Strategies in Workplace Health Promotion Programs

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Objectives

• Understand evolution of corporate health promotion programs.
• Gain understanding of the association of modifiable health risks with costs and productivity.
• Gain perspectives on efficacy of common strategies in health promotion.
America – Land of Chronic Disease

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Obesity among adults &gt;18 (BMI&gt; 30.0 kg/m2) Prevalance</td>
<td>26.9 %</td>
</tr>
<tr>
<td>Overweight or obesity &gt;18</td>
<td>64 %</td>
</tr>
<tr>
<td>Tobacco use</td>
<td>17.9 %</td>
</tr>
<tr>
<td>Binge Drinking</td>
<td>15.8 %</td>
</tr>
<tr>
<td>Cancer (all sites) Mortality (CI per 100,000)</td>
<td>190.1</td>
</tr>
<tr>
<td>Breast Cancer - Incidence (Age adjusted CI)</td>
<td>121.8</td>
</tr>
<tr>
<td>Breast Cancer - Mortality (Age adjusted CI)</td>
<td>24.5</td>
</tr>
<tr>
<td>Cervical Cancer - Incidence (Age adjusted CI)</td>
<td>8.3</td>
</tr>
<tr>
<td>Cervical Cancer - Mortality (Age adjusted CI)</td>
<td>2.6</td>
</tr>
<tr>
<td>Colorectal Cancer - Incidence (Age adjusted CI)</td>
<td>50.6</td>
</tr>
<tr>
<td>Colorectal Cancer - Mortality (Age adjusted CI)</td>
<td>18.2</td>
</tr>
<tr>
<td>Lung Cancer - Incidence (Age adjusted CI)</td>
<td>69.9</td>
</tr>
<tr>
<td>Lung Cancer - Mortality (Age adjusted CI)</td>
<td>53.4</td>
</tr>
<tr>
<td>Prostate Cancer - Incidence (Age adjusted CI)</td>
<td>155.2</td>
</tr>
<tr>
<td>Prostate Cancer - Mortality (Age adjusted CI)</td>
<td>20.3</td>
</tr>
<tr>
<td>Cerebrovascular Disease Mortality (Age adjusted CI)</td>
<td>46.6</td>
</tr>
<tr>
<td>Coronary Heart Disease Mortality (Age adjusted CI)</td>
<td>154</td>
</tr>
</tbody>
</table>

http://apps.nccd.cdc.gov/cdi/ 2010
Global Problem

Projected Deaths from Chronic Diseases (in millions)

Who pays for Healthcare

US Health Insurance Provider Breakdown

- Employer Provided: 9.1%
- Purchased Individually: 27.0%
- Government Funded: 59.7%
Among Firms Offering Health Benefits, Percentage of Firms That Report They Made the Following Changes as a Result of the Economic Downturn, by Firm Size, 2010

*Estimate is statistically different between All Small Firms and All Large Firms within category (p<.05).

Average Annual Health Insurance Premiums and Worker Contributions for Family Coverage, 2000-2010

2005

$10,880

$8,167

$2,713

2010

$13,770

$9,773

$3,997

$1,284 Worker Contribution Increase

Note: The average worker contribution and the average employer contribution may not add to the average total premium due to rounding.

Average Annual Worker and Employer Contributions to Premiums and Total Premiums for Family Coverage, 1999-2010

<table>
<thead>
<tr>
<th>Year</th>
<th>Worker Contribution</th>
<th>Employer Contribution</th>
<th>Total Premiums</th>
</tr>
</thead>
<tbody>
<tr>
<td>1999</td>
<td>$1,543</td>
<td>$4,247</td>
<td>$5,791</td>
</tr>
<tr>
<td>2000</td>
<td>$1,619</td>
<td>$4,819*</td>
<td>$6,438*</td>
</tr>
<tr>
<td>2001</td>
<td>$1,787*</td>
<td>$5,269*</td>
<td>$7,061*</td>
</tr>
<tr>
<td>2002</td>
<td>$2,137*</td>
<td>$5,866*</td>
<td>$8,003*</td>
</tr>
<tr>
<td>2003</td>
<td>$2,412*</td>
<td>$6,657*</td>
<td>$9,068*</td>
</tr>
<tr>
<td>2004</td>
<td>$2,661*</td>
<td>$7,289*</td>
<td>$9,950*</td>
</tr>
<tr>
<td>2005</td>
<td>$2,713</td>
<td>$8,167*</td>
<td>$10,880*</td>
</tr>
<tr>
<td>2006</td>
<td>$2,973*</td>
<td>$8,508*</td>
<td>$11,480*</td>
</tr>
<tr>
<td>2007</td>
<td>$3,281*</td>
<td>$8,824</td>
<td>$12,106*</td>
</tr>
<tr>
<td>2008</td>
<td>$3,354</td>
<td>$9,325*</td>
<td>$12,680*</td>
</tr>
<tr>
<td>2009</td>
<td>$3,515</td>
<td>$9,860*</td>
<td>$13,375*</td>
</tr>
<tr>
<td>2010</td>
<td>$3,997*</td>
<td>$9,773</td>
<td>$13,770*</td>
</tr>
</tbody>
</table>

* Estimate is statistically different from estimate for the previous year shown (p<.05).

Average Annual Worker Premium Contributions Paid by Covered Workers for Single and Family Coverage, 1999-2010

*Estimate is statistically different from estimate for the previous year shown (p<.05).

Roots of Health Promotion

• Ancient Greeks – recognized links between good health and ability to fight diseases (considered physical and social determinants)
• Prior to 1980’s – not much...
• WHO Ottawa Conference 1986... watershed event
  – Led to increasing efforts to control specific diseases through workplace efforts (smoking, alcohol, cancer).
• 1986 NIH Office of Disease Prevention established
Typical HP Programs 80’s-90’s

• Established as part of benefits programs for recruitment and retention
• Few goals and objectives
• Few outcomes measures
• Low participation rates
• Little in new programming - Designed around improving awareness
• smoking cessation, cholesterol, weight loss
Late 90’s Economy

• Dot Com Era
  – On site health centers
  – On site massage therapy
  – On site clinical care

Also era of sky-rocketing health care costs and losing game of cost shifting (HMO, PPO, etc.)
Health and Productivity

• Rise of theory that worksite health promotion may lead to:
  – Improved health status
  – Improved productivity
  – Reduced health care utilization
  – Decreased “presenteeism”

Birth of new research field – Health and Productivity Management
Integrated and Sustainable Approach

Total Health & Productivity Management

- Health Advocate
  - Provide Direction
  - Get the Care You Need
  - Coaching & Outreach

- Health Plan Design

- Disease Management
  - High Acuity (identified high cost disease)
  - Low Acuity (identified lower cost disease; lifestyle behavior focus)

- Case Management
  - HI (salaried)
  - CCM (hourly)

- Absence Management
  - STD, LTD
  - Workers’ Compensation
  - Scattered Absence

- On-site Medical
  - Diabetes education pilot
  - Injury and medical management

- Wellness Programs
  - Active expansion
  - Retiree communications/awareness program

- Health Risk Assessment
  - Assess and track health behaviors
  - Maintain health
  - Address health risks

- Health Portal
  - Stay healthy
  - Health information
  - Make informed choices

- Fitness Centers
  - Low risk maintenance
  - High risk reduction

- Behavioral Health
  - Work/Family
  - Work Life Plus
Rationale for workplace Health and Productivity Programs

• Most people with health care coverage receive through employer
• Health care spend rising nearly 17% per year over past decade
• Benefits are highest fixed cost for most employers
• Indirect costs are significantly higher than health care costs
7 HPP Components for Success

Literature Review of Published Award Winners

• Integration HPM programs into organizational operations
• Address individual, environmental, policy and cultural factors
• Targeting multiple health issues
• Tailoring programs to address specific needs

Goetzel et al, JOEM 2007
7 HPP Components for Success

- Attaining high participation rates
- Rigorously evaluating programs
- Communicating successful outcomes to key stakeholders

Goetzel et al, JOEM 2007
Implementation Steps of HPP

- Company Assessment
  - (alignment with corp. strategy, Sr. management & stakeholder support, internal threats)
- Data and Metrics
  - (Define what you already have i.e. Health Metrics, Productivity Metrics)
  - analyze and define risks
  - Benchmarking (number of free sites)
- Operational Plan
- Interventions
- Evaluation and Refinements
Health data benchmarking

• Cost Data
  – Medical expenditure panel survey (www.meps.ahrq.gov)
  – National Health Care Survey (www.cdc.gov/nchs/nchs.htm)
  – Kaiser Family Foundation (www.statehealthfacts.org)
  – Consultant/Vendor sponsored surveys

• Condition and health risk prevelance
  – National Health Information Survey (www.cdc.gov/nchs/nhis.htm)
  – National Health and Nutrition Examination Survey (www.cdc.gov/nchs/nhanes.htm)
  – Kaiser Family Foundation (www.statehealthfacts.org)
HPP Effect

• Survey of 167 Fortune 1000 Companies
  – Low Cost Companies (low tertile) $7,228/ee
  – High Cost Companies (highest tertile) $10,428/ee

• Low cost companies had HPP programs that:
  – Offered variety of health management programs
  – Focused on individual health improvement
  – Disease management

Towers and Perrin 2007
Key Changes in Beliefs of HPP

- Individuals Can Maintain Low-Risk Health Status even as they Age
- A Health Plan and an Employer can Help its Members Maintain Low-Risk Health Status
- The Major Economic Benefit is in Paying Attention to Individuals with Low-Risk Health Status
Health Continuum

Premature Death/Disability → Chronic Signs & Symptoms → Feeling OK → High-Level Wellness/Maximum Performance

Where are the Opportunities?

Chronic Signs & Symptoms

Feeling OK

High-Level Wellness/Maximum Performance
<table>
<thead>
<tr>
<th>Health Risk Measure</th>
<th>High Risk Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcohol</td>
<td>More than 14 drinks/week</td>
</tr>
<tr>
<td>Blood Pressure</td>
<td>Systolic &gt;139 mmHg or Diastolic &gt;89 mmHg</td>
</tr>
<tr>
<td>Body Weight</td>
<td>BMI $\geq$ 27.5</td>
</tr>
<tr>
<td>Cholesterol</td>
<td>Greater than 239 mg/dl</td>
</tr>
<tr>
<td>Existing Medical Problem</td>
<td>Heart, Cancer, Diabetes, Stroke</td>
</tr>
<tr>
<td>HDL</td>
<td>Less than 35 mg/dl</td>
</tr>
<tr>
<td>Illness Days</td>
<td>&gt;5 days last year</td>
</tr>
<tr>
<td>Life Satisfaction</td>
<td>Partly or not satisfied</td>
</tr>
<tr>
<td>Perception of Health</td>
<td>Fair or poor</td>
</tr>
<tr>
<td>Physical Activity</td>
<td>Less than one time/week</td>
</tr>
<tr>
<td>Safety Belt Usage</td>
<td>Using safety belt less than 100% of time</td>
</tr>
<tr>
<td>Smoking</td>
<td>Current smoker</td>
</tr>
<tr>
<td>Stress</td>
<td>High</td>
</tr>
</tbody>
</table>

**OVERALL RISK LEVELS**

- **Low Risk**: 0 to 2 high risks
- **Medium Risk**: 3 to 4 high risks
- **High Risk**: 5 or more high risks
Measuring risk – Depends on how you ask the Question?

<table>
<thead>
<tr>
<th>Self report if you have condition</th>
<th>Self Report if Dr. ever told you that you have condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Allergies (48.1%)</td>
<td>• Allergies (34%)</td>
</tr>
<tr>
<td>• Back/Neck Pain (27.4%)</td>
<td>• Obesity (29.3%)</td>
</tr>
<tr>
<td>• Hypertension (17.4%)</td>
<td>• Hypertension (18%)</td>
</tr>
<tr>
<td>• Obesity (17%)</td>
<td>• Arthritis (16.2%)</td>
</tr>
<tr>
<td>• GERD (15.5%)</td>
<td>• GERD (12.6%)</td>
</tr>
<tr>
<td>• Arthritis (14.9%)</td>
<td>• Depression (11.2%)</td>
</tr>
<tr>
<td>• Fatigue (13.3%)</td>
<td>• Anxiety (11.1%)</td>
</tr>
<tr>
<td>• Migraine (13.1%)</td>
<td>• Asthma (7.0%)</td>
</tr>
<tr>
<td>• Depression (12.6%)</td>
<td>• Back/Neck Pain (7.5%)</td>
</tr>
<tr>
<td>• Headache (12.2%)</td>
<td>• Migraine (7.2%)</td>
</tr>
</tbody>
</table>

Loeppke et al April 2009 JOEM
Costs Associated Age and Risk

Excess Medical Costs due to Excess Risks

Edington, AJHP 2001; 15(5):341-349
Low Risk

Excess Self-Reported Major Diseases Associated with Excess Risks

Percent with Disease

Annual medical/pharmacy costs by weight groups

Median of medical cost ($)

- Under weight: $3,184
- Normal: $2,225
- Over weight: $2,388
- Obesity I: $2,801
- Obesity II: $3,182
- Extreme Obesity: $3,753

Beyond Direct Costs - Relative Costs of Poor Health: Total Value of Health

Direct Costs:
- Medical & Pharmacy

Indirect Costs:
- Presenteeism
- LTD
- STD
- Absenteeism

Edington, Burton. A Practical Approach to Occupational and Environmental Medicine (McCunney). 140-152. 2003
Top 10 health conditions by annual medical, drug, absenteeism and presenteeism costs per 1000 FTEs.

Loeppke et al April 2009 JOEM
### Association of Risk Levels with Several Corporate Cost Measures

<table>
<thead>
<tr>
<th>Outcome Measure</th>
<th>Low-Risk (N=671)</th>
<th>Medium-Risk (N=504)</th>
<th>High-Risk (N=396)</th>
<th>Excess Cost Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Short-term Disability</td>
<td>$120</td>
<td>$216</td>
<td>$333</td>
<td>41%</td>
</tr>
<tr>
<td>Worker’s Compensation</td>
<td>$228</td>
<td>$244</td>
<td>$496</td>
<td>24%</td>
</tr>
<tr>
<td>Absence</td>
<td>$245</td>
<td>$341</td>
<td>$527</td>
<td>29%</td>
</tr>
<tr>
<td>Medical &amp; Pharmacy</td>
<td>$1,158</td>
<td>$1,487</td>
<td>$3,696</td>
<td>38%</td>
</tr>
<tr>
<td>Total</td>
<td>$1,751</td>
<td>$2,288</td>
<td>$5,052</td>
<td>36%</td>
</tr>
</tbody>
</table>

Excess Disability Costs due to Excess Risks

- Low Risk (0-2 Risks) N=685: $491
- HRA Non-Participant N=4,649: $666
- Medium Risk (3-4 Risks) N=520: $783
- High Risk (5+ Risks) N=366: $1,248

Health Risks and Behaviors X hours Lost

- Presenteeism
- STD
- Illness

Excess Lost On-The-Job Productivity due to Excess Risks

- Low Risk (0-2 Risk):
  - Base Cost: 6.2%
  - Excess Costs: 0.0%
  - N=17,947

- Medium Risk (3-4 Risks):
  - Base Cost: 6.1%
  - Excess Costs: 3.1%
  - N=6,959

- High Risk (5+ Risks):
  - Base Cost: 6.1%
  - Excess Costs: 3.1%
  - N=3,469

Burton, Chen, Conti, Schultz, Pransky, Edington.
Change in Costs
follow
Change in Risks
Change in Medical Claims to Change in Health Risk Levels

Low Risk (0-2 risks)  
N=716  
$1,397

Medium Risk (3-4 risks)  
N=433  
$2,178

High Risk (5+ risks)  
N=196  
$4,279

1996-1997 Risk Status

Low Risk  
$2513  
N=616

Med Risk  
$4049  
N=92

High Risk  
$7158  
N=8

2001-2002 Risk Status

Low Risk  
$2742  
N=264

Med Risk  
$3552  
N=124

High Risk  
$6357  
N=45

N=1,345; Male Hourly Active Employees; Costs in 98 & 02.

An increase in disability days is associated with an increase in health risk level at the second HRA. A decrease in health risk level is associated with a moderation or decrease in disability days as well.

Change in Costs follow Change in Risks

Overall: Cost per risk reduced: $215; Cost per risk avoided: $304
Actives: Cost per risk reduced: $231; Cost per risk avoided: $320
Retirees<65: Cost per risk reduced: $192; Cost per risk avoided: $621
Retirees>65: Cost per risk reduced: $214; Cost per risk avoided: $264

Updated from Edington, AJHP 2001; 15(5):341-349
The Key Ingredient of HPP: Participation?
Cost Savings Associated with Program Involvement from 1985 to 1995

Programming Year

- Zero or One HRA (N=804)
- Two or More HRAs (N=522)

Annual Increase = 12.6%
Annual Increase = 4.2%
The average annual increase in absence days (1995 – 2000):

Participants: 2.4
Non-Participants: 3.6

$200 Work Day × 1.2 Work Days Participant Year × 2,596 participants = $623,040 Year
Observed Program Attrition Rates

- Identified: 35%
- Attempted Contact: 22%
- Contacted: 52%
- Participated: 55%
- Remain 6 months: 36%
- Remain 12 months: 1.7%

Percent reduction in next bar
Costs Of Healthcare

Active employees and dependents

- **Low Risk**
  - 84%
  - $408 average claim

- **Moderate Risk**
  - 17%

- **High Risk**
  - 12%
  - $3,700 average claim

- **Acute Conditions**
  - 23%

- **Chronic Disease**
  - 4%
  - $106,742 average claim

- **Catastrophic Illness**
  - 60%
Summary
Requirements for HPP as a Serious Corporate Strategy

• Driven from the top through leadership performance objectives and healthy work environment objectives
• Driven by employee participation in health risk assessments to identify areas that are critical to managing risks in the population
• Adequate program resources for low-risk maintenance and risk reduction opportunities, with incentives
• Must meet the key indicators of
  – 80% participation (HRA, Coaching Sessions, 2 other events)
  – Drive and maintain 70% of employee population to low risk
Corporate Health Management Programs as a Serious Economic Strategy: Key Learnings

1. Risk and Disease Identification: Know your organization
2. Success metric: Percent of the Population at Low Risk (70+%) 
3. Secondary success metric: Percent Participation (80%, 60%, 40%)
4. Effective strategies: Low-Risk Maintenance and Risk Reduction
5. General concept for outcome measures: Benefits follow Risks
6. Specific to outcome measures: Effective Programs Equal Benefits

Overall Strategy: Manage the Person, not the risk or the disease
Data Warehouse

- HRA Data (14 yrs)
- HP Data
- Pharma data
- Biometrics (Ht, Wt, BP, LDL, etc.)
- Rebate Challenges
  Weight, Cholesterol, Physical activity, BP, Diabetes, Tobacco Cessation
- Workers Comp
- Welfare Benefits
  EAP, LTD, STD, Absenteeism

Integrated Outcomes Measures
Impact of Common Workplace Health Promotion Practices
Onsite Catering

• Catering vs. Packed Lunch vs. restaurant
  – Finnish Study
  – Found in cross-sectional surveys show that the use of catering services is associated with more healthy food habits (fish, vegetables, boiled potatoes) compared with packing from home or eating at restaurants
  – No correlation with health outcomes in this study

Worksite Environment

• Environmental changes including menu changes, education, encouragement to eat F/V vs. no intervention
• Results - Small increase in fruit and veggies consumption in the workplace (11 grams)

Physical Activity

- Systematic Review (Marshall 2004)
- Interventions that focused on corporate-fitness type programs and the provision of generic health education programs were not effective in terms of adequate participation rates and sustained behavior change.
- The more successful individually-based programs were those which tailored materials to individual needs.
- The greatest potential for influencing the overall workforce appeared to be programs that included less 'organized' approaches and promoted incidental physical activity within and around the workplace.

Worksite Physical Activity Program

• Systematic Review on effectiveness of worksite physical activity programs on physical activity, physical fitness, and health
• Evidence for a positive effect of a worksite physical activity program on physical activity and musculoskeletal disorders.
• Limited evidence for a positive effect on fatigue.
• Inconclusive or no evidence was found for a positive effect on general health, blood serum lipids, and blood pressure.

10,000 Steps

- Small study of 10,000 steps vs. 30 minutes daily continuous activity vs. 30 minutes daily activity in various 10 minute increments for 4 weeks
- Outcome was self-efficacy scale (evaluated individuals' belief in their ability to complete progressively more challenging PA)
  - 10K group had largest increase in steps
  - 10K group and 30 min Continuous Activity had largest increase in moderate or vigorous activity (measured by accelerometer)
  - No differences between groups in self-efficacy

Conclusion: No direct health improvements measured other activity.

Count your Blessings?

- Emmons McCullough 2003
- RCT Keep diary of Hassles gratitude vs. neutral life events
- Weekly records of moods, coping behaviors, health behaviors, physical symptoms, and overall life appraisals.
- The gratitude-outlook groups exhibited heightened well-being
- Results suggest that a conscious focus on blessings may have emotional and interpersonal benefits.

- Martinez Marti (2010)
- Replicated Emmons study in Spain
- Results mixed
- “Gratitude interventions may have an effect on well-being, but we consider other methods to promote gratitude besides gratitude journals should be tested.”
Common Incentives in HPP

• Money
• Health Insurance Discount
• Team Contests with prizes
• Tokens (coat, gym bag, socks, etc.)
• Vacations
• Car
• Peer pressure
Incentives - Smoking Cessation

• 878 smokers employed at GE randomized to information vs. incentive to enroll in smoking cessation (Volpp et al 2009)
• cessation program participation rates were three times higher in the incentive group than the control group (20.2% vs 7.1%, P < 0.01).
• $750 incentive tripled long-term smoking cessation rates in the incentive group compared to controls (14.7% vs 5.0%, P < 0.0001)
• However, 85.3% of incentive group participants did not succeed in quitting long-term.
Incentives - Smoking Cessation

From same study, another analysis* found:

• Most quitters (69.8%) in the incentive group who were already motivated to quit and reported that they would have quit for less money, said incentives were “not at all” or only “somewhat” important.
• Most nonquitters in the incentive group reported that even $1500 would not have motivated them to quit.

What are the Conclusions?

• Financial incentives are ineffective at motivating some smokers to quit.
• Internal motivation and readiness to quit need to be sufficiently high for relatively modest incentives to be effective.

*Kim A. JOEM Jan 2011
Incentives- Smoking Cessation

- Systematic Review of 14 Studies on reporting incentives for smoking cessation
- insufficient evidence to draw a conclusion regarding the effectiveness of worksite-based incentives and competitions when implemented alone to reduce tobacco use.
- There was strong evidence that worksite-based incentives and competitions, when combined with additional interventions to support individual cessation efforts, are effective in reducing tobacco use among workers.

General Incentives

- Different types of incentives may be needed for enrollment and to sustain participation.
- RCT tested differences between a traditional worksite health promotion program and an activated consumer program on health behaviors and health status. A control arm was included.
- Retention measured at 12, 18 months
- Variables for enrollment differences were industry type, smoking status, and patient activation
- Retention related to sex, age, and industry type
- Findings suggest that one set of strategies may be needed to encourage program enrollment while a distinctly different set of strategies may be needed to sustain participation. (Terry et al., Population Health Management 2010;13:115–122)
Obesity

• Systematic Review in 2005 (MMWR)
• Studies of primary obesity prevention are lacking.
• Evidence is lacking to determine how much weight loss over what period yields the greatest health benefit.
• Additional research is needed regarding the most effective means of maintaining initial success.

MMWR Worksite-Based Interventions October 7, 2005 / 54(RR10);1-12
Web-based Exercise Promotion

- Delivery of structured exercise schedules vs. control group choosing workouts individually via an interactive website.
- 12-week intervention
- No differences in aerobic exercise capacity and cardiovascular risk profile
- High dropouts, no true control (no intervention)

Exercise Prescription

- computerized tailored physical activity reports vs. no report from primary care physician
- Patients completed activity report
- Some received feedback with exercise prescription, others just general information
- Both groups had increase in activity
- No differences between groups with 6 months follow-up

Workplace Environment

• School District Employee Study
• Form Committees and implement health promotion activities vs. no change.
• Intervention randomized by school, 2-year follow-up
• BMI reduced by an average of 0.04 kg/m2 vs. increased BMI by an average of 0.37 kg/m2 (control)
• Comparisons for waist-hip ratio, weekly physical activity minutes, and fruit and vegetable consumption were not significant.
• ?Intervention or Committees not necessarily effective
Cardiovascular Health

- Systematic review: evidence for an effect of lifestyle-targeted interventions at the workplace on the main biological risk factors for cardiovascular disease
- Considered 31 RCTs
- Found only evidence in one study for reduction of body fat (no other outcomes)
- No other evidence for impact on CVD

Comprehensive Risk Reduction

- Prevention Plan™ in 2606 employees
  - Risk assessment
    - Customized personal prevention (computer tools, services)
    - Secondary prevention (biometrics, screening, diagnosis)
    - Tertiary (Early interventions, Evidence Based Disease Management)

Improvement in 10 of 15 Individual High Risks
BP, Seat Belt, Fasting glucose, Stress, Health Perception, Alcohol use, Cholesterol, physical activity, Health related illness days,
Prevention Plan™

• Risks that Didn’t Change
  – BMI, Smoking, Existing Medical Condition, Use of Drugs for relaxation, HDL

• Improvement on Health Risk Transitions from Eddington Model for prediction

Health Risk Transitions Prevention Plan™

<table>
<thead>
<tr>
<th>Risk</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decrease</td>
<td>1100</td>
<td>42.21%</td>
</tr>
<tr>
<td>Unchanged</td>
<td>971</td>
<td>37.26%</td>
</tr>
<tr>
<td>Increase</td>
<td>535</td>
<td>20.53%</td>
</tr>
</tbody>
</table>
Considerations

• Voluntary participation (selection bias)
• Uncertain if representative of general population
• Hawthorne effect
• Limited to 1-year duration
Economic Efficacy

- Numbers of studies with positive ROI on aspects of HPP activities
- No good data on overall economic effectiveness of HPP
Summary

• Don’t shoot messenger
• Lack of evidence in many areas
• Intuitively we accept better health equates to _______.
• Education of business leaders to temper expectations
• Very active field – new findings each month!