Intersection of Workplace Wellness and Population Health

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University of Kentucky
Outline

• Intersections of Populations, Worksite Wellness and Population Health
• Trends influencing health in the workforce
• American Heart Association’s Life Simple Seven
  – Impact on Disease
• My Life Check
  – What it does
  – Why it is important
• The Pepsico Experience
Population Health: Definition

- *Population health* refers to the net health status or outcomes of a defined group of people as a result of the many determinants of health, including health care, public health interventions, and social and environmental factors.

Worksite Wellness: Definition

• A *workplace wellness* program is a *health promotion activity* or organization-wide policy designed to support healthy behaviors and **improve health outcomes while at work**. These programs consist of activities such as health education and coaching, weight management programs, medical screenings, on-site fitness programs, and more.

http://www.cdc.gov/features/workingwellness/

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Overlap of these Definitions

net health status or outcomes

health promotion activity

improve health outcomes while at work
Why worksites?

Cumulative Increases in Health Insurance Premiums, Workers’ Contributions to Premiums, Inflation, and Workers’ Earnings, 1999-2013

Why worksites?

As health care cost increases continue to outstrip inflation, **employers and employees** alike are struggling with rising costs.
Why Worksite Wellness Now?

- Prevention and Public Health Fund (PPHF) of the ACA
  - contains many new provisions designed to improve public health and wellness.
  - ACA was designed to address 4 key prevention areas, and the fourth area was for research and surveillance focused on workforce wellness.
  - Understanding key issues that affect the American workforce is critical to improving prevention efforts.
"Workforce fitness matters to employees, their families, their companies, and the larger community and should therefore be considered a corporate asset to be simultaneously protected and promoted."

~NP Pronk
US Obesity Prevalence Over Time

Pronk NP. *Annu Rev Public Health* 2015. 36:131–49
US Prevalence Occupation Type

Prevalence, %

Service Jobs
Goods Producing Jobs
Agricultural Jobs


Prevalence Trends in Occupations

Occupational METs & Energy Expenditure

Characteristics of the Workforce
The US Workforce is Struggling with Managing Health

In the U.S., the majority of the top overarching workforce health issues are either major risk factors for heart disease or major contributors.

- Stress: 78%
- Obesity: 75%
- Lack of physical activity: 73%
- Poor nutrition: 57%
- Tobacco use: 32%
- Presenteeism: 21%
- Substance abuse: 13%
Worksite Wellness may be a Critical Access Point for Population Health

SECTION I: Chronic Condition Overview

About 73% of employees have at least one chronic condition. An employee with any chronic condition has an average of 3 comorbid conditions.

Only 31% of employees' conditions are currently being treated.

In Nov, 2015 there are currently 157 million workers in the labor force, age 16+ according to the US Department of Labor, Bureau of Labor Statistics
# The Health of the Bluegrass, Kentucky, and the US (Behavioral Risk Factor Surveillance System)

<table>
<thead>
<tr>
<th>Condition</th>
<th>US Median %</th>
<th>Kentucky %</th>
<th>95% CI</th>
<th>Bluegrass %</th>
<th>95% CI</th>
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<tbody>
<tr>
<td>Arthritis</td>
<td>26.0</td>
<td>33.9</td>
<td>32.5-35.3</td>
<td>29.8</td>
<td>26.2-33.4</td>
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<tr>
<td>Heart attack</td>
<td>4.4</td>
<td>6.8</td>
<td>6.1-7.5</td>
<td>6.3</td>
<td>4.2-8.5</td>
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<td>Stroke</td>
<td>3.0</td>
<td>4.2</td>
<td>3.6-4.7</td>
<td>2.9</td>
<td>1.5-4.3</td>
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<tr>
<td>Depressive disorder</td>
<td>19.0</td>
<td>23.9</td>
<td>22.6-25.3</td>
<td>23.5</td>
<td>19.9-27.1</td>
</tr>
<tr>
<td>Diabetes</td>
<td>10.0</td>
<td>12.5</td>
<td>11.6-13.4</td>
<td>11.9</td>
<td>9.0-14.7</td>
</tr>
<tr>
<td>Disability</td>
<td>20.4</td>
<td>27.6</td>
<td>26.2-28.9</td>
<td>25.1</td>
<td>21.4-28.8</td>
</tr>
<tr>
<td>Health care*</td>
<td>84.7</td>
<td>87.8</td>
<td>86.4-89.2</td>
<td>85.8</td>
<td>82.0-89.5</td>
</tr>
<tr>
<td>Overweight</td>
<td>35.4</td>
<td>35.1</td>
<td>33.6-36.6</td>
<td>36.2</td>
<td>32.2-40.2</td>
</tr>
<tr>
<td>Obese</td>
<td>29.6</td>
<td>31.6</td>
<td>30.1-33.0</td>
<td>28.1</td>
<td>24.4-31.9</td>
</tr>
<tr>
<td>Asthma</td>
<td>8.9</td>
<td>11.9</td>
<td>10.8-12.9</td>
<td>17.2</td>
<td>14.0-20.5</td>
</tr>
<tr>
<td>COPH/other lung</td>
<td>6.5</td>
<td>12.3</td>
<td>11.3-13.3</td>
<td>8.9</td>
<td>6.5-11.3</td>
</tr>
<tr>
<td>Smoker</td>
<td>18.1</td>
<td>26.1</td>
<td>24.6-27.6</td>
<td>27.3</td>
<td>23.5-31.2</td>
</tr>
</tbody>
</table>
American Heart Association’s Life’s Simple Seven Program

Why Following These 7 Steps can Improve Health and Meet Goals of Population Health and Worksite Wellness
AHA’s Life’s Simple 7

Ideal Health Behaviors
- Nonsmoking
- Healthy weight
- Appropriate levels of physical activity
- Healthy eating pattern

Ideal Health Factors
- Total cholesterol
- Blood pressure
- Non-diabetic
## Definitions

<table>
<thead>
<tr>
<th>Smoking</th>
<th>Never or Quit &gt; 12 mo ago</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMI</td>
<td>&lt;25 kg/m(^2)</td>
</tr>
<tr>
<td>Physical activity</td>
<td>≥150 min/wk moderate or</td>
</tr>
<tr>
<td></td>
<td>≥75 min/wk vigorous</td>
</tr>
<tr>
<td>Healthy diet</td>
<td>4 out of 5 components</td>
</tr>
<tr>
<td>Cholesterol</td>
<td>&lt; 200 mg/dL</td>
</tr>
<tr>
<td>Blood pressure</td>
<td>&lt;120/&lt;80 mm Hg</td>
</tr>
<tr>
<td>Glucose</td>
<td>&lt;100 mg/dL</td>
</tr>
</tbody>
</table>
Components of a Healthy Diet

In the context of a diet that is appropriate in energy balance, pursuing an overall dietary pattern that is consistent with a DASH-type eating plan, including but not limited to:

• Fruits & vegetables: ≥4.5 cups (~1 L)/day
• Fish: ≥2 3.5-oz (~100 g) servings/week
• Fiber-rich whole grains (≥1.1 g fiber per 10 g carbohydrate): ≥3 1-oz-(~28 g) equivalent servings/day
• Sodium: <1500 mg/day
• Sugar-sweetened beverages: ≤36 oz (~1 L)/week (1/4 discretionary calories)
What is the relationship between Ideal CV Health Factors & Behaviors and incident CVD?
The ARIC Study

- **Prospective cohort study of atherosclerotic diseases** in 4 U.S. communities: Forsyth County, NC; Jackson, MS; Washington County, MD; and the north-west suburbs of Minneapolis, MN

- **At baseline (1987 to 1989)**, 15,792 men and women age 45 to 64 years who were selected by list or area probability sampling

- All participants followed from baseline to date of CVD event, death, loss to follow-up, or otherwise through 31 December 2007

- **CVD events were ascertained** by annual telephone follow up and retrieval of hospital records / death certificates

Folsom et al. *JACC* 2011
The ARIC Study

Distribution (prevalence, %) of ideal CV health metrics in ARIC Study participants free of CVD at baseline.

Folsom et al. JACC 2011

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The ARIC Study

Cumulative incidence of CVD according to the number of ideal cardiovascular health metrics

Folsom et al. JACC 2011
What is the relationship between an Ideal CV Health Factor & Behavior composite score and mortality?
The REGARDS Study

- 30,239 AA & whites age 45+ recruited by phone and examined in their homes across the US
- Stratified sample by sex, race, region
- Biannual follow up of 17,794 participants or proxies by phone for outcomes including death
The REGARDS Study
Statistical Analysis

• Tabulate number of individuals with ideal, intermediate or poor health status for each of 7 factors, weighted by the sampling fractions for sex, race, region

• Create a composite score ranging from 7-21 points
  • Poor: 1 point
  • Intermediate: 2 points
  • Ideal: 3 points

• Cox models: RR of death for each point higher score

• Consider lifestyle factors separate from other factors
The REGARDS Study
Score Distribution

<table>
<thead>
<tr>
<th>Simple 7 Score</th>
<th>Black Mean (SD)</th>
<th>White Mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td></td>
<td>14.9 (2.0)</td>
</tr>
<tr>
<td>8</td>
<td></td>
<td></td>
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<tr>
<td>9</td>
<td></td>
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<tr>
<td>21</td>
<td></td>
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</tbody>
</table>

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The REGARDS Study
Relative Risk of Death

RR Death by Tertiles of Simple 7 Score
With 2319 deaths over mean follow up 4.6 years

<table>
<thead>
<tr>
<th>Tertile (range)</th>
<th>Unadjusted</th>
<th>Adjusted*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (7-13)</td>
<td>1.0 (ref)</td>
<td>1.0 (ref)</td>
</tr>
<tr>
<td>2 (14-15)</td>
<td>0.70 (0.61-0.80)</td>
<td>0.60 (0.52-0.68)</td>
</tr>
<tr>
<td>3 (16-20)</td>
<td>0.45 (0.38-0.53)</td>
<td>0.41 (0.35-0.48)</td>
</tr>
</tbody>
</table>

* Adjusted for age, race, sex, region, income, education
Ideal CV Health Factors & Behaviors

What is the relationship between an Ideal CV Health Factor & Behavior composite score and stroke?
Survival free from stroke by cardiovascular health categories (REGARDS)

Kailuan Study, China, Incident Stroke at 4 Years F/U

Hazard ratio (95% CI)

Number of ideal CV health metrics

Ischemic

Hemorrhagic

91698 participants (72826 men and 18872 women between the ages of 18 and 98 years)

Zhang Q et al. DOI: 10.1161/STROKEAHA.113.678839
Ideal CV Health Factors & Behaviors

What is the relationship between an Ideal CV Health Factor & Behavior composite score and cancer?
Survival curves for combined cancer incidence by total number of ideal health metrics, ARIC, 1987 to 2006

Hazard ratios* of combined cancer according to # of ideal health behaviors and ideal health factors, ARIC, 1987 to 2006

*All hazard ratios are adjusted for age, sex, race, and ARIC study center.
What are Benefits for Employees and Impacts of Wellness Programs?
Documented Benefits of a Healthy Workforce

For the Employee
- Reduced risk for premature death
- Reduced risk for CVD, T2DM, cancers, back pain, high cholesterol
- Higher job satisfaction
- Increased worker income, lower debt
- Lower long-term unemployment

For the Employer
- Reduced productivity loss
- Reduced risk for short-term disability
- Enhanced mood
- Enhanced work performance
- Reduced health care spending
- Lower employee turnover rates

Pronk NP. *Annu Rev Public Health* 2015. 36:131–49

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The Landscape of Workplace Health Programs
Most employees have programs available to them and most have participated.

Overall Program Utilization

- Flu shots: 40%
- CPR or other emergency response training: 18%
- Email or online resource: 14%
- Access to on-site gym, court or recreation facilities: 13%
- Nutritious food choices at meetings or in cafeteria: 12%
- Walking course: 11%
- Nutritious snacks in vending machine: 10%
- Access to on-site gym, court or recreation facilities: 13%
- On-site showers: 9%
- Routine screening for blood pressure: 14%
- Routine screening for cholesterol: 13%
- Newsletter or brochure: 12%
- On-site health fair: 11%
- On-site nurse or health clinic: 10%
- Employers who have a wellness program: 78%
- Employers who use at least one wellness program: 80%
- Overall Program Utilization: 

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**LiveWell Rewards**

This University-wide initiative, led by UK Health & Wellness and developed by a diverse group of staff and faculty, aims to improve UK’s culture of health. **Enjoy these benefits available exclusively to you!**

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**UK LiveWell Check In**

A free health screening and $100 UK health plan rebate opportunity for our UK community. Participate in a way that works for you by choosing one of the two options below during your eligibility window.
Tools and Strategies for both Population Health and Worksite Wellness
Life’s Simple 7

Get Active
Eat Better
Lose Weight
Stop Smoking
Control Cholesterol
Manage Blood Pressure
Reduce Blood Sugar

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Good Habits Build Better Health.

The My Life Check® Health Assessment & Challenge is a short pilot program that encourages you to take actions and form habits to improve your heart health.

*How it works:* you complete an assessment, get a heart score and recommendations to make improvements, and track your progress.

GET STARTED
Your Summary

You're Going Strong

Your healthful habits are paying off. The longer you can maintain your lifestyle, the better off your heart health outlook will be. Stay focused on making the right decisions to keep your momentum going.

Actions You Can Take
An Example: The PepsiCo Program

• Healthy Living program started in 2003
  – a wellness program made up of:
    • health risk assessments
    • on-site wellness events
    • lifestyle management
    • disease management
    • complex care management
    • 24-7 nurse advice line
    • maternity management

• All PepsiCo employees and dependents can participate.
Components of Disease Management

• Offered to employees focused on improving medication adherence and patient self-care knowledge and abilities
  • The ten conditions covered:
    • asthma
    • coronary artery disease
    • atrial fibrillation
    • congestive heart failure
    • stroke
    • hyperlipidemia
    • hypertension
    • diabetes
    • low back pain
    • chronic obstructive pulmonary disease.
  • Completion required six to nine months
    • series of calls with a nurse that average fifteen to twenty-five minutes per call
    • Completion of a program occurs when the participant is successfully managing his or her condition.
Aggregate Impact Of Lifestyle Management And Disease Management On Per Member Per Month Health Care Costs At PepsiCo, 2004–11.

14,555 participants in disease management, 22,880 in lifestyle management, and 9,324 in both disease management and lifestyle management.

John P. Caloyeras et al. Health Aff 2014;33:124-131
Per Member Per Month Cost Savings At PepsiCo, By Healthy Living Program Component, 2004–11

John P. Caloyeras et al. Health Aff 2014;33:124-131

[Graph showing cost savings for different program components.]
Return On Investment (savings for each $1 spent) for PepsiCo’s Healthy Living Program, By Program Component, 2011.

John P. Caloyeras et al. Health Aff 2014;33:124-131

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Summary
Overlap of these Two Definitions

net health status or outcomes

health promotion activity

improve health outcomes while at work
Effective Worker Wellness Programs Exist

- Workers are interested in building health, but lack resources to implement.
- Programs that bridge concepts of population health and disease management are most effective.
  - Must contain elements of prevention of risk factors and prevention of disease complemented with chronic disease management.
- Evaluation of programs suggest cost savings, improvement of health outcomes, and productivity.
Reducing Risk

Decrease risks = Decrease costs

Eliminating one health risk for one employee can result in a substantial reduction in health care costs.

Return on Investment

• Each $1 invested in a worksite health and wellness program generates between $2.50 and $10.00 in savings attributable to reduced absenteeism and medical costs.

• Meta-analysis reported an average worksite health and wellness program would lead to $358 in annual savings per employee, with an up-front cost of $144 per employee per year – 250% ROI
Thank You