td>$2,441</td>
<td>413</td>
</tr>
<tr>
<td>Fitness Center</td>
<td>407</td>
<td>$25,603</td>
<td>495</td>
<td>$29,939</td>
<td>879</td>
</tr>
<tr>
<td>Highmark Challenge</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>112</td>
</tr>
<tr>
<td>Maintain Don't Gain Newsletter</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wellness Program Costs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cost per participant</td>
<td>$130.28</td>
<td>$135.34</td>
<td>$138.38</td>
<td>$150.98</td>
<td></td>
</tr>
<tr>
<td>Estimated Annual Savings from</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Model $176.47/person</td>
<td>$333,881</td>
<td>$333,881</td>
<td>$333,881</td>
<td>$333,881</td>
<td></td>
</tr>
<tr>
<td>Net Savings (Estimated Savings</td>
<td>$87,398</td>
<td>$157,538</td>
<td>$152,881</td>
<td>$129,304</td>
<td></td>
</tr>
<tr>
<td>Wellness Program Costs, Highmark, inflation-adjusted to 2005 dollars</td>
<td>47</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### JOHNSON & JOHNSON
### HEALTH AND WELLNESS PROGRAM EVALUATION

<table>
<thead>
<tr>
<th><strong>TITLE</strong></th>
<th>J &amp; J Health and Wellness Program (H &amp; W)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>INDUSTRY</strong></td>
<td>Healthcare</td>
</tr>
<tr>
<td><strong>TARGET POPULATION</strong></td>
<td>43,000 U.S. based employees</td>
</tr>
</tbody>
</table>
| **DESCRIPTION** | • Comprehensive, multi-component worksite health promotion program  
• Evolved from LIVE FOR LIFE in 1979 |
After an average of 2.75 years, risks were reduced in eight categories but increased in four related categories: body weight, dietary fat consumption, risk for diabetes, and cigar use.

$225 Annual Medical Savings/ Employee/Year since 1995

Source: Ozminkowski et al, 2002 — N=18,331
Recent Experience In Health Promotion At Johnson & Johnson: Lower Health Spending, Strong Return On Investment

ABSTRACT Johnson & Johnson Family of Companies introduced its worksite health promotion program in 1979. The program evolved and is still in place after more than thirty years. We evaluated the program’s effect on employees’ health risks and health care costs for the period 2002–08. Measured against similar large companies, Johnson & Johnson experienced average annual growth in total medical spending that was 3.7 percentage points lower. Company employees benefited from meaningful reductions in rates of obesity, high blood pressure, high cholesterol, tobacco use, physical inactivity, and poor nutrition. Average annual per employee savings were $565 in 2009 dollars, producing a return on investment equal to a range of $1.88—3.92 saved for every dollar spent on the program. Because the vast majority of US adults participate in the workforce, positive effects from similar programs could lead to better health and to savings for the nation as a whole.
HEALTH RISKS – BIOMETRIC MEASURES -- ADJUSTED

Results adjusted for age, sex, region * p<0.05 ** p<0.01
HEALTH RISKS – HEALTH BEHAVIORS -- ADJUSTED

Results adjusted for age, sex, region * p<0.05 ** p<0.01
HEALTH RISKS – PSYCHOSOCIAL -- ADJUSTED

Results adjusted for age, sex, region * p<0.05 ** p<0.01
ADJUSTED MEDICAL AND DRUG COSTS VS. EXPECTED COSTS FROM COMPARISON GROUP

Average Savings 2002-2008 = $565/employee/year

Estimated ROI: $1.88 - $3.92 to $1.00
Seven-Year Trends in Employee Health Habits From a Comprehensive Workplace Health Promotion Program at Vanderbilt University

Daniel W. Byrne, MS, Ron Z. Goetzel, PhD, Paula W. McGown, MSN, MAcc, RN, FNP-BC, CPA, Marilyn C. Holmes, MS, RD, LDN, Meghan Short Beckowski, MPH, Maryam J. Tabrizi, MS, Niranjana Kowlessar, PhD, and Mary I. Yarbrough, MD, MPH, FACOEM, FACPM

Objective: To assess long-term changes in health risks for employees participating in Vanderbilt University’s incentive-based worksite wellness program.

Methods: Descriptive longitudinal trends were examined for employees’ health risk profiles for the period of 2003 to 2009. Results: The majority of risk factors improved over time with the most consistent change occurring in physical activity. The proportion of employees exercising one or more days per week increased from 72.7% in 2003 to 83.4% in 2009. Positive annual, monotonic changes were also observed in percentage for nonsmokers and seat belt usage. Although the largest improvements occurred between the first two years, improvements continued without significant regression toward baseline. Conclusions: This 7-year evaluation, with high participation and large sample size, provides robust estimates of health improvements that can be achieved through a voluntary incentive-based wellness program.

Learning Objectives

- Discuss the characteristics of Vanderbilt University’s workplace health promotion program, “Go For The Gold” (GFTG).
- Identify long-term effects on health risk factors such as physical activity, smoking, and seat belt use.
- Discuss factors leading to the overall health improvement and risk reduction among GFTG participants.
FIGURE 1. Physical activity trends for the aggregate and cohort groups of Vanderbilt’s GFTG Program and comparison to national and Tennessee norms from Behavioral Risk Factor Surveillance System. For the Vanderbilt data, the HRA question was “How many days per week do you engage in aerobic exercise of at least 20 to 30 minutes duration (fitness walking, cycling, jogging, swimming, aerobic dance, or active sports)?”
FIGURE 4. Obesity trends for the aggregate and cohort groups of Vanderbilt's GFTG Program and comparison to national and Tennessee norms from Behavioral Risk Factor Surveillance System. Obesity was defined as a BMI $\geq 30$. 
FIGURE 2. Tobacco use trends for the aggregate and cohort groups of Vanderbilt’s GFTG Program and comparison to national and Tennessee norms from Behavioral Risk Factor Surveillance System. The HRA question identified those who currently smoke cigarettes daily. Former smokers, pipe, cigar, and chewing tobacco were not included.
Identifying “Best Practices” in Workplace Health Promotion: What Works?

Health Promotion Programs — What Works?

Leadership Commitment

- Leading by example – with buy-in by middle managers
- “Healthy company” norm/culture
- Explicit connection to the core principles of the organization
- Employee-driven advisory board
- Specific program goals and objectives – with realistic expectations
- Alignment of organizational, HR and health promotion policies/practices
- Sustainability – future orientation
Incentives

- Incentives to participate (not change biometrics)
- Accountability at all levels – linked to rewards
- Effective marketing and communication (multi-channel)
Health Promotion Programs — What Works?

Effective Screening and Triage

• Casting a wide net to identify the highest risk individuals

• Providing “public health” interventions to keep people at low risk

• Triaging individuals into programs that produce greatest impact/payoff

• Protecting confidentiality

• Coordinating with providers and community resources
Health Promotion Programs — What Works?

State-of-the-Art Intervention Programs

• Theory and evidence-based (e.g., Bandura, Prochaska, Lorig, Strecher, Glasgow)

• Tailored and individualized interventions

• Balancing high touch with high tech

• Individual and Environmental/ ecological interventions

• Effective, reliable, valid tools
Health Promotion Programs — What Works?

**Effective Implementation**

- Integrate programs – insure vendor (stakeholder) engagement
- Accessible/attractive programs
- Start simple – pilot – grow on success
- Multi-component -- variety of topics and engagement modalities
- Integrate staff into the fabric of the organization
- Spend the right amount of money to achieve a desired ROI
Health Promotion Programs — What Works?

- Excellent Evaluation
  - Measure, manage, and measure again
  - Regular communication of results
  - Explicit connection of results to core values
  - Rigorous methods that stand up to peer review
  - Integrated Data Systems
SO, WHAT CAN YOU DO TOMORROW?

**Promote physical activity**
- Walking trails, open stairwells, slow down the elevator, promote public transport, subsidize gym membership, provide pedometers, sponsor competitions, work with your local schools

**Promote access to healthy foods**
- Make the healthy choices the easy choices, label “healthy” choices, only allow healthy food at company-sponsored events, change vending machine contractors, sell half portions in the cafeteria, give people smaller plates, provide free water, make people wait for unhealthy food, promote and subsidize nutritious food, provide healthy cupboards, pay for microwaves and refrigerators, educate

**Advocate for legislation that supports healthy lifestyles**
- Soda taxes, physical activity in schools, ensure food advertising to children is responsible, support outdoor facilities and parks, end subsidies for unhealthy foods and increase subsidies for healthy foods, build bike and walking trails

**Build a healthy company culture**
- Change the norms of the organization, reward employees and managers for healthy lifestyles, provide social support for employees who want to lose weight, make the workplace fun
Focusing on improving the health and quality of people’s lives will improve the productivity and competitiveness of our workers and citizens.

A growing body of scientific literature suggests that well-designed, evidence-based health promotion and disease prevention programs can:

- Improve the health of workers and lower their risk for disease;
- Save businesses money by reducing health-related medical losses and limiting absence and disability;
- Heighten worker morale and work relations;
- Improve worker productivity; and
- Improve the financial performance of organizations instituting these programs.
THANK YOU!

Ron Z. Goetzel, Ph.D.
Rollins School of Public Health, Emory University
Truven Health Analytics
+1 301-547-4393 (voice)
+1 202-285-6728 (cell)
ron.goetzel@truvenhealth.com
ron.goetzel@emory.edu