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# Promising Practices in Employer Health and Productivity Management Efforts: Findings From a Benchmarking Study

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## Learning Objectives

- Summarize the results of a literature review intended to identify promising health and productivity management (HPM) measures undertaken by employers.
- Give examples of the types of HPM efforts endorsed by experts or included in an inventory of practices that might be worthwhile.
- Outline information gleaned from site visits to organizations thought to incorporate the best elements of effective HPM practices.

## Abstract

**Objective:** To identify key success factors related to employer-based health and productivity management (HPM) programs. **Methods:** Data regarding promising practices in HPM were gathered via literature review, discussions with subject matter experts, online inventory, and site visits. **Results:** Promising practices in HPM include 1) integrating HPM programs into the organization's operations; 2) simultaneously addressing individual, environmental, policy, and cultural factors affecting health and productivity; 3) targeting several health issues; 4) tailoring programs to address specific needs; 5) attaining high participation; 6) rigorously evaluating programs; and 7) communicating successful outcomes to key stakeholders. **Conclusion:** Increased efforts should be directed at disseminating the experiences of promising practices. However, more research is needed in this area, so that additional public and private funding is made available for applied research in "real-life" business settings. Finally, employers should be provided effective tools and resources to support their HPM efforts. (*J Occup Environ Med.* 2007;49:111–130)

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Employers are experimenting with different forms of worksite-based programs aimed at improving the health of their workers.<sup>1,2</sup> Many employers have become convinced that their organizations can play an important role in reducing health risk factors among employees, which, in turn, will lead to lower health care costs, reduced absenteeism, and improved on-the-job productivity.<sup>3</sup>

For example, a recent analysis by Hewitt Associates<sup>4</sup> reported results of its Health Value Survey of more than 1800 health plans throughout the United States, including 400 major employers and more than 18 million health plan participants. In that analysis, Hewitt reported,

"Many companies are providing education, decision support tools, integrated disease management, coaching, wellness and preventive care programs to provide employees with a more holistic way to manage their health . . . Passive, siloed solutions to managing employee health will not work. Employers need to create an environment of health in their organization from the top down, and need to hold leadership and their employees much more accountable for understanding and using the integrated health and health risk management programs that support this environment of health . . . One example of this approach is health risk questionnaires (HRQs), which are designed to evaluate a person's lifestyle and help produce a suggested course of action that can be facilitated through a variety of managed health tools and resources. By providing tools and resources like HRQs and personal health records, employees, providers, and employers can more easily address potential health concerns, which can result in improved health, reduced health care costs, and a more present and productive workforce" (page 3).<sup>4</sup>

Another recently released employer survey by Towers Perrin<sup>5</sup> of 167

primarily *Fortune* 1000 companies found marked differences in benefit practices between companies that paid the most for employee health care (those in the top tertile of the survey group in terms of their medical expenditures) when compared to their counterparts in the bottom tertile of medical expenditures. The “low cost” companies (paying an average of \$7,224 per employee per year) when compared to their “high cost” counterparts (paying \$10,428) pursued “more extensive solutions, including those that address the underlying causes of health care cost increases. These included programs that invest in employee health by providing workers with programs and resources that encourage them to understand and manage their health risks and conditions. Tellingly, low-cost companies (in contrast to high-cost companies) offered a variety of health management programs such as those focused on health improvement (83% versus 58%) and disease management (84% versus 61%).<sup>5</sup> Finally, a 2006 survey of 464 employers by the International Foundation of Employee Benefit Plans<sup>6</sup> found that 62% of respondents offer wellness initiatives and 15% who do not currently offer these programs plan to do so.

However, a soon to be published National Worksite Health Promotion Survey,<sup>7</sup> conducted by Partnership for Prevention and the Office of Disease Prevention and Health Promotion presents some sobering findings. The survey of a representative sample of over 1500 worksites found that employers indeed offered a wide range of health promotion activities to their workers but that only 6.9% of the sample offered five key elements comprising a comprehensive program: 1) health education, 2) links to related employee services, 3) supportive physical and social environments for health improvement, 4) integration of health promotion into the organization’s culture, and 5) employee screenings with adequate treatment and follow up. Larger

worksites (with over 750 employees)\* and those with a dedicated staff person were more likely to offer comprehensive programming.<sup>7</sup>

It is our observation that employers often lack the knowledge, insight, and experience needed to design, implement, and evaluate effective programs likely to achieve desired outcomes.<sup>8</sup> Although there is considerable real-life experience with successful Health and Productivity Management (HPM) initiatives that can guide employer efforts, dissemination of information related to promising HPM practices is scattered and not widely adopted. Too often, promising practice HPM programs are applied and remain resident within organizations that have adopted such programs, although knowledge and insights related to their success are widely sought.<sup>9</sup>

With this as background, the Centers for Disease Control and Prevention (CDC), in alliance with the National Association of Chronic Disease Directors (NACDD), sponsored a large-scale HPM Benchmarking Project (Project) with the intent of publicizing what works in HPM and disseminating that information to large and small employers so successful programs can be broadly replicated. This paper reports the results of the Project and highlights promising practices in HPM, an umbrella term encompassing need-based, integrated medical, pharmacy management, health promotion, demand management, return-to-work, caregiver, employee assistance, and disease management programs in place at many worksites across the United States.

The aim of the Project was to identify promising practices that employers could adopt in order to improve the health and productivity of their workers and eliminate the unnecessary expenses that curtail the organization’s competitiveness. The Project took several forms, including

a literature review of promising practices, extensive discussions with subject matter experts, data collection from several potential-promising practice organizations using the online Inventory of Promising HPM Practices (Inventory), and site visits to nine organizations that were thought to embody some of the best elements of effective HPM practices. Below, we describe the Project in more detail and summarize its main findings and implications for employers and policy makers.

## Background

The United States has been witnessing alarming increases in obesity, diabetes, and related disorders for many years.<sup>10</sup> These diseases strain the resources of the health care system, as individuals who experience them generate significantly higher health care costs.<sup>11</sup> However, there is evidence that a considerable portion of disease and related costs are caused by modifiable behaviors such as smoking and drinking habits, physical inactivity, and poor diet.<sup>12</sup> Thus, diverse efforts are underway to help people reduce their risk factors by promoting healthy lifestyles.<sup>13</sup>

The CDC has long recognized these trends and is formulating disease prevention and control strategies for addressing health risks on a national basis.<sup>14</sup> A key element of the CDC’s strategy is to partner with employers as a bridge for reaching and improving the health behaviors of millions of employed adults. Specifically, the CDC is working with employers to develop and implement HPM programs that improve employees’ health and work performance, and ultimately reduce health risks and associated costs.<sup>15,16</sup>

Employers themselves are highly concerned about escalating costs, but may lack the knowledge, skills, and tools necessary to implement effective HPM programs.<sup>17</sup> In response to this problem, the CDC initiated the HPM Benchmarking Project, which is designed to 1) identify organiza-

\**P* = .06.

tions that have improved employee health and reduced costs through their HPM programs, 2) learn how organizations implemented these programs to achieve desired outcomes, and 3) formulate recommendations on how promising programs can be implemented more generally across businesses.

The definition of HPM varies widely within the worksite literature. For our purposes, we employ the term "HPM programs" to encompass worksite-based initiatives that include health promotion (eg, health management or wellness programs); disease management (eg, screening, care management, or case management programs); demand management (eg, self-care, nurse call line programs); and related efforts to optimize employee productivity by improving employee health. Related efforts might include use of employee assistance programs to address behavioral health, substance use, or work-related emotional problems; return-to-work programs that usually operate as part of short-term disability benefit; pharmacy management services; and/or programs designed to reduce employees' caregiver burden for those who have seriously ill parents or children.

For this Project, we sought to distill the essential components of HPM programs that produce positive health and financial results. We begin by briefly reviewing previous benchmarking efforts in this area and their findings. We then offer a brief literature review on this topic. We summarize the opinions of experts convened for the purpose of establishing the critical elements that constitute promising practices. We conclude with our impressions of promising practices based on the above activities and from site visits to organizations that others pointed to as embodying many of the characteristics highlighted in the literature review and expert discussions. We also offer ways to accelerate the adoption of HPM promising programs among employers.

## The Importance of Benchmarking

Why benchmark? The business case for increased employer investment in the health and productivity of employees remains tenuous.<sup>18</sup> Intuitively, most employers understand they play an important role in improving their workers' health and well-being. They realize that if they can keep workers fit and healthy, their employees will consume fewer health care resources, be absent from work less frequently, have fewer accidents, be more productive, and, in general, contribute more effectively to the success of the enterprise.<sup>19</sup>

But employers are still hesitant to offer sufficiently intensive and comprehensive programs.<sup>20</sup> The reasons for their hesitancy are multifaceted. First, many employers are not convinced that HPM programs can improve health and achieve a "bottom line" (ie, positive financial) effect.<sup>21</sup> They may not be aware of financial impact studies examining this issue, or they may be reasonably skeptical, citing the lack of scientific rigor in many economic analyses.<sup>22</sup> Second, although some employers may believe that HPM programs exert a positive impact, they may not know which elements of these programs are more important.<sup>21</sup> They may also be cognizant of programs with many activities but without measurable results. Finally, many employers may feel at a loss when attempting to identify and implement effective HPM programs on their own.<sup>21</sup>

To support employer efforts in building effective programs, the CDC sought examples of benchmark or promising practice initiatives featuring clear implementation guidelines, manageable goals and objectives, and documented outcomes, including cost savings. Opportunities for enhancing partnerships between the CDC and employers abound. Hence, the rationale for the Project reported here was to gather new evidence on the characteristics of effective HPM programs, to leverage that knowledge, and to iden-

tify strategies to better disseminate what is already known.

## Previous Benchmarking Studies

Several benchmarking studies focused on worksite HPM programs preceded the current effort. These included research by Goetzel et al,<sup>23</sup> O'Donnell and colleagues in collaboration with the American Productivity and Quality Center (APQC),<sup>24,25</sup> Goetzel et al with the APQC and the Institute for Health and Productivity Management Institute (IHPM),<sup>26</sup> the Wellness Councils of America (WELCOA),<sup>27</sup> and Goetzel et al, who studied former C. Everett Koop Health Project Award winners.<sup>28</sup> Results of these benchmarking projects are summarized in Table 1. As shown, there is considerable overlap in the observations of promising practices across studies, and findings from these diverse projects support each other. In fact, when reading the substance of these reports, several themes recur, and observations from prior research are more often reinforced than negated. Thus, this body of evidence can be viewed as complementary, rather than controversial, since no single study is regarded as definitive in its reporting of promising practices in HPM.

## Why Conduct Yet Another Benchmarking Study?

An obvious question arises: If there is so much prior research in this area, why then is there a need to perform another benchmarking study? Although a small and sophisticated set of researchers and program managers are aware of this literature, and increasingly organizations are implementing promising practices, most employers are admittedly still in the dark about critical success factors related to HPM. They, along with their consultants and vendors, seek intelligence and guidance for implementing state-of-the-art and state-of-the-science HPM programs. Employers knowledgeable about HPM programs may still find

**TABLE 1**  
Summary of Previous Benchmarking Best Practice Studies

HPM Best Practice	Goetzel et al, 1997	APQC O'Donnell et al, 1996	IHPM Goetzel et al, 1998	WELCOA	Koop Health Project, Goetzel et al, 2001
Organizational commitment	✓	✓	✓	✓	✓
Program linked to business objectives		✓	✓		✓
Effective communication		✓	✓		✓
Effective operation plan		✓		✓	
Supportive environment				✓	
Program goals include productivity and morale			✓		✓
Employee input when developing goals and objectives		✓			
Management leads by example			✓		
Interdisciplinary team focus			✓	✓	
Identification of wellness champions			✓	✓	✓
Incentives to participate	✓	✓			
Program accessibility		✓			
Effective screening and triage	✓	✓			
State-of-the-art interventions	✓	✓			
Effective implementation	✓				
Ongoing program evaluation	✓	✓		✓	
Data collection, measurement, reporting, and evaluation (including ROI)			✓	✓	✓

it hard to introduce HPM programs because they lack the time, tools, and resources necessary for successful implementation.<sup>2,29,30</sup>

The current benchmarking Project was formulated to respond to that need and to inform the CDC and employers on advances in HPM programming newly introduced at leading-edge organizations. Furthermore, since previous benchmarking studies are now dated, we sought to update this knowledge base with more contemporary examples of organizational initiatives. Many of the studies cited previously were conducted five or ten years ago in a different health care climate, where employers were not as focused on prevention, health promotion, and HPM (beyond several notable innovators in the field). Today, many more employers are introducing HPM programs. They, and employers still standing on the sidelines, are eager to learn how well these programs work, which elements are critical to success, and how programs can be tailored to employers' specific work environments and workforce requirements.

Another feature of the Project was to highlight the health and economic results that can be achieved from promising practice HPM programs, and the processes that lead to program development and execution. Accordingly, the Project began by identifying HPM programs that reportedly achieved desired business outcomes, and then worked backwards to understand the forces that led to these successful outcomes.

It is hoped that this benchmarking effort will form the foundation for further development activities by the CDC and NACDD to build and make available worksite-centered tools, resources, and consulting expertise founded on proven intervention programs. It is also expected that these employer tools may mitigate some of the barriers that organizations experience when considering the adoption of HPM programs.

**Materials and Methods**

To identify the key elements of successful HPM initiatives, the Project team implemented multiple lines of inquiry. First, a literature

review was conducted to identify companies that have conducted rigorous evaluation studies documenting cost savings and/or return on investment (ROI) for HPM initiatives. Second, an expert panel was assembled, composed of 14 individuals with current experience working with employers engaged in HPM. Panelist input regarding key elements of best practice programs was solicited in writing and at a face-to-face meeting at CDC headquarters in Atlanta.

The Project team then developed a list of promising practice criteria, based on the literature review and discussions with experts. The team also compiled a list of 99 organizations whose HPM programs appeared to align with these criteria for promising practices. Organizations were identified based upon expert panel recommendation, a review of trade and scientific journals, results of related projects,<sup>31,32</sup> and a perusal of best practice award winners.<sup>33-37</sup>

Synthesizing the information gathered from the literature review and expert panel discussions, the Project

team then developed a draft, online, Inventory of Promising HPM Practices (Inventory). The team developed this Inventory to illuminate how closely organizations' HPM efforts mirrored the Project's working list of promising practice standards. The Inventory inquired about specific program activities, behavior change strategies, participation rates, incentives used, program content, delivery methods, evaluation methods, and results of evaluation studies.

The Inventory was sent out for review by the expert panel who offered helpful edits, comments, additions, deletions, and other suggestions on ways to improve the Inventory. In addition, standardized questions used in the 2004 National Worksite Health Promotion (NWHP) Survey administered by the Department of Health and Human Services, Office of Disease Prevention and Health Promotion and administered by Partnership for Prevention<sup>2</sup> were incorporated into the Inventory. The final Inventory (see Appendix A) was set up as a Survey Monkey survey on the Internet ([www.surveymonkey.com](http://www.surveymonkey.com), accessed January 3, 2007) and the 99 organizations identified earlier as potential promising practice candidates were invited to complete it. Of those invited to participate in the Inventory, 39 did so.

Next, the Project team developed a systematic method for scoring responses to the Inventory. Points were tallied in four different ways, depending upon the criteria used in the summation process. The cumulative square root of frequency (*f*) rule (see Appendix B for details) was then used to find the subset of companies whose Inventory scores were similar and high, and whose scores were significantly different from the rest. In all four applications of the rule, the same companies emerged as high scorers. These organizations were exemplars whose HPM programs appeared to reflect the Project's criteria for promising practices.

Finally, to acquire deeper insights into critical characteristics of successful HPM efforts, site visits were conducted at the nine high scoring organizations that agreed to accommodate the Project team for the limited time period within which site visits needed to be conducted. The site-visit process was consistent with the broader CDC strategy, which was to obtain an employer perspective on how to formulate the lessons of the Project in a manner that is salient to the business community.

## Results

Our findings from the Project largely corroborated many of the lessons learned from previous HPM benchmarking efforts. However, we were pleased to learn that much of the conceptual knowledge regarding HPM has become firmly entrenched at many organizations, particularly those we visited. Almost all of the organizations reviewed were operating programs that were strong, well supported, and thriving.<sup>†</sup> Below, we highlight our major findings by Project category and then offer some possible implications for action.

## Literature Review

Our review of the scientific literature focused on HPM outcomes revealed only a handful of organizations where rigorous evaluation studies were conducted documenting reduced health risks and cost savings resulting from the HPM programs.<sup>38</sup> A parallel effort by the Guide to Preventive Services (Community Guide) is currently underway and the results will be posted at the Community Guide Web site ([www.thecommunityguide.org](http://www.thecommunityguide.org)). The Community Guide effort is focused on compiling peer-reviewed evidence supporting worksite health improvement programs targeting employees at high

risk for certain biometric categories (eg, weight, blood pressure, blood glucose, cholesterol) and behaviors (eg, physical inactivity, poor nutrition, alcohol abuse, lack of motor vehicle safety). Included in the set of reviews are worksite programs that offer assessments of health risks, most often through the administration of a health risk appraisal (HRA) alone or followed by any number of health improvement interventions ranging from one-to-one counseling, general health education programs, and other broad based worksite programs.

Our Project's literature review was undertaken with the knowledge that HPM efforts are often not published. The dearth of a large body of research in this area may be explained by the observation that most employers cannot afford the expense of conducting rigorous randomized trial studies, or lack the internal expertise to conduct such research. When employers seek to assess whether their programs are effective, they generally rely upon their internal administrative and financial reporting systems that track and display trends in key metrics such as health care costs, absenteeism rates, and safety incidents. Lacking comparison and control groups, employers are generally unable to assess whether their efforts are successful, from a strict scientific standpoint, except on a very broad basis.<sup>39</sup>

Nonetheless, several impressive program evaluations were uncovered where health and financial outcomes were reported in the literature or through organizational Web sites that recognized outstanding programs with proven results (eg, Koop Awards). Scientific studies published in peer-reviewed journals, or reported by reputable review organizations, highlighted results from worksite programs at Johnson & Johnson,<sup>40</sup> Citibank,<sup>41</sup> United Auto Workers – General Motors/Chrysler,<sup>42</sup> Glaxo-Smith Kline,<sup>43</sup> Washoe County School District,<sup>44</sup> International Truck and Engine,<sup>45</sup>

<sup>†</sup>The staff at one of the employers visited informed us several weeks after our visit that its HPM program was being dismantled. This change appears to have resulted from a change in leadership philosophy.

Fairview Health System,<sup>46</sup> and Hawaii Medical Services Association.<sup>47</sup>

Our sources for promising practices that reported health and financial outcomes came from the studies listed above and a series of literature reviews published during the past decade by Pelletier,<sup>48,49</sup> Goetzel et al,<sup>50,51</sup> and Chapman.<sup>52</sup> In addition, employer studies often cited with the strongest research designs and large numbers of subjects included those performed at Johnson and Johnson,<sup>53,54</sup> Citibank,<sup>55</sup> Dupont,<sup>56</sup> the Bank of America,<sup>57,58</sup> Tenneco,<sup>59</sup> Duke University,<sup>60</sup> the California Public Retirees System,<sup>61</sup> Procter and Gamble,<sup>62</sup> and Chevron Corporation.<sup>63</sup>

Even accounting for certain inconsistencies in design and results, most produced positive financial outcomes and several reported a positive ROI. Admittedly, the methodological rigor of evaluations performed in business settings has not been consistent.<sup>64</sup> In fact, randomized trials are hard to find in the literature, largely because they are not well accepted in business environments. However, methodological shortcomings in earlier analyses have diminished significantly over the past two decades. The most recent evaluations use sophisticated econometric methods that control for selection bias and often assess impact over several years (with some extending for three to five years and one, performed at Johnson & Johnson, lasting nine years).<sup>65</sup> These advances should inform future study designs of similar HPM interventions.

In sum, our limited literature review of private sector HPM programs presents compelling evidence that HPM programs can achieve significant health and economic results important to businesses, but there is certainly a need for better-designed and well-funded worksite-based studies. Our review helped form the generation of several broad tenets central to the design and implementation of effective HPM programs,

**TABLE 2**

Expert Panel Consulted for Promising Practice HPM Benchmarking Project

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Panelists

Steve Aldana, PhD—Brigham Young University  
 David Anderson, PhD—StayWell Health Management  
 Larry Chapman, MBA—Summex Corporation  
 David DeJoy, PhD—University of Georgia  
 Ken Holtyn, PhD—Independent Consultant  
 David Hunnicutt, PhD—WELCOA  
 Joseph Leutzinger, PhD—Academy for Health and Productivity Management  
 Garry Lindsay, MPH—Partnership for Prevention  
 Paula Marmet, MS, RD—Chronic Disease Directors Association and Kansas Department of Health and Environment  
 Michael O'Donnell, PhD—*American Journal of Health Promotion*  
 Stephanie Pronk, PhD—Watson Wyatt Worldwide Consulting  
 Chuck Reynolds, MBA—The Benfield Group  
 Sue Willette, MPH—Mercer Health Care Consulting

CDC Representatives

William H. Dietz, MD  
 Diane Dunet, PhD  
 Michele Reyes, PhD  
 Phillip K. Sparling, PhD

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which were then used in our discussions with industry experts. However, there is still a need for more and better-designed research studies that evaluate the key principles of HPM and carefully examine whether such programs can improve employee health and pay for themselves through lower health care expenditures and improved worker productivity.

### Expert Panel

A roster of the panel of experts convened for this Project representing academicians, practitioners, consultants, and vendors is shown in Table 2. Prior to a face-to-face meeting, the Project team queried these experts on their insights related to promising practices in HPM. These were synthesized into seven broad categories and summarized in Table 3.

**TABLE 3**

Characteristics of Promising Practice HPM Organizations

- 
1. Employ features and incentives that are consistent with the organization's core mission, goals, operations, and administrative structures;
  2. Operate at multiple levels, simultaneously addressing individual, environmental, policy, and cultural factors in the organization;
  3. Target the most important health care issues among the employee population;
  4. Engage and tailor diverse components to the unique needs and concerns of individuals;
  5. Achieve high rates of engagement and participation, both in the short and long term;
  6. Achieve successful health outcomes, cost savings, and additional organizational objectives; and
  7. Are evaluated based upon clear definitions of success, as reflected in scorecards and metrics agreed upon by all relevant constituencies.
- 

The themes identified by experts as central to successful HPM programming served as the foundation for a full-day discussion at the face-to-face meeting. Not surprisingly, panelists tended to share their expertise at a conceptual level, emphasizing philosophical orientations, underlying assumptions, and broad strategic approaches. This expertise was highly valuable because it helped inform and place into context the results from upcoming site visits.

Key themes emerging from the expert panel discussion were as follows:

- *Defining success.* Panelists agreed that improved health and reduced costs are important, and that employers are well advised to evaluate their programs in relation to these outcomes. But, these are not the only outcomes to consider. For example, employers may be interested in improving workers' morale, or gaining a reputation in the marketplace as caring for their employees' health and well-being. Thus, it may be worthwhile to define successful programs as

efforts that accomplish organizational business or social responsibility objectives.

- *Measuring success.* Organizations should continuously evaluate their HPM programs, but the degree of rigor necessary was debated. Although well-controlled studies are desirable, they may not be feasible in many business environments.<sup>66</sup> This discussion underscored the differing priorities on the part of organizational decision-makers versus researchers. Several panelists suggested that it may be more important for employers to evaluate programs using methods that are systematic, whereby stakeholders define key process and outcome measures relevant to the organization.
- *Integrating HPM strategies into company operations.* Panelists stressed that effective HPM programs are embedded into organizational infrastructure, such as benefit design, compensation practices, disability policies, and the physical environment or ecology of the organization. Successful initiatives are not simply "linked" to other parts of the organization. They also reflect the organization's mission and are tied to broader business objectives. Stated another way, exemplary programs thrive in organizations where senior managers regard HPM as integral to and not apart from their business operations.
- *Implementing meaningful incentives.* Programs must achieve high degrees of participation in order to succeed, highlighting the importance of incentives and rewards for employees who demonstrate desired behaviors. Panelists noted that the most effective incentives directly affect employees' health care costs, such as insurance premium discounts for completing a health risk appraisal (HRA) and/or participating in intervention programs. This contrasts with stand-alone incentives that are widely used but not necessarily effective, such as gift certificates, coffee mug, and sweatshirts.

- *Designing data-driven, population-based interventions.* Organizations are wise to assemble baseline data to direct programmatic decisions. Baseline data may consist of HRA responses, medical claims, absenteeism records, presenteeism measures, and attitude and interest surveys. It is crucial for an employer to understand the specific health issues relevant to the employee population, including the most frequent and costly health problems of employees, so that interventions can be designed accordingly.
- *Communicating project results in a relevant manner.* Panelists emphasized that employers have a different frame of reference than the CDC and researchers. Care must be taken to communicate program aims and results in language that is understood and readily accepted by the business community.

### Online Inventory

A summary of Inventory results is found in Table 4.

As shown, across organizations, 70% of the respondents tracked the frequency, duration, and type of participation in HPM programs and their average participation rate was 60%. Twenty organizations reported that their programs were in operation for ten or more years, and 25 indicated their programs were run jointly by vendors and internal staff. On average, one fulltime equivalent (FTE) staff person was allocated to run HPM programs for every 1000 eligible employees. About three of four surveyed organizations offered educational programs ( $n = 32$ ), skill building sessions ( $n = 32$ ), external resources ( $n = 31$ ), and preventive screenings ( $n = 30$ ) to support employees' efforts in improving their health.

The administration of a health risk appraisal was the most common program component employed ( $n = 28$ ), however most organizations ( $n = 25$ ) also provided triage into interventions based upon risk, tailored programs, and coordination with

community resources. Programs were most often delivered through printed materials ( $n = 30$ ), Internet ( $n = 29$ ), telephone counseling/coaching ( $n = 27$ ), face-to-face counseling/coaching ( $n = 26$ ), and advice lines ( $n = 21$ ). The most frequently targeted health issues included exercise/physical activity ( $n = 31$ ), obesity/weight management ( $n = 31$ ), cholesterol management ( $n = 29$ ), diet/nutrition ( $n = 29$ ), preventative screening ( $n = 29$ ), and smoking ( $n = 29$ ).

When assessing program results, participants analyzed data related to participation rates ( $n = 29$ ), behavior change ( $n = 29$ ), employee satisfaction ( $n = 28$ ), biometric values ( $n = 27$ ), and health care utilization/costs ( $n = 27$ ). Respondents reported having written policies in place to address tobacco ( $n = 30$ ) and alcohol use ( $n = 29$ ). Almost half (45%) of the organizations reported providing employees access to an on-site fitness facility and 52% of organizations offered their employees subsidies for memberships to fitness clubs.

Finally, the Inventory asked organizations to rate their level of agreement with a set of statements denoting organizational support for HPM efforts. Examining some of the items on the Inventory, almost all respondents agreed that their senior management was committed to health promotion (97%) and that health and productivity strategies were aligned with business goals (93%), while only a little over a third (37%) reported that their organization integrated data across systems to capture and evaluate measures in order to assess the impact of HPM initiatives.

### Site Visits

Visits to the nine promising practice employers reinforced many of the observations made previously in the literature review and expert panel dialogues. These are summarized below.

**TABLE 4**  
Summary of Results From the HPM Inventory of Promising Practices

<b>Number of organizations completing the inventory</b>		39
<b>Eligible Employees</b>		
Avg. no. of employees eligible to participate in HPM programs		68,587
Range		225–1,100,000
<b>Employee Participation</b>		
Avg. participation rate		59.6%
Percent tracking frequency, duration, and type of program participation		70
Percent offering premium reduction for participating in HPM programs		36.7
<b>Staffing</b>		
Avg. no. of fulltime employees allocated per 1000 eligible employees		1.1
<b>Length of Program</b>	<i>No. of employers</i>	
<1 yr		0
1–2 yr		2
3–5 yr		6
6–9 yr		4
≥10 yr		20
<b>Program Operation</b>	<i>No. of employers</i>	
Both a vendor and internal operation present		25
Program operated internally		5
Vendor operates program		2
<b>Program Strategies</b>		
Avg. no. of program strategies employed (out of 9)		8.1
<i>Strategy</i>	<i>No. of employers utilizing strategy</i>	
Educate people regarding strategies for improving their health		32
Equip people with specific skills for improving their health		32
Equip people with external resources		31
Increase preventative screening		30
Optimize the worksite physical environment		29
Provide alternatives to medical service utilization		29
Provide financial or other incentives		28
Educate people regarding the cost of their care		25
Improve communication between patients and providers		24
<b>Program Components</b>		
Avg. no. of program components (out of 4)		3.3
<i>Program Components</i>	<i>No. of employers utilizing component</i>	
Administer HRA		28
Triage employees based upon degree of risk		25
Tailor interventions to degree of risk		25
Coordinate with local community resources		25
<b>Health Issues Targeted</b>		
Avg. no. of health issues targeted (out of 23)		16.6
<i>Health Issue</i>	<i>No. of employers targeting issue</i>	
Exercise/physical activity		31
Obesity/weight management		31
Cholesterol management		29
Diet/nutrition		29
Preventative screening		29
Smoking		29
Blood pressure		28
Heart/cardiovascular disease		28
Diabetes		27
Stress/emotional health		27
Depression		25
Cancer		22
Work-life balance		22
Asthma		20
Alcohol/substance abuse		19
Allergy		19
Occupational injuries		19
Pregnancy/childbirth		19
Headaches/migraine		17
Safety/accidents		15
Arthritis		12
Workplace violence prevention		12
HIV/AIDS/sexually transmitted disorders		7

(Continued)

**TABLE 4**  
Continued

<b>Program Delivery</b>	
Avg. no. of ways program is delivered (out of 5)	4.3
<i>Method of Delivery</i>	<i>No. of employers utilizing method</i>
Printed materials	30
Internet	29
Telephone counseling/coaching	27
Face-to-face counseling/coaching	26
Advice nurse/line	21
<b>Outcomes Measured</b>	
Avg. no. of outcomes measured (out of 10)	6.7
<i>Outcome</i>	<i>No. of employers measuring outcome</i>
Program participation rates	29
Behavior change	29
Employee satisfaction	28
Biometric measures	27
Health care utilization and costs	27
Workers' compensation costs	23
Absenteeism	14
Functional status	12
Productivity at the workstation/site	10
Turnover rates	8
<b>Formal Studies</b>	
Percent of employers conducting formal studies	54.8
<b>Policy Issues</b>	
Avg. no. of policy issues addressed (out of 5)	2.8
<i>Policy issue</i>	<i>No. of employers addressing issue</i>
Tobacco use at the worksite and/or on the job	30
Alcohol use at the worksite and/or on the job	29
Seat belt use during business travel in an automobile	16
Physical activity	7
Nutrition	6
<b>Fitness Facilities</b>	
Avg. percent of employees at each site with access to on-site fitness club	44.5
<b>Subsidies</b>	
Percent of employers offering employees subsidies for fitness club memberships	51.7
<b>Organizational Health Commitment Statement</b>	
	<i>% of employers that agree or strongly agree</i>
Our senior management is committed to health promotion as an important investment in human capital	96.7
Our health and productivity strategies are aligned with our business goals	93.3
Our health benefits support prevention, risk reduction, and disease management, and are free of barriers to evidence-based interventions	73.3
We have identified the leading physical and mental conditions among our employees and know their related direct and indirect costs	70.0
Our incentives support consumer accountability and motivate employees to stay healthy, reduce high-risk behaviors/clinical measures, and/or adhere to disease management regimens	66.7
Our employees are educated about the true cost and total value of personal health and its impact on business success	56.7
All levels of management are educated regarding the link between employee health and productivity, and total economic value	53.3
We have integrated our data management system to capture and evaluate our direct and indirect health and productivity related measures in order to assess the impact on work impairment	36.7

Numbers/percentages are based on valid responses to questions.

• **Integration into organizational operations.** Employers visited clearly integrated HPM efforts into their business operations. This included benefit design, compensation practices, organizational

communications, and senior manager performance appraisals. For example, one employer rewarded employees for completing an HRA and practicing healthy behaviors by posting reward dollars into em-

ployee Health Savings Accounts. Another employer tied health promotion and safety initiatives into middle management performance reviews. In addition, HPM programs were supported through com-

pany equipment, facilities, and other forms of infrastructure. Physical plants were used to house fitness centers and on-site health education classes, and cafeterias featured healthy food choices (eg, by offering salad bars and signage related to healthy eating). Employing company collateral to deliver HPM programs was viewed as a highly effective strategy that emphasized the premium placed by the organization on employee health.

- **Addressing individual, environmental, policy, and cultural factors.** One of the most consistent observations was that the employers designed their HPM programs at multiple levels. Organizations expected employees to assume responsibility for their health, thereby supporting a variety of individually directed health improvement and disease management programs. In addition, employers altered the physical environment to be conducive to healthy choices, by providing fitness facilities and changing vending machine and cafeteria food offerings. Furthermore, employers established policies to reinforce the desired behaviors, and branded their programs to become part of the organizational culture.
- **Targeting the continuum of health care issues.** Promising practice employers based their HPM offerings on data derived from multiple sources, including HRA results, employee surveys, claims analyses, and qualitative studies (for example, focus groups). At the same time, addressing certain core behavioral risk factors such as physical inactivity, poor diet, and smoking was central to all HPM programs.
- **Tailoring to population needs.** Organizations visited developed mechanisms for triaging people into programs that match individual needs and learning styles. Programs were delivered through diverse modalities that acknowledged the different circumstances of employees. For example, the Internet was thought to be highly

suitable for some employees but not others, necessitating additional delivery modalities, such as telephone counseling, one-to-one coaching, and use of printed materials. Many of the organizations also had interest and future plans to reach out beyond employees to include spouses, dependents, and retirees in their programs. Finally, many organizations tailored their programs to include ethnically and culturally diverse populations.

- **Attaining high participation.** Employers devoted considerable attention to achieving high participation rates. Promising practice programs were based on an in-depth understanding of what employees find meaningful, and organizations designed their incentive systems accordingly to achieve high participation and engagement. Employers emphasized the need for employees to take positive action to address their health risks whether at their place of employment or away from their jobs. Losing weight, becoming more physically active, and quitting smoking were encouraged and rewarded in any setting, not only at the worksite.
- **Evaluating programs based on clear definitions of success.** Senior managers regularly reviewed a specific set of indicators to gauge the success of HPM programs. These indicators included but were not limited to participation rates, changes in specific health behaviors such as weight loss or smoking cessation, employee satisfaction, and economic variables such as health care utilization and costs. No uniform set of performance indicators was applied across employers. Instead, organizations individually defined key metrics that were most pertinent to their business.
- **Communicating successful outcomes to key stakeholders.** Promising practice organizations amassed data to confirm that their programs were associated with health risk reductions, increases in healthy behaviors, reduced health care costs,

improved productivity, and a favorable ROI. They then communicated their results to key stakeholders in their organizations. As previously noted, however, their data were most often based on internal analyses not subject to external peer review. However, there was a growing interest on the part of employers in conducting better and more scientifically valid studies in an attempt to assess the true effects of their programs.<sup>67</sup>

## Conclusions and Policy Implications

Findings from the Project were not especially new or dramatic. Instead, they reinforced and affirmed previous work highlighting HPM promising practices. From the Project team's perspective, it was encouraging to witness longstanding conceptualizations of HPM becoming established among many employers, and to observe previously hypothesized success factors to be borne out through direct observations. Further, we observed that HPM program managers were conducting their daily business with a sense of assurance that their programs were well conceived and working. Programs appeared to be past the experimentation stage and in a standard operating procedure mode.

Although few hard-evidence studies were available to document program achievements, especially with regard to cost savings, senior managers at promising practices demonstrated support for their programs through personal engagement, continued funding, releasing staff to run programs, and their willingness to go public with program descriptions and accomplishments.

The goal of the Project was to integrate the science and practice of HPM. This was done by reviewing relevant literature related to employer efforts in HPM, consulting with a diverse group of experts and practitioners in the field, and by viewing, first hand, what employers have been able to achieve at their

worksites. The product of this effort, a melding of the art and science of HPM, creates an opportunity to apply evidence-based practices in real-life settings while at the same time formulating models and concepts that are practice-based.

### Limitations

This study has several limitations worth noting. First, the organizations identified as potentially reflecting promising practices in HPM were selected largely on reputation alone. This leaves open the possibility that the organizations visited may not actually be achieving health and financial outcomes from their programs. In fact, very few organizations were able to produce peer-reviewed studies documenting their achievements and such research is needed to advance HPM efforts in applied settings.

Second, we did not attempt to aggressively follow-up with non-responders to the Inventory to determine whether their programs were also exemplary. Non-responders may have simply lacked the time to complete the survey or they may have been unwilling to cooperate with this research because they did not wish to subject their programs to in-depth and potentially critical review. As such, the results presented here are skewed toward insights gained from organizations willing to be part of this research and willing to share their experience in implementing HPM programs. We note, however, that it was not our intent to assess the broad landscape of organizational efforts at instituting HPM, both good and bad.

The Partnership for Prevention and Office of Disease Prevention and Health Promotion study cited earlier begins to address this concern by enumerating employer efforts in HPM from a representative sample of US employers.<sup>7</sup> However, the 2004 National Worksite Health Promotion Survey was also not designed to assess the quality or effectiveness of programs. Our objective for this

study was to find exemplary programs and to document how these programs achieved a reputation for promising practice. We acknowledge that promising practice employers' published evidence of accomplishments is sparse and that more and better research of "real-life" employer HPM initiatives is needed.

### Implications for Action

Although knowledge exists on how to run efficient and effective worksite programs, that knowledge may not find its way to day-to-day practice. Previous benchmarking results have not been well communicated beyond a small circle of researchers and visionary employers who experimented with and applied what was learned from successful programs. Only recently have employers and HPM vendors made better use of research and practical advice garnered from over a decade of research in this area. No large-scale education, communication, and dissemination efforts have been launched and, consequently, there is a need for better marketing and communication of current and evolving knowledge related to HPM—what works and what does not, and where our knowledge is incomplete.

Moreover, gaps still exist between the science and practice of HPM. Well-structured experiments examining the application of HPM conceptual models within employer settings are still in their infancy. Some notable exceptions to the gap between theory and practice can be pointed to, as was the case in our study, but even in this circumstance, an established program with proven outcomes can be shut down very rapidly with a change in leadership. Although several key process components leading to successful HPM initiatives have been documented and applied by leading employers, not enough has been done to evaluate program outcomes, especially financial outcomes, using rigorous study methods. Thus, more research is needed before early attempts at HPM

applications can be generalized to the broader employer community.

The employers highlighted in the Project are in the minority. Countless additional employers are not well informed about HPM and have not yet committed their organizations to these concepts. Nevertheless, many, if not most, employers would likely welcome help and support to institute HPM at their worksites.<sup>68</sup> How, then, can communication and application efforts be accelerated? Below, we offer several options for government and private sector organizations to consider.

First, increased efforts should be directed at improving employer communication and education on the known benefits of HPM. Specifically, it is important to communicate the cost burden of poor health habits and interventions available to reduce these risks. Government agencies and private sector organizations such as large employer health coalitions, can leverage their extensive marketing and communication networks to get the word out about promising practices and ways employers can learn from exemplary programs. This would entail preparing scientific articles; writing in trade journals; conducting industry and business group briefings; issuing press releases; preparing media kits; and presenting at conferences frequented by business leaders. Importantly, communication efforts should be directed at publications (and associated meetings) where influential business leaders tend to congregate (eg, *Wall Street Journal*, *Harvard Business Review*, Business Roundtable, and the US Chamber of Commerce). A key aim of these dissemination efforts would be to recruit business influencers to become ardent and visible advocates of HPM, emphasizing the importance of these programs to the success of American business. An example of such an initiative is the one currently in place at Partnership for Prevention entitled *Leading by Example*.<sup>69</sup>

A second important policy initiative would be to increase public and

private funding for applied HPM research in real-life business settings. The CDC and other government agencies have already directed new research funding to worksite programs and the role employers play in improving the health of workers. Until recently, much of the science emanating from program evaluation studies had emerged from private sector initiatives and was paid for by private sources. Consequently, even though the research is growing in both volume and rigor, it is still relatively primitive when compared to large-scale government-funded studies. To enhance knowledge and dissemination from worksite programs, government agencies could make available to researchers funds supporting the study of factors underlying successful worksite-based programs, and the effectiveness of these programs in improving health, lowering costs, and increasing productivity.

Third, employers need effective tools and resources to support their efforts in HPM. These tools will enable employers to estimate their unique ROI based on hypothesized reductions in the prevalence of certain risk factors, and compare their practices to those of promising practice companies. These tools and resources could be housed in a privately or publicly funded Employers' HPM Resource Center. The Resource Center would collect, develop, and disseminate objective, easy-to-use, and easy-to-access HPM information for employers on the effectiveness and cost-benefit of HPM. The information disseminated would be vetted by outside experts to ensure reliability and objectivity. Specific activities by the Resource Center might include evaluating and disseminating benchmarks for HPM programs and policies; creating an HPM activity tracking system that continuously examines current employer-sponsored HPM programs and disseminates the best, most current information related to design, implementation and evaluation of HPM efforts; creating a clearinghouse

for information on HPM vendors; providing information about HPM tools available in the marketplace; and, in general, ensuring that the evidence-based information on HPM is readily available to employers in a form that is easy to use and understand.

The Resource Center could also house a Technical Assistance Consulting Group to provide dissemination and application insights to employers wishing to develop HPM programs. The group would provide consulting expertise to employers (including local, state, and federal government agencies) on evidence-based approaches related to design, implementation, and evaluation of HPM programs. The group would help organizational leaders develop business case models for HPM; conduct needs assessments and baseline diagnostic studies; help establish realistic projections of ROI; design evidence-based programs based on solid theoretical foundations; apply learning from benchmarking studies and best practices; transfer knowledge and experience from large employers to small and medium sized worksites that are often not equipped with resources to implement large scale HPM programs; and create systems for measuring and evaluating outcomes of programs and capturing those in a central clearinghouse as part of the Resource Center.

Fourth, federal, state and local governments should consider implementing and evaluating innovative HPM programs directed at their employees. Such programs would ideally be designed in consultation with scientists and industry experts prior to implementation, then be subject to rigorous evaluation of program outcomes. These employer laboratories would then inform models of successful program design that other public and private organizations could emulate.

Fifth, public agencies could lead the way in honoring and rewarding organizations that have introduced successful HPM programs and have documented positive outcomes from

these programs. Current award programs include those emanating from the Department of Health and Human Services, the Health Project, Institute for Health and Productivity Management, National Business Group on Health, American College of Occupational and Environmental Medicine, and the Wellness Councils of America. A high visibility annual award to businesses demonstrating effective leadership in HPM will bring attention to these employers and elevate their stature as innovators in the field.

Finally, federal agencies can help encourage employers to partner with local public health departments, non-profit organizations, and community health providers, many of whom house expertise, knowledge, and resources to guide employers in their design, implementation, and evaluation of HPM programs.

For employee health and productivity initiatives to succeed, more applied research is needed to better understand the forces that lead to successful health and financial outcomes. Knowledge gained from this research needs to be readily disseminated across diverse audiences through multiple media channels, especially those accessed by business leaders. Additionally, public agencies can play a prominent role in communicating promising practice insights and providing technical assistance to organizations wishing to institutionalize HPM programs that achieve health improvements for workers and improve businesses' bottom lines.

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Appendix A. Online HPM Promising Practices Inventory

T6

Inventory of Workforce Health Promotion and Disease Prevention Practices

**TABLE 6**

Health and Productivity Management (HPM) Inventory

Thank you for taking the time to complete this Inventory. You will be asked for the following types of organizational information:

- Section A: Basic organizational characteristics
- Section B: Corporate health and productivity management programs
- Section C: Program evaluation
- Section D: Degree of organizational support for health and productivity management

The Inventory should take about 15 minutes to complete. Please answer all questions as thoughtfully as possible. Your responses will help this initiative to better understand how HPM programs across the nation operate.

**Section A. Basic organizational characteristics**

A1. What industrial classification best describes your organization?

- |  |  |
|--|--|
| <ul style="list-style-type: none"> <li><input type="checkbox"/> Agriculture, Forestry, Hunting, and Fishing</li> <li><input type="checkbox"/> Mining</li> <li><input type="checkbox"/> Utilities</li> <li><input type="checkbox"/> Construction</li> <li><input type="checkbox"/> Manufacturing</li> <li><input type="checkbox"/> Wholesale Trade</li> <li><input type="checkbox"/> Retail Trade</li> <li><input type="checkbox"/> Transportation and Warehousing</li> <li><input type="checkbox"/> Information</li> <li><input type="checkbox"/> Finance and Insurance</li> </ul> | <ul style="list-style-type: none"> <li><input type="checkbox"/> Real Estate and Rental and Leasing</li> <li><input type="checkbox"/> Professional/Scientific/Technical Services</li> <li><input type="checkbox"/> Management of Companies and Enterprises</li> <li><input type="checkbox"/> Administrative and Support and Waste Management and Remediation Services</li> <li><input type="checkbox"/> Educational Services</li> <li><input type="checkbox"/> Health Care and Social Assistance</li> <li><input type="checkbox"/> Arts, Entertainment, and Recreation</li> <li><input type="checkbox"/> Accommodation and Food Services</li> <li><input type="checkbox"/> Other Services (except Public Administration)</li> <li><input type="checkbox"/> Public Administration</li> </ul> |
|--|--|

A2. What is the status of your organization?

- For profit, public
- For profit, private
- Non-profit
- State or local government
- Federal government
- Other

A3. How many individuals are currently employed by your organization? Include part-time as well as full-time employees, but do not include contractor employees.

A4. How many retirees are covered by your pension plans or health plans?

**Section B. Health and Productivity Management (HPM) Program Characteristics**

Please answer the questions in this section regarding your organization's *primary* HPM program, defined as an organizational initiative in one or more of the following areas:

- Health promotion (including health management or wellness program)
- Disease management (including screening, care management or case management program)
- Demand management (including self-care, nurse call line)
- Any effort to optimize employee productivity by improving employee health.

If your organization operates several HPM programs, answer the questions regarding the largest or umbrella program, ie, the program with the highest number of active participants. This program may be operated internally or by a vendor.

B1. Program name: \_\_\_\_\_

(Continued)

**TABLE 6**  
Continued

- B2. Program Type (check all that apply)
- Health promotion
  - Disease management
  - Demand management
  - Other health and productivity management—specify:
- B3. For the 2004 calendar year, how much did your organization spend on the program? Specify this amount per eligible individual, including employees, dependents, and retirees:  
\$ \_\_\_\_\_/eligible individual
- B4. HPM programs seek to improve employee health while reducing costs, generally through strategies that target individual behavior. What strategies do your programs use to promote the desired behavioral changes?
- Educate people regarding the cost of their care
  - Educate people regarding strategies for improving their health
  - Equip people with specific skills for improving their health, eg goal-setting, troubleshooting and problem-solving, self-care, and self-management techniques
  - Equip people with external resources, eg, health coaches, community organizations, smoking quit lines
  - Optimize the worksite physical environment, eg, provide exercise facilities and healthy food choices, re-design work sites to prevent injury
  - Provide alternatives to medical service utilization, eg, EAP, advice nurse
  - Provide financial or other incentives
  - Improve communication and coordination between patients and providers
  - Increase preventive screening
  - Other (specify):
- B5. How long has your program been in operation?
- Less than 1 year
  - 1 to 2 years
  - 3 to 5 years
  - 6 to 9 years
  - 10 years or more
- B6. Does your organization operate the program internally; do you employ a vendor, or both?
- Internal → How many employees are allocated to the program:
    - On a part-time basis? \_\_\_\_\_
    - Full time? \_\_\_\_\_
  - Vendor
- B7. How many individuals in each of the following categories are eligible to participate in the program? Of these, how many currently participate?

	Employees	Dependents	Retirees
Number eligible			
Number currently participating			

- B8. What incentives do you offer to increase participation? Check all that apply.
- Benefit plan premium differences, flex dollars/credits, co-pay differentials, or coinsurance differentials
  - Cash/money in flexible spending account
  - Gifts/discounts for services
  - Other (specify):
- B9. Do you record the frequency, duration, and type of participation by each participant?
- Yes
  - No
- B10. Does your program include the following activities? Check all that apply.
- Administer HRA (Health Risk Assessment)
  - Triage employees based upon degree of risk
  - Tailor interventions to degree of risk
  - Coordinate with local community resources

(Continued)

**TABLE 6**

Continued

B11. How does the program deliver interventions? Check all that apply.

- Face-to-face counseling/coaching
- Telephone counseling/coaching
- Advice nurse/line
- Printed materials
- Internet
- Other (specify):

B12. What health issues are targeted by your program? Check all that apply.

- Alcohol/substance abuse
- Allergy
- Arthritis
- Asthma
- Blood pressure
- Cancer
- Cholesterol management
- Depression
- Diabetes
- Diet/nutrition
- Exercise/physical activity
- Headaches/migraine
- Heart/cardiovascular disease
- HIV/AIDS/sexually transmitted disorders
- Obesity/weight management
- Occupational injuries, eg, carpal tunnel, lower back pain, neck pain, etc.
- Pregnancy/childbirth
- Preventive screening
- Safety/accidents
- Smoking
- Stress/emotional health
- Work-life balance
- Workplace violence prevention
- Other (please specify): \_\_\_\_\_

### Section C. Program Evaluation

This section asks about the methods your organization employs to evaluate the effectiveness of its overall HPM strategy (not limited to a primary or other individual program). Question C1 focuses on ongoing monitoring, whereas questions C2–C12 ask about formal research studies.

C1. Which of the following issues does your organization monitor in order to evaluate your corporate HPM strategy? Check all that apply.

- Program participation rates
- Employee satisfaction
- Behavior change
- Functional status
- Biometric measures, eg, cholesterol, weight, blood pressure, blood glucose levels
- Health care utilization and costs
- Workers' Compensation costs
- Absenteeism
- Productivity at the workstation/site
- Turnover rates
- Other (specify):

C2. Has your organization conducted any formal studies regarding the effectiveness of your overall HPM strategy, above and beyond ongoing monitoring efforts?

- Yes → When was the study conducted? \_\_\_\_\_
- No (you will automatically be skipped to Question C12)

C3. Who conducted the study? Check all that apply.

- Internal staff
- University (specify):
- Consulting firm or Research Organization (specify):
- Other (specify):

(Continued)

**TABLE 6**  
Continued

- C4. Regarding the study methods:  
 What were the sample sizes?  
 What hypotheses were tested, or what was the key question of interest for the study?  
 What statistics were used to evaluate outcomes?  
 What type of research design was used?  
 Was a control or comparison group included?
- C5. What were the health outcome results from the study?
- C6. Did the study calculate a return on investment (ROI)?  
 Yes  
 No (you will be automatically skipped to Section D)
- C7. What was the ROI? \$ \_\_\_\_\_ (benefit) to \$ \_\_\_\_\_ (cost)
- C8. What was the timeframe for realizing the ROI?  
 Less than 12 months  
 12 to 17 months  
 18 to 23 months  
 24 to 35 months  
 36 or more months
- C9. Were study results used to refine the program?  
 No  
 Yes (specify):
- C10. Were study results published in a peer-reviewed journal?  
 No  
 Yes (specify):
- C11. Were study results described in other professional magazines or periodicals?  
 No  
 Yes (specify):
- C12. Has your organization won any external awards for its health promotion programs?  
 No  
 Yes (specify):

**Section D. Organizational Support of HPM Programs**

This section solicits your opinions regarding the extent to which your company supports health and productivity management.

- D1. Does your organization have a written policy for the following issues? Check all that apply.  
 Tobacco use at the worksite and/or on the job  
 Alcohol use at the worksite and/or on the job  
 Seat belt use during business travel in an automobile  
 Physical activity, eg, allowing employees to take fitness breaks on the job  
 Nutrition, eg, requiring healthy food options at company meetings and/or cafeterias
- D2. Across all sites, what percentage of employees have access to an on-site exercise facility?  
 \_\_\_\_\_%

D3. Does your organization offer subsidies for fitness club memberships to:

	Employees?	Dependents?	Retirees?
Yes	-	-	-
No	-	-	-

(Continued)

**TABLE 6**  
Continued

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D4. Please indicate the extent to which you agree or disagree with the following statements as they apply to your organization (1 = Strongly Disagree; 2 = Disagree; 3 = Undecided; 4 = Agree; 5 = Strongly Agree).

Our senior management is committed to health promotion as an important investment in human capital.

Our health and productivity strategies are aligned with our business goals.

All levels of management are educated regarding the link between employee health and productivity, and total economic value.

Our employees are educated about the true cost and total value of personal health and its impact on business success.

We have identified the leading physical and mental conditions among our employees and know their related direct and indirect costs.

We have integrated our data management system to capture and evaluate our direct and indirect health- and productivity-related measures in order to assess the impact on work impairment (e.g., presenteeism).

Our health benefits support prevention, risk reduction, and disease management, and are free of barriers to evidence-based interventions.

Our incentives support consumer accountability and motivate employees to stay healthy, reduce high-risk behaviors/clinical measures, and/or adhere to disease management regimens.

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## Appendix B: Applying the Cumulative Square Root of Frequency Rule to Find Exemplar Companies With Best Practice HPM Programs

This appendix describes how the cumulative square root of frequency ( $f$ ) rule was applied to find companies with best-practice HPM programs. Such programs were those with similar and high Inventory scores. The cumulative square root of  $f$  rule was used to find similar, high-scoring companies, when four different methods were used to score all companies.

More information about the cumulative square root of  $f$  rule can be found in Cochran.<sup>69</sup> It is rooted in survey sampling theory and has a long history in statistical manipulations of survey data. (A simple Google or PubMed search of the phrase "cumulative square root of frequency" or "cumulative square root of  $f$ " will result in over 100 examples of how it has been used in previous efforts.) The rule was developed to divide survey sample members into groups, such that the variance of a variable of interest was similar within a group, but different between groups.

We used the rule to help divide companies into three groups of roughly the same size, because there were 39 respondents to the Inventory, and we thought we would need about one-third of them (about 13) as a starting point, from which the nine most similar, highest scoring-companies would ultimately be selected for site visits. Nine would be selected for site visits because only nine could be accommodated within the tight time frame for the project. More than nine were selected in the scoring process though, because we did not know a priori how many would be able to schedule visits, or whether any would refuse our offer to visit.

The method for applying the cumulative square root of  $f$  rule that is described in this appendix is illustrated for one method of tallying Inventory scores (we call this method, "Method A," which was based on all Inventory items except those related to HPM program tenure, number of intervention modalities, dollar investment per employee, and program evaluation procedures). We also generated lists of exemplar companies for Methods B, C, and D, which differ from Method A in the number and type of criteria used to tally Inventory scores, as noted be-

low. Then we observed the overlap in all four of these lists, and used that overlap to find the most attractive companies to approach for site visits (those who appeared on most of the lists).

Once Inventory scores were obtained, it took only about one hour to apply the cumulative square root of  $f$  rule for Method A, and less than that for each of Methods B, C, and D. Each application was completed by following these 12 steps:

1. Pick a Method for scoring the Inventory (start with Method A).
2. Sort the companies by the score achieved for that method, from lowest to highest score.
3. Call the score variable,  $X$ .
4. Divide companies into meaningful ranges of  $X$ . We arbitrarily selected small (3-point) ranges in scores that we thought were meaningful (eg, scores of 0–2 points were thought to be similar, as were scores 3–5 (but these were thought to be better than scores of 0–2 points etc.).
5. Count the frequencies for  $X$  in each range (ie, the number of companies with scores in each range category).
6. Estimate the square root of the frequency values, for each range category (Excel software can do this easily).
7. Find the cumulative square root of the frequencies (Excel will do this easily too).
8. Find the maximum value of the cumulative square root (eg, in Method A, that value was 23.3)
9. Divide that maximum value by 3, since we want the top-third scoring companies.
10. Set boundaries of the cumulative square root of  $f$ , based on step 9. In Method A, to get three groups, those boundaries were equal to scores of 0 to 7.77, 7.78 to 15.54, and 15.55 to 23.31.
11. Find the Inventory score values associated with the group that has the highest values for those bound-

aries. In Method A, those are the scores associated with a cumulative square root of  $f$  value that is 15.55 or higher. The associated Inventory scores were 54 or higher.

12. Find the list of companies with those scores. In Method A, this list includes all companies with scores of 54 or higher. The actual company names were noted.

This 12-step process was then repeated to generate lists of companies

based on Inventory scoring Methods B, C, and D. Method B used the same criteria as Method A, but also added scores for Inventory items related to HPM program tenure and the number of intervention modalities. Method C built on Method B by adding scores for Inventory questions related to the company's dollar investment in HPM per employee. Method D built on Method C by adding scores for Inventory questions about how of-

ten and how rigorously HPM programs were evaluated.

After the lists of exemplar companies were generated for Inventory scoring Methods A, B, C, and D, these lists were compared for overlap. Ideally, if the Inventory scoring process was valid, one would (and we did) see a lot of overlap in the lists obtained for the four scoring methods. The companies that appeared on multiple lists were the ones we approached for site visits.