Worksite Wellness Evaluation: A 3-step Approach to Measuring Success in Worksites of All Sizes

David Chenoweth, Ph.D., FAWHP

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Today’s Agenda...

- Highlight the value of evaluation
- Illustrate a 3-step (Process, Impact, and Financial Outcome) evaluation
- Show a simple method for calculating lost productivity costs of common risk factors
- Describe sample outcome variables measured in several evaluation techniques:
  1. claims data analysis,
  2. break-even analysis,
  3. cost-effectiveness analysis,
  4. benefit-cost /ROI analysis, and
  5. forecasting
- Describe and illustrate appropriate times to apply each of the preceding techniques

Today’s dynamic worksite wellness landscape...

- New York beverage distributor using a BDA to determine the feasibility of establishing a prospective nationwide satellite disability management program
- Colorado school district wants to determine if current urgent care clinic can break-even after converting to a primary care clinic
- Georgia health care system wants to expand its current 20 year-old fitness center into a comprehensive wellness center
How can we drive PERFORMANCE without measurement and evaluation?
Well-planned Evaluations Can be a Decisive and Strategic Advantage...

- Assess quality of resource allocations and performance (personnel, equipment, facilities, etc.)
- Determine level of intervention impact
- Proportionately allocate your budget around defined needs
- Establish external benchmarking
- Guide strategic planning

Purpose of Evaluation...
“Evaluation is not research; it is not done to prove or disprove anything; it is done to improve something…”

<table>
<thead>
<tr>
<th>Research</th>
<th>Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Careful or diligent search” “Studious inquiry or examination”</td>
<td>“Determine or affix the value of” “Determine the significance, worth, or condition…”</td>
</tr>
</tbody>
</table>

Before evaluating... assess organizational landscape...
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A value proposition is inextricably tied to Human Capital

“If we leave the human factor out of our business calculation, we shall be wrong every time.”

William H. Lever, founder of Lever Brothers

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<table>
<thead>
<tr>
<th>Scope &amp; Specificity</th>
<th>Evaluation Goals</th>
<th>Evaluation Design</th>
<th>Evaluation Resources</th>
<th>Timeframe</th>
</tr>
</thead>
<tbody>
<tr>
<td>What</td>
<td>- What are we evaluating?</td>
<td>- What are we assessing?</td>
<td>- What are we measuring?</td>
<td>- What are we evaluating?</td>
</tr>
<tr>
<td></td>
<td>- program?</td>
<td>- measures?</td>
<td>- measures?</td>
<td>- program?</td>
</tr>
<tr>
<td>Why</td>
<td>- Why are we evaluating?</td>
<td>- Why are we assessing?</td>
<td>- Why are we measuring?</td>
<td>- Why are we evaluating?</td>
</tr>
<tr>
<td></td>
<td>- can we add value?</td>
<td>- can we add value?</td>
<td>- can we add value?</td>
<td>- can we add value?</td>
</tr>
<tr>
<td>How</td>
<td>- How can we best coordinate all resources?</td>
<td>- How can we best coordinate all resources?</td>
<td>- How can we best coordinate all resources?</td>
<td>- How can we best coordinate all resources?</td>
</tr>
<tr>
<td>Who</td>
<td>- Who is the target population to evaluate?</td>
<td>- Who is the target population to evaluate?</td>
<td>- Who is the target population to evaluate?</td>
<td>- Who is the target population to evaluate?</td>
</tr>
<tr>
<td>Where</td>
<td>- can the evaluation be conducted?</td>
<td>- can the evaluation be conducted?</td>
<td>- can the evaluation be conducted?</td>
<td>- can the evaluation be conducted?</td>
</tr>
<tr>
<td>When</td>
<td>- is the best time?</td>
<td>- is the best time?</td>
<td>- is the best time?</td>
<td>- is the best time?</td>
</tr>
</tbody>
</table>

Identifying WHAT you are going to evaluate...

<table>
<thead>
<tr>
<th>Program</th>
<th>Health Plan</th>
<th>Policies</th>
<th>Environ-Cultural</th>
<th>Incentives</th>
<th>Facilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health coaching</td>
<td>Client focus on incentives</td>
<td>Smoke free, drug free, safety</td>
<td>Healthy work setting/office</td>
<td>Health insurance premium discount</td>
<td>Privacy Center</td>
</tr>
<tr>
<td>Walking chat</td>
<td>Health savings program for employees</td>
<td>Healthy food options</td>
<td>Health minus usage</td>
<td>Fitness center</td>
<td>On-site center</td>
</tr>
<tr>
<td>Women’s health series</td>
<td>Service plan for employees</td>
<td>Healthy food options</td>
<td>Health savings account</td>
<td>Fitness center</td>
<td>On-site center</td>
</tr>
<tr>
<td>Lunch ’n Learns</td>
<td>Nutrition and performance</td>
<td>Healthy food options</td>
<td>Health savings account</td>
<td>Fitness center</td>
<td>On-site center</td>
</tr>
<tr>
<td>Medical self-care</td>
<td>Health and wellness</td>
<td>Healthy food options</td>
<td>Health savings account</td>
<td>Fitness center</td>
<td>On-site center</td>
</tr>
</tbody>
</table>
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Which interventions are AMENABLE to evaluation?

<table>
<thead>
<tr>
<th>Physical Activity</th>
<th>Nutrition</th>
<th>Information/Education</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stairway usage</td>
<td>Lunch 'n learners</td>
<td>Email daily tips</td>
<td>On-site medical clinic</td>
</tr>
<tr>
<td>Walking</td>
<td>On-line webinars</td>
<td>Messaging in high density areas</td>
<td>Health Kiosk with b.p. cuff, scales, etc.</td>
</tr>
<tr>
<td>Walking trails</td>
<td>Color-coded healthy vending items</td>
<td>Medical self-care booklets</td>
<td>Quiet room</td>
</tr>
<tr>
<td>Exercise equip. in break area</td>
<td>Healthy potluck with recipe exchange</td>
<td>On-line library</td>
<td>5 minute on-time stretching</td>
</tr>
<tr>
<td>Stretch breaks</td>
<td>Gradual phase in healthy vending items</td>
<td>Health magazines in bathroom stalls</td>
<td>Days off for excellent attendance</td>
</tr>
<tr>
<td>Fit ctr. subsidies</td>
<td>Fruits/veggies @ mg.</td>
<td>Health volume in company newsletter</td>
<td>Smoke-free worksite</td>
</tr>
<tr>
<td>Worksite showers and lockers</td>
<td>Subsidize healthier cafeteria food</td>
<td>Lactation suites for nursing employees</td>
<td></td>
</tr>
<tr>
<td>Dept. competitions</td>
<td>“Nutri-tips” on caf/break tables</td>
<td></td>
<td></td>
</tr>
<tr>
<td>On-line physical activity</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Enhance the value of evaluation by establishing goals that are...

- COMPATIBLE with stakeholders' needs and values
- MEASURABLE: variables that can physically be measured
- QUANTIFIABLE: a value (#, %, $) can be assigned to selected metric (variable)
- focused on an intervention that has been OPERATING LONG ENOUGH to reasonably generate an impact
- REALISTICALLY ACHIEVABLE (e.g., wellness intervention is likely to make a positive impact)

Choosing an appropriate evaluation design [“Blue Print”]...

<table>
<thead>
<tr>
<th>Basic</th>
<th>Intermediate</th>
<th>Advanced</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree of rigor</td>
<td>Low</td>
<td>Moderate</td>
</tr>
<tr>
<td>Standard Design</td>
<td>“one group non-experiments”</td>
<td>“2-group NON-equivalent comparison”</td>
</tr>
<tr>
<td>Randomization</td>
<td>None</td>
<td>Non-randomization</td>
</tr>
<tr>
<td>Planning and Administration</td>
<td>Minimal</td>
<td>Moderate</td>
</tr>
<tr>
<td>Feasibility in a Worksite Setting</td>
<td>Excellent</td>
<td>Good</td>
</tr>
</tbody>
</table>
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**Building a practical, 3-tiered evaluation...**

![Diagram](image)

- **Financial Outcome**
- **Impact**
- **Process**

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**Evaluation timeframe...**

- **January**
- **July**
- **December**
- **July**

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**Tailoring the scope of an evaluation...**

- **“PROCESS”**
  - Participation
  - Like/dislike change

- **“IMPACT”**
  - # of steps/day
  - # mins. of exercise/day
  - Body mass index (BMI)
  - # of health care claims
  - Perceived productivity

- **“FINANCIAL OUTCOME”**
  - Health care cost

---
Sample PROCESS variables...

**Qualitative**

- Rate the availability of healthy vending machine items:
  - Very Good 1
  - Good 4
  - Neutral 3
  - Poor 2
  - Very Poor 1

  - HRA
  - Focus group
  - Culture audit

**Quantitative**

- Vendor's sales report
  - Volume of or % of healthy items purchased
  - Healthy items vs. unhealthy items purchased

- HRA
- Focus group
- Culture audit

Patient Satisfaction Survey (onsite clinic)

Operational Efficiency

- Comfortable WR
- TimeWorkers
- Time to Appt
- Appearance
- Location
- Hours

- Very Poor
- Poor
- Neutral
- Good
- Very Good

- By facility (EAP, Fitness Ctr, Clinic, etc.)
- Type of program (individual, group, etc.)

Visits Per Day Average

- Mon
- Tue
- Wed
- Thu
- Fri
- Sat
- Sun
**Evaluation design options...**

<table>
<thead>
<tr>
<th>Participants Only</th>
<th>Participants &amp; (Matched) Non-participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre</td>
<td>Intervention X</td>
</tr>
<tr>
<td>Post 01</td>
<td></td>
</tr>
<tr>
<td>Post 02</td>
<td></td>
</tr>
</tbody>
</table>

**Participants Only**

- “group non-experimental”

**Participants & (Matched) Non-participants**

- “quasi-experimental comparison group”

- IMPACT variables:
  - blood pressure
  - body mass index (BMI)
  - # of health care claims
  - perceived productivity

**Establishing a matching group...**

**Goal...**

to achieve relative similarity between participants and non-participants

<table>
<thead>
<tr>
<th>Matching Variables</th>
<th>Participants</th>
<th>Non-Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>Ave. 43</td>
<td>38 - 48 (range)</td>
</tr>
<tr>
<td>Gender distribution</td>
<td>70% male; 30% female</td>
<td>65-75% male (range)</td>
</tr>
<tr>
<td>% with jobs on two floors</td>
<td>65%</td>
<td>55 - 75% (range)</td>
</tr>
<tr>
<td>Work shift</td>
<td>90% daytime</td>
<td>80% minimum daytime</td>
</tr>
</tbody>
</table>

**Who has employee data for matching?**

- Building relationships
- Integrated data systems
- Providing data safeguards
Tools/techniques for assessing “IMPACT”...

- Employee health records
- Environmental audit
- Culture audit
- Employee focus groups
- Health risk assessment (HRA)
- Biometric screening
- Productivity survey
- Medical care claim-cost data
- Visual observation

CAUTION: No single technique is a sufficient stand-alone diagnostic tool

Transitioning from IMPACT to FINANCIAL OUTCOMES...

Impact (Non-financial) Values

- BMI decrease
- Blood pressure decrease
- Physical activity increased
- Self-confidence improved
- Self-reported work performance gain
- Fewer workers’ comp claims
- Fewer Rx drug claims
- Fewer medical claims

Financial Outcome$
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In a small worksite...

PCL Construction – Denver, CO
“Keys to Wellness”

> Provides healthy snacks in vending machines
> Fitness center subsidies
> “Ping-pong” tables
> Local 5K runs
> H1N1 and flu vaccinations
> Annual on-site health screenings

Doesn’t use “program” to avoid the perception that healthy activities are separate from the company’s business practices.

Courtesy of PCL Construction, Inc.

PCL Construction – Denver, CO
“Keys to Wellness”

<table>
<thead>
<tr>
<th>Strategy</th>
<th>&quot;Process&quot;</th>
<th>&quot;Impact&quot;</th>
<th>&quot;Outcome&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Healthy vending snacks</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Fitness center subsidy</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>“Ping-Pong”</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>H1N1 vaccinations</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>On-site health screenings</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>

☐ Compare medical care claims and cost among participants vs. non-participants.

Sample tools/techniques used for evaluation...

<table>
<thead>
<tr>
<th>Strategy</th>
<th>&quot;Process&quot;</th>
<th>&quot;Impact&quot;</th>
<th>&quot;Financial Outcome&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Healthy vending snacks</td>
<td>✓ (Item counts)</td>
<td>✓ (HRA, BMI score)</td>
<td></td>
</tr>
<tr>
<td>Fitness center subsidy</td>
<td>✓ (Participation)</td>
<td>✓ (HRA, biometric score)</td>
<td>✓ (Annual claims data)</td>
</tr>
<tr>
<td>H1N1 vaccinations</td>
<td>✓ (Participation)</td>
<td>✓ (Attendance, flu claims)</td>
<td>✓ (Annual influenza claim &amp; cost data)</td>
</tr>
<tr>
<td>On-site H1N screenings</td>
<td>✓ (Participation)</td>
<td>✓ (HRA health status)</td>
<td>✓</td>
</tr>
</tbody>
</table>

☐ Compare medical care claims and cost among participants vs. non-participants.
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In a mid-size worksite...

Syngenta Crop Protection

- Healthy snacks in vending machines
- Fitness center subsidy
- On-site Medical Clinic
- Weight Watchers® on-site program
- Annual on-site health screenings

 Courtesy of Judy Fryar, COHN, Syngenta Crop Protection, Greensboro, NC

<table>
<thead>
<tr>
<th>Strategy</th>
<th>&quot;Impact&quot; (change)</th>
<th>&quot;Financial Outcome&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Healthy vending snacks</td>
<td>Item counts</td>
<td>(HRA, BMD sc'g)</td>
</tr>
<tr>
<td>Fitness center subsidy</td>
<td>√ (Participation)</td>
<td>√</td>
</tr>
<tr>
<td>On-site Medical Clinic</td>
<td>Utilization</td>
<td>(HRA, biometric sc'g)</td>
</tr>
<tr>
<td>Weight Watchers®</td>
<td>√ (Participation)</td>
<td>(HRA, health records, # of medical claims)</td>
</tr>
<tr>
<td>On-site health screening</td>
<td>√ (Participation)</td>
<td>(HRA health status)</td>
</tr>
</tbody>
</table>

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In a large worksite...

Baptist Health South Florida...

- "Wellness Advantage" award-winning program
- Eight on-site fitness centers with semi-annual open houses
- Classes: boot camp, urban training, walking & circuit training
- Bi-annual wellness fairs with free screenings
- $3 Wellness Meals (<600 calories & <30% fat)
  - the fastest-selling items
- "Disease management program = positive ROI"

Courtesy of Baptist Health South Florida

“Process”
“Impact”
“Financial Outcome”

Healthy vending snacks
√ (Item counts)
√ (HRA, BMD sc'g)

Fitness center subsidy
√ (Participation)
√

On-site Medical Clinic
- (Utilization)
- (HRA, biometric sc'g)
√ (Annual claim costs)

Weight Watchers®
- √ (Participation)
- (HRA, health records, # of medical claims)
- √ (Pre vs. Post claim costs)

On-site health screening
- (Participation)
- (HRA health status)
√√

Compare medical care claims and cost among participants vs. non-participants.

"Disease management program = positive ROI"
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<table>
<thead>
<tr>
<th>Strategy</th>
<th>Participation</th>
<th>Impact* (changes)</th>
<th>Financial Outcome*</th>
</tr>
</thead>
<tbody>
<tr>
<td>On-site fitness centers</td>
<td>√ (Participation)</td>
<td>[HRA status &amp; biometric screening]</td>
<td>√ (Annual medical claim costs)</td>
</tr>
<tr>
<td>Classes</td>
<td>√ (Participation)</td>
<td>[HRA status]</td>
<td></td>
</tr>
<tr>
<td>Wellness Fair</td>
<td>√ (Participation)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wellness Meals</td>
<td>√ (Meals sold)</td>
<td>[HRA health status indicators]</td>
<td></td>
</tr>
<tr>
<td>Disability management</td>
<td>√ (Participation)</td>
<td>[RTK, Productivity indicators]</td>
<td>√ (Disability-specific claim costs)</td>
</tr>
</tbody>
</table>

√ Compare medical care claims and cost among participants vs. non-participants.
√ Track medical care and Rx drug use and costs at quarterly intervals.

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### Medical claims partially tied to physical inactivity

<table>
<thead>
<tr>
<th>DRG#</th>
<th>MDC: Cancer</th>
<th>Condition</th>
<th>ICD-10 Code*</th>
</tr>
</thead>
<tbody>
<tr>
<td>T41, T41, T42</td>
<td>MDC: Endocrine/Metabolic</td>
<td>Colon cancer</td>
<td>C18.9</td>
</tr>
<tr>
<td>T16, T16</td>
<td>MDC: Endocrine/Metabolic</td>
<td>Breast cancer</td>
<td>C50.91</td>
</tr>
<tr>
<td>A0</td>
<td>MDC: Endocrine/Metabolic</td>
<td>Lung cancer</td>
<td>D42.82R</td>
</tr>
<tr>
<td>287</td>
<td>MDC: Endocrine/Metabolic</td>
<td>Prostate cancer</td>
<td>C61.9</td>
</tr>
<tr>
<td>50/187</td>
<td>MDC: Endocrine/Metabolic</td>
<td>Prostate cancer</td>
<td>C61.9</td>
</tr>
<tr>
<td>284</td>
<td>MDC: Endocrine/Metabolic</td>
<td>Diabetes &gt; 35 yrs of age</td>
<td>E11.9</td>
</tr>
<tr>
<td>134</td>
<td>MDC: Circulatory (cont.)</td>
<td>Angina Pectoris</td>
<td>I20.9</td>
</tr>
<tr>
<td>133</td>
<td>MDC: Circulatory (cont.)</td>
<td>Angina Pectoris</td>
<td>I20.9</td>
</tr>
<tr>
<td>014</td>
<td>MDC: Circulatory (cont.)</td>
<td>Cerebrovascular disease (&quot;Stroke&quot;)</td>
<td>I67.9</td>
</tr>
<tr>
<td>122</td>
<td>MDC: Musculo-skeletal</td>
<td>Acute Myocardial Infarction</td>
<td>I21.3</td>
</tr>
<tr>
<td>241</td>
<td>MDC: Musculo-skeletal</td>
<td>Rheumatoid arthritis</td>
<td>M06.9</td>
</tr>
<tr>
<td>245</td>
<td>MDC: Musculo-skeletal</td>
<td>Osteoarthritis</td>
<td>M17.4</td>
</tr>
<tr>
<td>243</td>
<td>MDC: Musculo-skeletal</td>
<td>Pain in joint/Stiffness in joint</td>
<td>M25.5</td>
</tr>
<tr>
<td>248</td>
<td>MDC: Musculo-skeletal</td>
<td>Synovitis/Tenosynovitis</td>
<td>M65.9</td>
</tr>
<tr>
<td>426</td>
<td>MDC: Mental</td>
<td>Neurotic depression</td>
<td>F34.1</td>
</tr>
<tr>
<td>426</td>
<td>MDC: Mental</td>
<td>Depressive disorder</td>
<td>F32.8</td>
</tr>
<tr>
<td>427</td>
<td>MDC: Mental</td>
<td>Anxiety states</td>
<td>F41.9</td>
</tr>
</tbody>
</table>

### Which claims are partially tied to physical inactivity?

- DRG# 709: Diabetes > 35 yrs of age
- DRG# 134: Angina Pectoris
- DRG# 133: Angina Pectoris
- DRG# 014: Cerebrovascular disease ("Stroke")
Meeting your value proposition?

- Work performance
- Revenue generation
- Competitive edge

SHRM Foundation EPG Report...

- Health status influences
- Risk factor-driven medical costs
- Risk factor-driven lost productivity costs
- Calculating risk factor lost productivity costs
- Role of integrated and aligned health management strategies

<table>
<thead>
<tr>
<th>Risk Condition</th>
<th>Absenteeism</th>
<th>Presenteeism</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diabetes mellitus</td>
<td>4.94%</td>
<td>18.26%</td>
<td>23.20%</td>
</tr>
<tr>
<td>Depression</td>
<td>2.61%</td>
<td>14.51%</td>
<td>17.12%</td>
</tr>
<tr>
<td>Alcohol abuse</td>
<td>3.00%</td>
<td>4.78%</td>
<td>7.78%</td>
</tr>
<tr>
<td>Obesity</td>
<td>1.40%</td>
<td>8.30%</td>
<td>9.70%</td>
</tr>
<tr>
<td>High cholesterol</td>
<td>3.14%</td>
<td>4.91%</td>
<td>8.05%</td>
</tr>
<tr>
<td>Smoking</td>
<td>2.84%</td>
<td>4.78%</td>
<td>7.62%</td>
</tr>
<tr>
<td>High stress</td>
<td>3.08%</td>
<td>4.45%</td>
<td>7.53%</td>
</tr>
<tr>
<td>Arthritis</td>
<td>2.36%</td>
<td>4.90%</td>
<td>7.26%</td>
</tr>
<tr>
<td>High blood pressure</td>
<td>0.37%</td>
<td>5.20%</td>
<td>5.57%</td>
</tr>
<tr>
<td>Asthma</td>
<td>4.80%</td>
<td>1.20%</td>
<td>6.00%</td>
</tr>
<tr>
<td>Migraine</td>
<td>3.96%</td>
<td>1.99%</td>
<td>5.95%</td>
</tr>
<tr>
<td>Physical inactivity</td>
<td>3.78%</td>
<td>4.59%</td>
<td>8.37%</td>
</tr>
</tbody>
</table>

Source: Chenoweth, D. 2011. Ibid.
Calculating the Cost of Lost Productivity Per Risk Factor

\[ \text{Cost} = \text{Risk Factor} \times \text{Prevalence} \times \text{Compensation} \times \text{Lost Productivity} \]

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>Lost Workload</th>
<th>Employees</th>
<th>Prevalence</th>
<th>Lost Employees</th>
<th>Compensation</th>
<th>Lost Productivity Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcohol Abuse</td>
<td>8726</td>
<td>500</td>
<td>26</td>
<td>130</td>
<td>$50,000</td>
<td>$471,900</td>
</tr>
<tr>
<td>Arthritis</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depression</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Diabetes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hypertension</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Migraine</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Obesity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phy. inactivity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stress</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Medical claims data analysis**
- Break-even Analysis
- Cost-effectiveness
- Benefit Cost/ROI Analysis
- Forecasting

**Evaluation Techniques - Timeframe**

- "What's our current risks?" (Claims Data Analysis)
- "Are we on course to make an impact?" (Break-even Analysis, Cost-effectiveness Analysis)
- "Have we achieved our goals?" (Process & Financial Impact)

**Baseline and "Rx"**
- From now to 6 mos. (Baseline)
- 12 to 24 mos. (Process & Impact)
- 30 to 36 mos. (Financial Impact)
Chapter 1
Medical Claims Data Analysis

"Making a business case for evaluating the benefits and costs of worksite clinics and onsite health coaching programs is critical for any wellness program. I have been a strong proponent of health care claims data analysis (CDA) for my wellness program and clients during my 18-year career. Analyzing claims data in a pre- and post-test analysis over a 2-3 year period allows you to assess changes in health risk levels and medical costs associated with these risks. CDA also allows you to look at the cost-avoidance that your program may have been able to produce over this time frame. By knowing where your gaps in care are, your wellness program provider will be able to focus on key elements of the program participants' health, which enables your provider to assist participants in making appropriate behavior change. This change should correlate to better health and a positive return on investment."


Chapter 1
Medical Claims Data Analysis

Using Medical Claims Data...

Tracking actual medical costs against projected costs...

Source: Chenoweth et al., JOEM, 2008.

Major Diagnostic Categories (MDC)
(broadly-named systems)

All Claims

- Nervous
- Mental
- Infect/Paras.
- Perinatal
- Skin/subcut.
- Endo/metab/nutr.
- Digestive
- Respiratory
- Reproductive
- Musculo-skeletal
- Genitourinary
- S/U/I-defined
Worksite Wellness Evaluation: A 3-step Approach to Measuring Success in Worksites of All Sizes

David Chenoweth

MDC: Musculo-skeletal

DRG: Medical back problem

ICD
- Back strain
- Lumbago
- Inter-vertebral disc disorder

Which of these risk factors are major cost drivers?

- Medical Hx
- Work dissatisfaction
- On-the-job stress
- Repetitive motion
- No job rotation
- No pre-work stretching
- Seated work position
- Poor ergonomics
- Physically inactive
  - Obesity
  - Age > 40
- Cigarette smoking

Musculo-skeletal [back problems]

Lumbago
Inter-vertebral disc disorder
Back strain

How to do your own PRFCA

Proportionate
Risk
Factor
Cost
Appraisal

Age 10
(average)
Chapter 2
Break-even Analysis (BEA)

"At Hamilton Medical Center we use break-even analysis as a tool for making strategic decisions before investing capital dollars. It's important that we gain as much knowledge as possible about the potential market, expected volumes, equipment cost, FTE requirements, construction cost, and other financial indicators—all of which are factored into break-even analysis (BEA). In addition to being a decision-making tool, BEA helps us compare expected and actual results once a new service is operational.

We recently made the decision to initiate a $5 million expansion of our Bradley Wellness Center. Because the project involved new, cutting-edge services, the research that went into the analysis and the results were paramount in our decision to invest in this initiative."

Danny Wright
Vice President
Hamilton Medical Center
Dalton, Georgia
Worksite Wellness Evaluation: A 3-step Approach to Measuring Success in Worksites of All Sizes

David Chenoweth

**Break-Even Analysis** answers the following questions...

1. Will the new on-line health coaching program break-even?
2. Will our 2 year –old on-site health clinic break-even by the fourth year of operations?
3. Is the cost of the 5 minute on-the-job stretching break sufficient to generate adequate back injury cost savings and break-even by the end of the year?
4. How can we determine if the $20/month wellness incentive will pay off?

**Recommended readings...**


**BEA is a...**

Financial framework comprised of measurable data designed to indicate IF, and WHEN...
Worksite Wellness Evaluation: A 3-step Approach to Measuring Success in Worksites of All Sizes

David Chenoweth

<table>
<thead>
<tr>
<th>1st Quarter</th>
<th>2nd Quarter</th>
<th>3rd Quarter</th>
<th>4th Quarter</th>
</tr>
</thead>
</table>

If You're Planning a NEW or UPGRADED Wellness Intervention...

"What if" scenarios...

<table>
<thead>
<tr>
<th>Program Level</th>
<th>Low</th>
<th>Mid</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actual Prevalence</td>
<td>15%</td>
<td>15%</td>
<td>15%</td>
</tr>
<tr>
<td>Projected % Change</td>
<td>-1%</td>
<td>-1.5%</td>
<td>-2.5%</td>
</tr>
<tr>
<td>Budget % Allocated</td>
<td>3%</td>
<td>4%</td>
<td>5%</td>
</tr>
</tbody>
</table>

CALCULATE

A simple break-even analysis ["Impact Threshold"]

<table>
<thead>
<tr>
<th>Wellness Intervention Cost</th>
<th>Divided by</th>
<th>Risk Factor Cost (Phys. Inactivity)</th>
<th>×</th>
<th># Impacts Needed for Break-Even</th>
</tr>
</thead>
<tbody>
<tr>
<td>$25,000</td>
<td>×</td>
<td>$982</td>
<td></td>
<td>25.46</td>
</tr>
</tbody>
</table>

Only need two variables...
Chapter 3
Cost-Effectiveness Analysis (CEA)

"As a nurse, saving lives and improving health is always part of my mission. Working in the corporate world, that focus is always there. Our Health Services program must constantly collect data and review it to see if our efforts are cost-effective for the company. We started with our in-house health clinics, which provide physicals, primary care, vaccination, and allergy shots to our employees. We compared the costs of those visits had been submitted under our health care plan (and found) the cost-savings were there and provided a means for us to expand our wellness program. We continued to measure everything we were doing in our wellness program, from participation to biometric results, in addition to our annual review of health care claims. It also gave us a way to show the leadership positive progress toward maintaining and improving the health and health care costs for our employee and dependent population. Sometimes the figures indicated that we needed to change direction or focus, but overall the data kept our Health Services and our wellness program, Reaping Rewards, as an integral part of the company."

Judy Fryer, RN, CNHC/CM
Health Services Manager
Syngenta Crop Protection
Greensboro, North Carolina

---

### Which method of health coaching produces the most impacts at the least expense?

<table>
<thead>
<tr>
<th>Method</th>
<th>Cost</th>
<th># Participants</th>
<th># Goals Achieved</th>
<th>$ Per Goal Achieved</th>
</tr>
</thead>
<tbody>
<tr>
<td>On-line</td>
<td>$500</td>
<td>50</td>
<td>10</td>
<td>$50</td>
</tr>
<tr>
<td>Face to Face</td>
<td>$2,000</td>
<td>50</td>
<td>35</td>
<td>$57</td>
</tr>
</tbody>
</table>

**Vs.**

### Which approach generates the most impact per dollar?

<table>
<thead>
<tr>
<th>Option</th>
<th>Rx Drug Plan Cost</th>
<th># 100 Participants</th>
<th># 200 Participants</th>
<th># 300 Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>$50,000</td>
<td>$60,000</td>
<td>$70,000</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>$1,219.51</td>
<td>41</td>
<td>68</td>
<td>$1,219.51</td>
</tr>
<tr>
<td>3</td>
<td>$1,162.79</td>
<td>42</td>
<td>75</td>
<td>$1,162.79</td>
</tr>
</tbody>
</table>

1. Common Rx drug such as Oral Ergotamine, Imitrex or Ergolant
2. Option 1 plus stress management counseling
3. Options 1 & 2 plus a "quiet room"
Chapter 4

Benefit-Cost / ROI analysis

"Poudre School District is a self-insured public school system with a major goal to create a health plan that emphasizes prevention at the forefront. We integrated all our benefits, including the employee clinic, employee assistance program, disease management, wellness, and health data integration. The desired outcome was a healthier, more productive employee, which we hoped would lead to improvement in student achievement, fewer accidents and injuries, and less lost time.

After we developed our conceptual design, we arranged for a thorough benefit-cost analysis and ROI study. As a result, our school board had the confidence to approve funding for the venture.

Now that we are in full operation, we have a tool that evaluates the outcomes of our services - looking at the benefit-cost analysis and ROI – in real time."

Cindy Guillaume, LCSW
Poudre School District
Employee Assistance Services
Fort Collins, Colorado

Benefit-Cost [ROI] Analysis

Basic benefit-cost equation...

- Fewer medical costs
- Greater productivity
- Fewer accidents
- etc.

$50,000
$2.00

$25,000
$1.00

= 2.0 to 1
Worksite Wellness Evaluation: A 3-step Approach to Measuring Success in Worksites of All Sizes

David Chenoweth

**Benefit-Cost Ratio**

<table>
<thead>
<tr>
<th>Annual Dollar Savings Per Cost Dollar</th>
</tr>
</thead>
<tbody>
<tr>
<td>$40.00</td>
</tr>
<tr>
<td>$30.00</td>
</tr>
<tr>
<td>$20.00</td>
</tr>
<tr>
<td>$10.00</td>
</tr>
<tr>
<td>$0.00</td>
</tr>
<tr>
<td>$10.00</td>
</tr>
<tr>
<td>$20.00</td>
</tr>
<tr>
<td>$30.00</td>
</tr>
<tr>
<td>$40.00</td>
</tr>
</tbody>
</table>

**Industry Norms**

<table>
<thead>
<tr>
<th>Annual Dollar Savings Per Cost Dollar</th>
</tr>
</thead>
<tbody>
<tr>
<td>$1.00</td>
</tr>
<tr>
<td>$2.00</td>
</tr>
<tr>
<td>$3.00</td>
</tr>
<tr>
<td>$4.00</td>
</tr>
<tr>
<td>$5.00</td>
</tr>
<tr>
<td>$6.00</td>
</tr>
<tr>
<td>$7.00</td>
</tr>
</tbody>
</table>

**Making the grade?**

Source: Chenoweth & Associates, Inc.

www.corpwellrx.com/scientificevidence

How can we plan for the future if we don't understand the past and present?

Chapter 5 Forecasting to Plan for the Future
Forecasting...

"We utilize an array of metrics to evaluate the outcomes of worksite-based wellness and condition management programs, and to perform predictive modeling to forecast opportunities for cost avoidance.

Data on biometrics, health behaviors, health-related work impairment, employee salaries/wages, and medical care and workers' comp claims are among the metrics OHM used to conduct health management forecasting. Current trends in the prevalence of health risk factors and chronic conditions are assessed to determine the potential impact of targeted population health management initiatives on avoiding future medical costs, through the prevention and effective control of those health conditions. By combining art along with the scientific methodology, such forecasting provides valuable information for health management strategic planning and projecting the ROI of the program."

Robin Rager, Ph.D.
Principal
Optimum Health Management, LLC
Torrance, California

Forecasting... applying historical and current trends [with anticipated events] to assess short-and long-term probabilities/outcomes

Yearly Wellness Engagements by Type

Tips for Enhancing your Evaluation...

> Establish a clearly delineated goal for doing an evaluation
> Allocate at least 5%-10% of your budget for evaluation
> Identify key stakeholders and tailor the evaluation to their needs and values
> Have a realistic expectation of what an evaluation can produce
> Select only variables that you can reasonably track
> Assess potential data sources and types of data that are available before evaluating
> Give the intervention time to make a genuine impact
> Once essential resources (e.g., personnel, equipment, facilities, etc.) are identified, conduct a beta trial (test run)

Creating synergism for building successful evaluations today...tomorrow...and the future...

Evaluation

Environment
Programs
Impact
Policies
Outcomes
Incentives

Employee & Organizational Performance

Thank You!