TESTIMONY

SCR94

Measure Title:	REQUESTING THE DEPARTMENT OF HEALTH AND THE DEPARTMENT OF LABOR AND INDUSTRIAL RELATIONS TO CONDUCT A STUDY TO PROMOTE WORKPLACE WELLNESS PROGRAMS.
Report Title:	Workplace Wellness; DOH; DLIR
Description:	
Companion:	
Package:	None
Current Referral:	HTH/JDL, WAM
Introducer(s):	SOLOMON, Dela Cruz, Galuteria

HTH/AGL, EDU
Committee Hearing
03-27-2012

NEIL ABERCROMBIE
GOVERNOR

DWIGHT Y. TAKAMINE
DIRECTOR

AUDREY HIDANO
DEPUTY DIRECTOR

STATE OF HAWAII
DEPARTMENT OF LABOR AND INDUSTRIAL RELATIONS
830 PUNCHBOWL STREET, ROOM 321
HONOLULU, HAWAII 96813
www.hawaii.gov/labor
Phone: (808) 586-8842 / Fax: (808) 586-9099
Email: dlir.director@hawaii.gov

March 27, 2012

To: The Honorable Josh Green, Chair, Clarence Nishihara, Vice Chair, and Members of the Senate Committee on Health

The Honorable Clayton Hee, Chair, Maile Shimabukuro, Vice Chair, and Members of the Senate Committee on Judiciary and Labor

Date: Tuesday, March 27, 2012
Time: 1:46 p.m.
Place: Conference Room 229, State Capitol

From: Dwight Y. Takamine, Director
Department of Labor and Industrial Relations (DLIR)

Re: SCR 94 Requesting the Department of Health and the Department of Labor and Industrial Relations to Conduct a Study to Promote Workplace Wellness Programs

I. OVERVIEW OF PROPOSED LEGISLATION

This resolution requires the Departments of Health (DOH) and Labor and Industrial Relations to:

- conduct a study to promote workplace wellness programs and to include in that study:
  - subsidies or easing of regulatory barriers for companies that adopt workplace wellness programs;
  - methods of improving long-term health outcomes of employees; and
  - methods of reducing medical costs and health insurance premiums for employers; and
- submit a report on the study, including findings, recommendations, and proposed legislation no later than twenty days prior to the convening of the 2103 Legislative session.

The department supports the intent of this resolution, but requests formal exclusion from conducting the study in partnership with DOH. The departments have discussed the matter and DLIR is willing to serve as a resource and assist

with the wellness study, but not be tasked with formal co-sponsorship

.

II. CURRENT LAW

There are no requirements for the labor department to conduct wellness program studies. Further, the programs administered by the department do not address or involve wellness programs.

III. COMMENTS ON THE RESOLUTION

Although the department supports the worthwhile intent of this resolution, we do not believe the department is the appropriate agency to conduct this study as we do not have the knowledge, the expertise, or the staffing to properly carry out the intentions of this resolution. Accordingly, we respectfully request that the department be excluded from conducting this study with the understanding we will assist and serve as a resource to the Department of Health.

AFSCME
LOCAL 152, AFL-CIO

888 Mililani Street, Suite 601
Honolulu, Hawaii 96813-2991

Telephone: 808.543.0000
Facsimile: 808.528.4059

www.hgea.org

The Twenty-Sixth Legislature, State of Hawaii
The Senate
Committee on Health
and
Committee on Judiciary and Labor

Testimony by
Hawaii Government Employees Association
March 27, 2012

S.C.R. 94 - URGING THE DEPARTMENT OF HEALTH AND THE DEPARTMENT OF LABOR AND INDUSTRIAL RELATIONS TO CONDUCT A STUDY TO PROMOTE WORKPLACE WELLNESS PROGRAMS

The Hawaii Government Employees Association, AFSCME Local 152, AFL-CIO supports the purpose and intent of S.C.R. 94, which calls for the Department of Health (DOH) and the Department of Labor and Industrial Relations (DLIR) to conduct a study to promote workplace wellness programs. S.C.R. 94 also requests the study to include methods of reducing medical costs and health insurance premiums for employers in Hawaii. The DOH and DLIR are charged with submitting the report, including any proposed legislation, to the 2013 Legislature.

The public employees in our bargaining units are paying substantial amounts for health insurance coverage. For example, family coverage under the HMSA 80/20 PPO plan now costs employees $509.14 per month. Reducing the high cost of health insurance for public employees will take much more than just worksite wellness programs; however, wellness programs can still play an important part in reducing health care costs over the long term.

According to the National Conference of State Legislatures (NCSL), evidence indicates that well-designed worksite wellness programs can reduce health expenditures and cut absenteeism, at least for large employers, including state government. Chronic diseases drive our health care spending, accounting for up to 78% of all health care costs. The NCSL estimates that an estimated 83% of Medicaid spending is for people with chronic diseases. Many chronic diseases can be prevented with regular health screenings and healthy behaviors, such as more physical activity, better diet and less tobacco use. Therefore, wellness programs should target specific diseases that are driving the costs of premiums and treat those because they have the greatest potential for savings.

Public employees have also been a part of state wellness programs. The NCSL recently reported that state wellness measures range from offering employees access to fitness centers to comprehensive programs that focus on smoking cessation and weight management. Other programs include personal risk assessments, lifestyle education incentives and health management strategies. Integral to a successful worksite wellness program are opportunities and incentives for employees to incorporate healthy choices, physical activity and good nutrition into their daily lives.

Thank you for the opportunity to testify in support of S.C.R. 94.

Respectfully submitted,

Leiomalama E. Desha
Deputy Executive Director

American Heart Association® | American Stroke Association®
Learn and Live®
Serving Hawaii

Testimony SUPPORTING SCR 94, "Requesting the Dept. of Health and the Dept. of Labor and Industrial Relations to Conduct a Study to Promote Workplace Wellness Programs"

The American Heart Association supports SCR 94. Workplaces provide a large audience for cardiovascular disease and stroke prevention activities. Experience has shown that workplace wellness programs are an important strategy to prevent the major shared risk factors for cardiovascular diseases and stroke, including cigarette smoking, obesity, hypertension, high cholesterol, physical inactivity, and diabetes. An estimated 25% to 30% of companies' medical costs per year are spent on employees with the major risk factors listed above. Cardiovascular diseases and stroke remain Hawaii's number one and number three leading causes of death, and the leading causes of major disability.

Societal benefits of a healthy employed population extend well beyond the workplace. When programs are successful, their influence extends beyond the individual workers to immediate family members, who are often exposed to their favorable lifestyle changes. Worksite wellness programs that can reduce these risk factors can ultimately decrease the physical and economic burden of chronic diseases, including cardiovascular diseases, stroke, and certain cancers.

Recent evidence from the social sciences and behavioral medicine literature suggests that environmental modification and policy changes and approaches are more successful at producing sustained behavior change that can reach employees across varied socioeconomic groups. One recommended policy change is for the state to offer tax incentives for employers who implement comprehensive worksite wellness programs. Worksite wellness programs represent an opportunity to prevent cardiovascular diseases and stroke in a large segment of the population.

In addition, the payback for investing in worksite wellness programs can be measured in various ways, including decreased direct healthcare costs, improved healthcare utilization, increased performance measures, lower rates of absenteeism, and a reduced prevalence of chronic disease. Employer spending on health promotion and chronic disease prevention and management is a good financial investment when it succeeds in modifying the health of employees. Migration to a lower risk status is estimated to save $53 per employee, savings that recur each year that the employee remains in a low-risk tier. Programs have achieved a rate of return on investment that ranges from $3 to $15 for each dollar invested, with savings realized within 12 to 18 months. Meta-analyses have shown a 28% average reduction in sick leave absenteeism, a 26% reduction in healthcare costs, and a 30% decrease in workers' compensation and disability management claims costs. Other benefits to the companies that offer such programming are recruitment and retention of top employees, as well as an improved corporate image.

The American Heart Association published a policy statement, "Worksite Wellness Programs for Cardiovascular Disease Prevention," in October, 2009. The statement is based on the results of 158 studies on workplace wellness programs and policies. A

Serving Hawaii since 1948

For information on the AHA's educational or research programs, contact your nearest AHA office, or visit our web site at www.americanheart.org or e-mail us at hawaii@heart.org

Oahu:
677 Ala Moana Blvd., Ste. 600
Honolulu, HI 96813-5485
Phone: 808-538-7021
Fax: 808-538-3443

Maui County:
Phone: 808-224-7185
Fax: 808-224-7220

Hawaii:
Phone: 808-961-2825
Fax: 808-961-2827

Kauai:
(Serviced by Oahu office)
Phone: 866-205-3256
Fax: 808-538-3443

ıilding healthier lives, .. ee of cardiovascular diseases and stroke."

copy of that policy statement is included with this testimony for your information. We recommend that the summary of recommended components of effective workplace wellness programs included in the AHA policy statement be considered for implementation in Hawaii.

Respectfully submitted,

Donald B. Weisman

Donald B. Weisman
Hawaii Government Relations/Mission:Lifeline Director

AHA Policy Statement

Worksite Wellness Programs for Cardiovascular Disease Prevention

A Policy Statement From the American Heart Association

Mercedes Carnethon, PhD, FAHA, Chair; Laurie P. Whitsel, PhD; Barry A. Franklin, PhD, FAHA; Penny Kris-Etherton, PhD, FAHA; Richard Milani, MD, FAHA; Charlotte A. Pratt, PhD; Gregory R. Wagner, MD; on behalf of the American Heart Association Advocacy Coordinating Committee; Council on Epidemiology and Prevention; Council on the Kidney in Cardiovascular Disease; and Council on Nutrition, Physical Activity and Metabolism

With >130 million Americans employed across the United States, workplaces provide a large audience for cardiovascular disease (CVD) and stroke prevention activities. Experience has shown that workplace wellness programs are an important strategy to prevent the major shared risk factors for CVD and stroke, including cigarette smoking, obesity, hypertension, dyslipidemia, physical inactivity, and diabetes. An estimated 25% to 30% of companies' medical costs per year are spent on employees with the major risk factors listed above.[1] Employees and their families share the financial burden through higher contributions to insurance, higher copayments and deductibles, reduction or elimination of coverage, and trade-offs of insurance benefits against wage or salary increases. When programs are successful, their influence extends beyond the individual workers to immediate family members, who are often exposed to their favorable lifestyle changes. Worksite wellness programs that can reduce these risk factors can ultimately decrease the physical and economic burden of chronic diseases, including CVD, stroke, and certain cancers.

The societal benefits of a healthy employed population extend well beyond the workplace. As such, comprehensive, culturally sensitive health promotion within the workplace can improve the nation's health. The *Healthy People 2010* goal is for 75% of all worksites, regardless of size, to develop comprehensive wellness programming.[2] However, the development of comprehensive programs takes time and resources, especially for smaller employers. Because program development and initiation can be resource intensive, the American Heart Association (AHA) supports incremental efforts to achieve a comprehensive worksite wellness program to address CVD and stroke prevention and makes the following recommendations.

Summary of Recommendations

1. Components of Wellness Programs

- A comprehensive program aimed at improving employees' cardiovascular and general health should include the following: Tobacco cessation and prevention, regular physical activity, stress management/reduction, early detection/screening, nutrition education and promotion, weight management, disease management, CVD education that includes cardiopulmonary resuscitation and automated external defibrillator training, and changes in the work environment to encourage healthy behaviors and promote occupational safety and health.
- Programming should be integrated into the organizational structure of the workplace by use of the following proven strategies: Health education that relies on existing valid sources and is focused on skill development that is consistent with employees' readiness to make behavior changes; initiatives that are incorporated into existing employee assistance programs; and voluntary worksite screening linked

The American Heart Association makes every effort to avoid any actual or potential conflicts of interest that may arise as a result of an outside relationship or a personal, professional, or business interest of a member of the writing panel. Specifically, all members of the writing group are required to complete and submit a Disclosure Questionnaire showing all such relationships that might be perceived as real or potential conflicts of interest.

This statement was approved by the American Heart Association Advocacy Coordinating Committee on September 3, 2009. A copy of the statement is available at http://www.americanheart.org/presenter.jhtml?identifier=3003999 by selecting either the "topic list" link or the "chronological list" link (No. KJ-0733). To purchase additional reprints, call 843-216-2533 or e-mail kelle.ramsay@wolterskluwer.com.

The American Heart Association requests that this document be cited as follows: Carnethon M, Whitsel LP, Franklin BA, Kris-Etherton P, Milani R, Pratt CA, Wagner GR; on behalf of the American Heart Association Advocacy Coordinating Committee; Council on Epidemiology and Prevention; Council on the Kidney in Cardiovascular Disease; and Council on Nutrition, Physical Activity and Metabolism. Worksite wellness programs for cardiovascular disease prevention: a policy statement from the American Heart Association. *Circulation*. 2009;120:●●●–●●●.

Expert peer review of AHA Scientific Statements is conducted at the AHA National Center. For more on AHA statements and guidelines development, visit http://www.americanheart.org/presenter.jhtml?identifier=3023366.

Permissions: Multiple copies, modification, alteration, enhancement, and/or distribution of this document are not permitted without the express permission of the American Heart Association. Instructions for obtaining permission are located at http://www.americanheart.org/presenter.jhtml?identifier=4431. A link to the "Permission Request Form" appears on the right side of the page.

(*Circulation*. 2009;120:0-0.)

Circulation is available at http://circ.ahajournals.org

DOI: 10.1161/CIRCULATIONAHA.109.192653

<ARTICLE DOCTOPIC="AHA Policy Statement" DOCSUBJ="&NA;" DATE="October 27, 2009" VID="120" ISS="17" PPF="000" PPL="000" DOI="10.1161/CIRCULATIONAHA.109.192653">

with medical care for follow-up on modifiable risk factors.
- Employers should administer health risk appraisals in combination with organizational health promotion checklists that have already been developed for the worksite before initiating programming so that health needs in the workplace can be identified and employees can learn their risks and health status. Employees' health risks must be addressed within comprehensive worksite programs.
- Research should investigate the effectiveness of wellness programming and how to tailor programming and policies for maximum effect.

2. Environmental Modifications

- The social and physical environment of the workplace should be designed to be conducive to recommended behaviors.
- Optimal environmental modifications should promote healthy behaviors while simultaneously minimizing the physical, organizational, and occupational risk in the work environment.
- Occupational safety and health are integral components of worksite wellness; workplaces should be free from hazards that jeopardize cardiovascular health and employee safety and well-being.

3. Regulations/Policy Approaches

- The regulatory environment should allow for increased opportunity for employers to reach a greater majority of the employee population and produce health benefits.
- Employers should adhere to all regulations that address hazards to employee health and safety, providing working conditions that are optimal for cardiovascular health and well-being.
- Employers who choose to offer healthy lifestyle behavior incentives in the workplace, such as wellness credits and financial incentives, should provide these directly to the employee. Financial incentives should not be attached to healthcare premiums or health status.

4. Vulnerable/Special Populations

- Wellness programs must address the needs of all employees at a given workplace, regardless of gender, age, ethnicity, socioeconomic status, culture, job type, or physical or intellectual capacity.
- Worksite wellness programs should be designed to be culturally sensitive and all-inconclusive, and employers should also consider targeted, complementary interventions for their more vulnerable employees that are specifically designed to engage those who are economically challenged, less educated, or underserved.
- Worksite wellness programs should help working families balance work and family commitments and incorporate policies around child care, elder/dependent care, telecommuting, and flexible work schedules.
- Research should be conducted to determine how to improve participation among employees who have the highest risk behaviors.

Wellness Programs

CVD and stroke are the leading causes of death in the United States. The estimated expense associated with all heart diseases combined is $304.6 billion, $24 and $98 billion of which is due to lost productivity from cardiovascular morbidity and mortality, respectively.[3] The financial burden associated with stroke is equally weighty; in 2009, an estimated $68.9 billion in direct and indirect costs was spent to diagnose and treat strokes.[4] The estimated lifetime cost for hospital stays, rehabilitation, and follow-up care to treat lasting neurological deficits is $140 048 (adjusted to 1999 dollars).[4,5] AQ: 5

Worksite wellness programs are a proven strategy to prevent major risk factors for CVD and stroke, including cigarette smoking, obesity, hypertension, dyslipidemia, physical inactivity and diabetes. Historically, wellness programs have included education and screening programs in an effort to increase individual workers' awareness of risk factors and suggest strategies to modify health behaviors. Recent evidence from the social sciences and behavioral medicine literature suggests that environmental modification and policy changes and approaches are more successful at producing sustained behavior change that can reach employees across varied socioeconomic groups. Worksite wellness programs represent an opportunity to prevent CVD and stroke in a large segment of the population. The AHA and its regional affiliates have a long history of participating in worksite wellness programs. Because of marked variability in the availability, content, and delivery of wellness programs, the AHA is committed to updating recommendations given current knowledge about effective programs and strategies to produce positive changes.

The Current State of Affairs

Availability

In 2004, the National Worksite Health Promotion Survey conducted 1553 interviews with worksites from different size and industry categories and found that only 6.9% of employers offered comprehensive worksite wellness programming, defined as those programs "that incorporated all of the 5 key elements outlined in *Healthy People 2010*: health education, supportive social and physical work environment, integration, linkage, and worksite screening and education."[6] The presence of comprehensive programming varied significantly by worksite size; programs were available at 11.3% of companies with 250 to 749 employees, but only 4.6% of companies with 50 to 99 employees had programs.

At least half of the working people in the United States do not have access to health promotion programs because they work in small companies or for employers who have employees distributed in small numbers across multiple sites. Of the 4.9 million firms in the United States, only 0.5% have >500 employees; the majority of firms (99.5%) have <500 em-

ployees.[7] These larger and smaller firms employ 51% and 36% of the working population, respectively.[8] There were also striking disparities in the availability of worksite wellness programs by industry type. Manufacturing and business/professional services reported having wellness programming 8.7% and 8.3% of the time, respectively, whereas wholesale/retail (5.6%), transportation (2.9%), finance (2.4%), and agriculture/mining (1.4%) were much less likely to have comprehensive programming.[2]

Smaller employers face a number of barriers to offering wellness programs. Many of these smaller companies do not have a central human resources function to initiate and organize programs. Moreover, the expense associated with hiring a full-time health promotion staff is difficult to justify in a smaller company. Finally, because health insurance premiums are typically *community rated*, meaning that premiums for smaller companies are set by the medical utilization experience of their community, reducing their medical care costs by improving the health of employees will not decrease their insurance premiums.[8] Consequently, an important financial incentive to develop worksite wellness programs is missing for smaller companies.

Returns on Investment

The payback for investing in worksite wellness programs can be measured in various ways, including decreased direct healthcare costs, improved healthcare utilization, increased performance measures, lower rates of absenteeism, and a reduced prevalence of chronic disease.

Financial Returns

Employer spending on health promotion and chronic disease prevention and management is a good financial investment when it succeeds in modifying the health of employees. Migration to a lower risk status is estimated to save $53 per employee, savings that recur each year that the employee remains in a low-risk tier.[9] Programs have achieved a rate of return on investment that ranges from $3 to $15 for each dollar invested, with savings realized within 12 to 18 months.[10] Meta-analyses have shown a 28% average reduction in sick leave absenteeism, a 26% reduction in healthcare costs, and a 30% decrease in workers' compensation and disability management claims costs.[11] Other benefits to the companies that offer such programming are recruitment and retention of top employees, as well as an improved corporate image.[10]

Absenteeism/Presenteeism

Employers have to absorb the indirect expense of lost productivity from employees who have chronic illnesses when the employee is absent from the job (absenteeism) or is at the job but impaired because of a health problem (presenteeism).[12] Employees with the greatest health risks, poorest emotional health, and higher percentages of adverse behaviors had much higher rates of lost workdays and lower productivity overall.[13,14] In a cross-sectional analysis of 2264 employees at a single employer, the rates of absenteeism and presenteeism were estimated to range from 0% to 6.3% and from 1.3% to 25.9%, respectively, among employees with up to 8 risk factors.[15] The number of workdays lost was directly associated with the number of risk factors among 2250 employees of a single petrochemical facility; the presence of 0, 1, 2, 3, and 4 or more risk factors was associated with 4.1, 6.4, 8.8, 9.3, and 12.6 days of absenteeism, respectively.[13] Bank One attempted to determine whether absenteeism or presenteeism is more costly and estimated that absenteeism represented 6% of total medical costs (direct and indirect), whereas presenteeism was responsible for 63%.[16]

Observational studies and interventions have shown that changes in health risk factors are directly related to changes in absenteeism and presenteeism. Individuals who reduce 1 health risk factor decrease presenteeism by as much as 9% and absenteeism by 2%.[17] Research demonstrates a strong relationship between changes in health risk factors with changes in presenteeism and resultant productivity. Each risk factor increased or reduced was associated with a commensurate change in productivity of 1.9% over time; the savings were estimated to be $950 per year per risk that was reduced.[18]

Productivity

Chronic diseases have a significant adverse influence on productivity; however, it is difficult to quantify productivity in today's postmanufacturing economy, in which so little of what is produced can be measured.[16,19] As a result, most productivity estimates are based on questionnaires that can yield widely different estimates of on-the-job productivity gains or losses even when administered in the same setting.[20–25] The results of various reviews suggest that on-the-job productivity losses can approximate from 20% to >60% of total health-related costs. It is estimated that health-related productivity losses cost US employers $225.8 billion per year or $1685 per employee per year, of which 71% is due to reduced performance at work.[26] Depression alone, a risk factor for new and recurrent CVD and stroke,[27] costs US employers approximately $35 billion in lost productivity.[28,29] Studies evaluating productivity losses show that such losses are intimately linked to presenteeism and its associated health concerns.[14,19–22,24,30] AQ: 6

Loss of productivity is related to both the severity of dysfunction caused by illness or disease and the summation of health risk factors present.[15,31–33] Estimates of productivity loss are between 12% and 28% for employees with 0 to 7 or more health risk factors, respectively.[34] As demonstrated in reports evaluating presenteeism, intervention trials aimed at reducing health risk factors have consistently demonstrated significant productivity gains.[17,18] Moreover, others have documented the low level of treatment currently provided in the US workforce for many at-risk health conditions, including depression, and the opportunity for substantial productivity gains by undertaking worksite health promotion activities.[26,28]

Components of Worksite Wellness

Recommendations

- A comprehensive program aimed at improving employees' cardiovascular and general health should include the fol-

lowing: Tobacco cessation and prevention; regular physical activity; stress management/reduction; early detection/screening; nutrition education and promotion; weight management; disease management; and changes in the work environment to encourage healthy behaviors and promote occupational safety and health (Table).

- Programming should be integrated into the organizational structure of the workplace by use of the following proven strategies: Health education that relies on existing valid sources and is focused on skill development that is consistent with employees' readiness to make behavior changes; initiatives that are integrated into existing employee assistance programs; and voluntary worksite screening linked with medical care for follow-up on modifiable risk factors.
- Employers should administer health risk appraisals in combination with organizational health promotion checklists that have already been developed for the worksite before initiating programming so that health needs in the workplace can be identified and employees can learn their risks and health status. Employees' health risks must be addressed within comprehensive worksite programs.
- Research should investigate the effectiveness of wellness programming and how to tailor programming and policies for maximum effect.
- When possible, planning and implementation of worksite wellness programs should optimize use of on-site personnel, physical resources, and organizational capabilities to make it easier for employees to participate.

Content

Tobacco Cessation and Smoking Prevention

Direct and environmental (ie, secondhand smoke) exposure to cigarette smoke is associated with substantial morbidity and mortality due to CVD and stroke. Cigarette smokers are 2 to 3 times more likely to die of CVD[35] and twice as likely to die of stroke.[36] Nonsmokers who are exposed to secondhand smoke at home or at work have a 25% to 30% greater likelihood of developing heart disease.[37]

Tobacco use in the workplace costs US businesses an estimated $92 billion per year.[38] Losses stem from increased healthcare utilization by employees who smoke, decreased productivity, and the exposure of nonsmoking employees and customers to secondhand smoke. On average, smokers miss 6.2 days of work per year compared with nonsmokers, who miss 3.9 days per year.[39] The American Productivity Audit of the US workforce reported that tobacco use was a stronger correlate of lost production time among employees than age, alcohol consumption, family emergencies, or education; lost production time increased in a dose-dependent manner in relation to the amount smoked.[39] Studies conducted in the 1970s and 1980s (before the implementation of workplace smoking ordinances) estimated that environmental smoke exposure was responsible for an additional $490 in healthcare expenditures per smoker per year.[40,41]

A combination of strategies have been used to educate workers about the health consequences of smoking and to help employees stop smoking through interventions that

Table. Components of a Work-Site Wellness Program for Cardiovascular Health

Component	Description
CVD education	Employer organizes and promotes classes and/or provides materials to educate employees about CVDs, stroke, and emergency response. Topics should include the following: (1) Types of CVD and prevalence; (2) risk factors and management; (3) awareness of symptoms and appropriate emergency action; (4) CPR/AED training; and (5) effective use of the healthcare system.
Tobacco cessation and prevention	Workplace is tobacco free, and employer organizes and promotes services to increase the rate of tobacco cessation and tobacco use prevention among employees and families.
Early detection and screening	Work site offers employees annual health risk assessment for a range of conditions* and provides feedback and tools to encourage tracking. Other cardiovascular and stroke screening is offered to increase awareness, prevention, treatment, and control of the key risk factors and identify the need for disease management.
Weight management	Employer offers a safe and effective weight management program that encourages employees to follow a sensible eating plan and engage in regular physical activity.
Nutrition	Work site provides general nutrition education and/or healthy eating information to the employee population. Examples include a dedicated World Wide Web site, newsletters, e-mail reminders, and point-of-service materials in the cafeteria and/or near vending machines, as well as group classes and individual counseling sessions. Cafeterias and vending machines provide healthy food choices.
Physical activity	Work site provides accessible indoor or outdoor exercise facilities and programming supporting the adoption of a physically active lifestyle. Examples include an indoor walking path with a mile distance marked off; lighted, attractive stairwells; provision of maps for safe and convenient walking outside the office; and free or markedly reduced access to exercise clubs.
Stress management	Employers provide education about stress reduction and stress management. Employers work to diminish work-related stressors such as job strain, effort-reward imbalance, long work hours, shift work, and work-family conflict to allow employees the opportunity to improve their work performance and minimize health consequences from stress overload.
Environment	The worksite should modify the physical and social environment to promote optimal cardiovascular health and wellness. Examples of physical modifications include improving workplace safety, modifying work stations and office layouts to decrease sedentary behavior, and encouraging physical activity. Social changes include implementing policy changes that build a healthier work culture and appointing members of leadership who are responsible for ensuring commitment and adherence to wellness programming.
Occupational safety and health	Employers should address all hazards to employee health and safety, providing working conditions that are optimal for cardiovascular health and well-being.

CPR/AED indicates cardiopulmonary resuscitation/automated external defibrillator.

*Assessment should be considered for the following: blood pressure, body mass index, cholesterol, blood glucose, cigarette smoking/tobacco use, and mental health.

have proved effective in other settings.[42] A Cochrane review of workplace interventions for smoking cessation identified 51 studies in the literature covering 53 interventions between 1966 and 2008.[43] Most of those interventions (n=37) were focused on modifying the behavior of individual workers through group therapy, self-help materials, individual counseling, pharmacological treatment for nicotine addiction, and social support. The remaining studies included interventions aimed at modifying the workplace and included incentive schemes and company competitions. In general, treatments that targeted individual smokers, in particular group counseling and pharmacological agents, were the most successful. Participant quit rates and sustained cessation rates for 6 to 12 months after the intervention were comparable to those when interventions were implemented in other settings.[43] Incentive schemes and company competitions did not generate high levels of employee participation, nor did they significantly reduce the prevalence of smoking.

Clean indoor air laws have had an important influence on smoking in the workplace. These laws have spread across the country, blanketing most of the working population with smoke-free air and lowering smoking rates. City and statewide legislation prohibiting indoor smoking has decreased smoking prevalence.[44] These notable successes suggest that organizational or policy interventions may decrease smoking and have the greatest benefit for the largest number of people. Although smoking inside the workplace is not as common today in the United States as it was in the 1970s and 1980s, only 77% of indoor workers reported that their workplace had policies that restricted smoking behaviors.[45] According to the 2004 National Worksite Health Promotion Survey, 40% of worksites completely prohibited smoking on worksite property, and another 56.5% restricted smoking to outside areas only.[6] The prevalence of smoking is higher in minorities and persons in lower socioeconomic and occupational classes, and these same groups and women are more likely to be exposed to secondhand smoke.[37,46] Blue collar workers are less likely than white collar indoor workers to be covered by smoke-free policies, and workers in certain occupations, such as trucking and fishing, are not covered by smoke-free air laws.[47–49]

In summary, interventions that target individual smokers are successful, but to achieve maximum effectiveness, they should be used in combination with workplace policies, including complete worksite smoking bans.

Physical Activity

Regular physical activity is recommended to promote and maintain health and to prevent the development of cardiovascular risk factors and related chronic diseases.[50] Opportunities for physical activity can be sought during leisure time, can be acquired during active transportation, or can arise in response to occupational duties; however, the likelihood of the workplace serving as a significant source of physical activity has declined, because contemporary work environments are sedentary. Physically demanding work has been reduced or eliminated in many sectors and replaced by labor-saving devices focused on speed, rapid communication, improved efficiency, and increased productivity. Physical inactivity and sedentary behaviors are associated with higher rates of clinical CVD (relative risk of 1.9 for inactive versus active persons in a meta-analysis of 43 studies),[51] CVD risk factors,[3] and stroke.[52,53] Consequently, an important strategy by which employers can lower CVD risk is to provide opportunities for activity in the workplace.

There are a number of strategies whereby companies have tried to promote activity in the worksite, including educating employees about the benefits of activity, providing access to safe spaces for activity, and modifying the built environment so that employees can incorporate activity into their work days. A pioneering study of an at-work stair-climbing program in healthy men showed that an appropriate daily training stimulus (approximately 25 flights for a 70-kg man) resulted in a significant increase in aerobic capacity.[54] More recently, investigators reported that sedentary adults who exclusively used stairs instead of elevators at work demonstrated increases in cardiorespiratory fitness and reductions in body weight, waist size, and blood pressure.[55] The average daily number of floors ascended or descended by each participant increased from 5 to 23 per day.

Worksite physical activity counseling has positive effects on daily energy expenditure and cardiorespiratory fitness.[56] Studies outside the occupational setting indicate that increasing activity by relatively small amounts can have substantial health benefits in at-risk populations. In the Dose Response to Exercise in Women trial,[57] previously sedentary overweight women who met even 50% of the consensus recommendations for physical activity over the 6-month intervention improved their fitness.[50] A worksite intervention that provided pedometers to employees to achieve 10 000 steps daily succeeded in increasing physical activity and weight loss and reducing blood pressure.[58] Using similar technology, another study reported that the combined use of an accelerometer (a portable watch-sized device to capture movement in both the vertical and horizontal planes compared with just the horizontal plane that a pedometer captures) and World Wide Web site that tracked activity also improved physical activity behaviors in previously sedentary employees.[59]

The adverse influence of sedentary behavior on health has received increased attention. Hamilton and colleagues[60,61] have shown that sedentary behaviors alone, especially sitting, are associated with higher rates of morbidity and mortality, cardiovascular risk factors, type 2 diabetes mellitus, and metabolic syndrome, as well as the physiological derangements that adversely influence lipid metabolism. An employee sitting at a desk is expending 1 metabolic equivalent (1 metabolic equivalent=3.5 mL $O_2 \cdot kg^{-1} \cdot min^{-1}$), whereas even the slowest walking (eg, <1 mph) increases an employee's metabolic rate to 2 metabolic equivalents.[62] Nonexercise activity thermogenesis, the spontaneous physical activities of daily living (including fidgeting while sitting and standing while reading), is

a source of energy expenditure for most people.[63] When matched with individuals with similar cardiovascular risk profiles, those with highly active ambulatory jobs can have nonexercise activity thermogenesis values >1000 kcal/d higher than their sedentary counterparts.[64] Thus, efforts to reduce sitting time through innovations in worksite design and policies can have a significant influence on decreasing sedentary behaviors.

Standing workstations and vertical computer desk designs with slow-moving treadmills placed underneath represent innovative workstation designs that can substantially increase nonexercise activity thermogenesis. Treadmill walking at extremely slow speeds (<1 mph) generally does not interfere with a workers' ability to use the computer or talk on the telephone. Most importantly, workers reported that they enjoyed using the contemporary workstations and that they supported their use in their own work environment.[65] Additional means for increasing physical activity that can be integrated into the workplace include stepping devices,[66] basic resistance training equipment, standing workstations, encouraging the use of stairs, centralizing office resources so employees have to walk to access them, encouraging employees to stand while talking on the telephone, walking to deliver messages or have conversations with colleagues versus e-mailling, and holding walking meetings. Many of these activities can be tailored to employees with physical disabilities, highlighting their universal applicability.

In summary, habitually sedentary and/or unfit men and women should be counseled to improve their exercise tolerance by starting and maintaining a regular physical activity program that includes structured exercise, increased lifestyle activity, or both. Organizational interventions may include modified workstations that encourage standing or moving and readily available places for activity in the workplace, such as well-lit staircases to promote active ambulation.

Stress Management/Reduction

Although workplace stress can be attributed to numerous sources, including job insecurity, long working hours, work scheduling, and organizational restructuring, it is most commonly defined as an imbalance between job demands and control (ie, job strain). Work-related stressors that demonstrate robust associations with CVD in the research literature include job strain (ie, high-demand–low-control work), effort-reward imbalance (ie, high work efforts combined with low rewards such as support, respect, security, and income), long work hours, and shift work. These stressors reduce employees' ability to work by diverting their attention away from job responsibilities to addressing or coping with the stresses.[67] Additionally, high levels of stress have been associated with the development of cardiovascular risk factors and impaired job performance.[68] Worldwide, approximately one quarter of working women and 18% of men report high levels of job-related strain.[69–71] A 2004 comprehensive review of studies of the association of job strain with CVD risk factors concluded that the weight of evidence suggests that job strain is a CVD risk factor.[72] However, a more recent prospective study, which was composed largely of women, did not find a significant association of job strain with ischemic heart disease; rather, low job control is correlated with a significant doubling in the risk of developing heart disease.[73] Although further research is required to identify which components of job stress are most strongly associated with heart disease, recommendations to implement stress management programs at both the individual and organizational level are warranted.

The 2004 National Worksite Health Promotion Survey reported that one quarter of worksite wellness programs included stress management programming.[6] Individual-centered approaches involve teaching employees skills for managing pressures and demands. Such strategies include cognitive behavioral therapy, relaxation techniques, and individual counseling focused on adopting healthy lifestyles.[74] A systematic analysis of the literature on job-stress interventions revealed that the greatest impact occurred when the intervention was both organizationally and individually focused.[75] Although individual-centered approaches may favorably modify behavioral issues such as smoking cessation or sedentary behaviors, they are less likely to reduce workplace stress because they do not address the organization of the workplace management approach.[76]

In a systematic review of organizational-level interventions designed to improve employee control, workers experienced health benefits. Egan et al[77] reviewed 18 relevant studies, 11 of which noted improvements in health and none of which reported adverse health effects; however, the authors acknowledged that the organizational interventions were complemented by health education efforts.

Approaches that target management within a workplace have proved modestly successful. One study[78] used a unique approach and provided a randomized (by worksite) World Wide Web–based supervisor training program on worksite mental health, supervisor support, and psychological distress among subordinate workers. Subordinate workers at the intervention (n=81) and control (n=108) sites completed a brief job stress questionnaire at baseline and at 3-month follow-up.[78] Although workplace autonomy and overall job stressors did not differ between subordinate workers at the intervention or the control sites, the item score for a friendly workplace atmosphere increased significantly (P=0.02) at the intervention site, whereas there was no change at the control site.

A prospective study of ischemic heart disease events associated with employees subjected to different approaches to supervision gives insight into potential interventions and the role of organizational policy. Employees whose supervisors provided clarity in goals and role expectation, communicated well and offered feedback about performance, and encouraged employee participation and control were significantly less likely to experience acute myocardial infarction, unstable angina, and cardiac deaths over a 10-year follow-up period.[79]

There are methodological challenges inherent in these interventional studies. The workplace is frequently changing because of closings, mergers, downsizing, or restructuring,

and these changes should be considered when interventional research about job stress is planned. Fundamental restructuring of the workplace influences the effectiveness of the intervention and raises serious questions about the analysis and interpretation of the research results.[80]

Comprehensive approaches that address both the organizational origins of workplace stress and the behavioral symptoms exhibited by employees are more likely to lead to favorable sustainable outcomes.[81] The organizational focus has the added benefit of reaching employees across job classes. Lower-paid and less-educated workers in typical blue collar positions are commonly segregated into low-control/high-demand positions that are at greater risk of exposure to occupational stress. Historically, these workers have not responded to individual-centered wellness initiatives,[74,82] and they are more likely to experience benefits through organizational and occupational changes that make the workplace safer, institute rules and policies about working hours, and provide the protection of worker organizations to advocate for employee rights.

Screening and Early Detection

Health screening in the employee population requires significant resources but can serve as an investment for employers. Guidelines from the AHA and other public health organizations stress the importance of increasing awareness, prevention, treatment, and control of major risk factors for CVD and stroke.[83] Regular recommended screening for heart disease and stroke may identify risk factors such as diabetes, obesity, hypertension, or abnormal blood lipids, allowing for lifestyle/behavior change and effective use of medications to address these before the manifestation of disease sequelae. If adverse cardiovascular signs or symptoms have developed, there is opportunity for disease management.

According to the US Census Bureau, 37 million employed persons were without health insurance in 2007,[84] which diminished the likelihood that they would seek preventive health services, including disease screening. Wellness programs that incorporate screening can fill an important national healthcare void by identifying treatable conditions. In order for disease screening to be effective, the diagnostic testing must have high rates of sensitivity and specificity.[85] It is important to minimize false-positive results that may lead to further unnecessary and costly evaluations and potential complications.

The 2004 National Worksite Health Promotion Survey grouped screenings offered at the workplace and through employee health plans to estimate and rank the prevalence of such programming in the United States. Blood pressure, cholesterol, and diabetes were the most commonly reported CVD screenings, at 36.4%, 29.4%, and 27.4%, respectively, with alcohol and drug abuse support and cancer screenings also frequently provided.[6] Despite the recommendations by the US Preventive Services Task Force for simple screening for obesity,[86] adiposity measures were not reported in the National Worksite Health Promotion Survey. Given the prevalence of overweight and obesity and its role in the development of CVD, not assessing the height and weight of employees represents a missed opportunity. Screening programs were most common in the largest worksites. Screening programs were present in 62% of the largest workplaces (>750 employees) and only 16% of workplaces with 50 to 99 employees.

According to a recent report on 20 000 employees in 13 US workplaces, self-testing stations for blood pressure and body weight are an attractive screening tool for any size workplace.[87] One fifth (21.7%) of employees used the health station at least once during the first 18 months it was installed, with many returning for repeated visits. The value of such stations is that employees can privately screen themselves for adverse health conditions, and if used in combination with existing wellness programming, employees could self-identify themselves as needing additional lifestyle and/or pharmacological interventions. Additionally, research supports the use of blood pressure measurement outside of clinical offices as an important supplement to these readings to provide a more comprehensive assessment of 24-hour blood pressure modulations.[88]

In summary, workplace screening for CVD and stroke risk factors has the potential to identify workers who are at risk for disease and who should be encouraged to participate in risk-reduction behavior change programs. The identification of workers with latent disease early in the course of disease provides the opportunity to delay cardiovascular complications and thus decrease the resulting time away from work and the less productive time at work displayed by workers with chronic diseases.

Nutrition Education and Weight Maintenance

A healthy diet and other lifestyle practices are the cornerstone of the AHA's prevention and treatment activities. The AHA's diet and lifestyle recommendations[89] promote healthy diet and lifestyle practices to reduce major CVD risk factors (eg, overweight and obesity, high low-density lipoprotein cholesterol and triglycerides, low high-density lipoprotein cholesterol, and elevated blood pressure and blood glucose levels). Controlling these major risk factors with recommended lifestyle behaviors markedly reduces the risk of CVD and stroke.[90] The Centers for Disease Control and Prevention estimated that a 10% weight loss will reduce an overweight individual's lifetime medical costs by $2200 to $5300 by lowering costs associated with the treatment of hypertension, type 2 diabetes mellitus, heart disease, stroke, and high cholesterol.[91]

Reducing these chronic diseases and underlying risk factors through good nutritional practices may result in economic benefits, decreased healthcare costs, and greater employee productivity in the workplace. The AHA has issued guidelines with strategies for promoting healthy diets for all adults. Those that can be adopted in the workplace include ensuring access to healthy foods (eg, fruits, vegetables, whole grains, skim milk dairy products, fish, lean meats and poultry, and plant-based meat alternatives); increasing offerings of food choices that are low in saturated fat, trans fat, sodium, added sugar, and calories; and providing nutrition labeling at the point of purchase (eg, in the cafeteria and vending machines).[89,92]

Two reviews evaluated studies detailing the effects of worksite wellness interventions and reported the following benefits: Availability of nutritious foods, point-of-purchase information, systematic reminders and training of healthcare providers to provide nutrition counseling, and incentives to encourage the purchase of nutritious foods.[93,94] The intervention strategies varied from providing health education opportunities, changing the availability of healthy foods, and providing incentives such as lower prices, games, and prizes, most of which were associated with favorable outcomes.[94] Other studies have shown that when trying to reach high-risk populations, it is important to address job hazard exposures and other areas of job security to gain credibility, which in turn, increases audience receptivity and participation.[95–97]

A national survey of approximately 3000 employees was conducted online on 2 occasions in July 2007 by HarrisInteractive for the AHA to assess the role that leadership plays in creating an atmosphere in which employees feel free to actively take advantage of worksite wellness programs.[98] The participants reported improvements in a number of health outcomes as a result of worksite wellness programs. Those related to nutrition were as follows: Feel better (40%), eat healthier (36%), lost weight (32%), lowered cholesterol (19%), and lowered blood pressure (18%). Employees also reported positive work performance outcomes: Fewer sick days (47%), better productivity (36%), improved quality of work (25%), and higher job satisfaction (21%). In addition, they valued nutritious food choices and effective weight loss programs. Employees reported that nutrition and weight loss programs had the biggest positive influence on health or health habits at 39% and 38%, respectively. These results demonstrate the benefits of worksite wellness programs in individuals who elected to respond to the survey (21% and 11% in the 2 samplings), which leaves questions about the impact in the nonrespondents. However, HarrisInteractive attempted to control for this by demographic weighting using data gathered from previous research.

Because most of the adult population is overweight or obese (66.7%), weight loss and weight maintenance programs are an important component of worksite wellness and health promotion.[3] Interactions between work, obesity, and occupational safety and health, in cases in which obesity may be associated with adverse work conditions, may increase when employees are in demanding, low-control jobs with long hours.[99] Concomitantly, obesity adds to the escalating cost of health insurance and is linked to the number of people who are either uninsured or underinsured.[100] Medical spending on obese employees is 37% higher than for people of normal weight.[101] Severely obese women experience more than double the absenteeism of normal-weight women.[102] As prevalence data demonstrate, obesity rates are higher in lower socioeconomic groups, an issue that is especially relevant for employers who hire a greater percentage of low-income workers. Employers whose workers fall within the lower socioeconomic classes may pay greater healthcare premiums or anticipate higher healthcare utilization.

A recent analysis of employer and employee attitudes toward weight loss programs in the workplace found that both groups view weight loss programs as appropriate and effective. They favored positive financial incentives as motivation for employers and employees to participate in these programs and strongly opposed punitive financial penalties. Employers, especially smaller companies, favored tax incentives for businesses that incorporate weight loss treatment and weight maintenance incentives into worksite wellness.[100]

In summary, an assessment of worksite wellness nutrition programs indicates that these are generally effective in favorably modifying dietary practices consistent with current recommendations and in reducing major cardiovascular risk factors such as overweight/obesity, hypercholesterolemia, and hypertension. These findings reinforce the need to accelerate worksite nutrition education and weight management activities. Moreover, a Task Force on Community Preventive Services has recommended a combination of nutrition and physical activity programs for worksite–based interventions to prevent and control overweight/obesity.[103] The implementation of a dietary modification in the worksite can simultaneously target multiple CVD risk factors that are closely linked with dietary intake and obesity.

CVD Education and Automated External Defibrillator/Cardiopulmonary Resuscitation Training

Each year, CVD claims the lives of >864 000 Americans, which makes it the leading cause of death in the United States; there are at least 265 100 Americans each year who experience out-of-hospital cardiac arrests and need emergency care before they reach a hospital.[3] Many of these lives can be saved if employees are educated about the chain of survival, in which workplaces are equipped with automated external defibrillators and employees are trained in how to phone 911, begin cardiopulmonary resuscitation, and deliver early defibrillation. The provision of defibrillation on-site with an automated external defibrillator can dramatically increase survival rates for cardiac arrest. Employers should offer classes and/or provide materials that educate employees about CVDs, stroke, and emergency response, including management of risk factors, signs and symptoms of stroke or cardiac arrest, and appropriate emergency response.

Delivery

The education of employees about risk factors for and signs and symptoms of CVD and stroke is an integral component of worksite wellness programming. Resources for educating employees about risk factors for CVD and stroke are readily available from credible sources, including the AHA[104] and the Centers for Disease Control and Prevention.[105,106] However, worksites should modify the content as needed to deliver it in a manner that is targeted to the employees' level of health literacy. Education should additionally focus on skills development so that employees have strategies for making healthy changes. To further promote uptake, content should be delivered in stages that are consistent with the employees' stage of readiness for behavior change.[107] The incorporation of behavioral theories from the behavioral medicine literature that are appropriate to employees' background knowledge and readiness for change will ensure maximum success.

Other Aspects of a Worksite Wellness Program

Numerous additional features can improve the implementation and uptake of worksite wellness programs.[108] The development of a mission statement for the program can help clarify program goals and desired outcomes. Engaging employees to develop the statement can help with buy-in to the program. The performance of health risk assessments before implementation of a wellness program can be an effective way to raise employees' awareness of their health risks and to engage them in a wellness program. Repeating assessments at regular intervals can determine the progress and success of the wellness program in the employee population. To maximize the effectiveness of health risk appraisals, they should incorporate questions about socioeconomic status and education, because these factors are established correlates of poor health and may inform intervention strategy. Health risk assessment surveys can be supplemented with organizational health promotion checklists (eg, Heart Check Lite[109]) that have already been developed for the worksite.

To reassure employees that wellness programs are for their benefit and not related to their job performance or responsibilities, procedures should be in place to ensure confidentiality and privacy. Employers should engage employees in the development and implementation of the program. To reach all employees, wellness programs should have specific policies that address employees who telecommute or work from remote locations.

Each program should be an active learning system in which outcome evaluation is an integral component. Regular, timely, personalized communication is an essential component of a program (eg, a powerful Internet interface that registers, engages, tracks, and evaluates each eligible participating member). Employees should have the opportunity to participate in programming individually when possible through self-help modules or group sessions where applicable. Program outcomes should be assessed annually. The administration of additional surveys for employees who express interest in wellness programs to gauge important constructs such as readiness to change, interest in participating in specific programs, health risks, and current preventive care can ensure that programs are tailored to be of the greatest interest to as many employees as possible.

Environmental Interventions

Recommendations

- The social and physical environment of the workplace should be designed to be conducive to recommended behaviors.
- Optimal environmental modifications should promote healthy behaviors while simultaneously minimizing the physical and organizational risk in the work environment.
- Occupational safety and health are integral components of worksite wellness; workplaces should be free from hazards that jeopardize cardiovascular health and employee safety and well-being.

Modifying the Workplace to Encourage Positive Behavior Change

Raising awareness about healthy lifestyles through education is paramount, but it is also important for wellness programming to build supportive environments and implement policies to encourage healthy lifestyles. Environmental interventions are defined as those "that do not require individuals to self-select into defined educational programs but are implemented for all employees."[111] A number of environmental modifications have proved successful at facilitating healthy behaviors and decision making, such as modifying the physical plant to encourage physical activity or ensuring available healthy food options in the cafeteria or vending machines.

Engbers et al[112] reviewed 13 randomized controlled trials published between 1985 and 2004 that included environmental modifications in health promotion programs at worksites. Four studies focused on cardiovascular risk factor reduction, 8 on cancer risk reduction, and 1 on a healthy lifestyle in general. All of the interventions had multiple components (education and environmental); 3 focused on physical activity; and all studies used environmental modifications to increase consumption of fruit, vegetable, and fiber and to reduce fat intake. The investigators found significant effects of environmental interventions on dietary intake and inconclusive evidence that physical activity was favorably modified. The National Heart, Lung, and Blood Institute has supported environmental interventions to prevent overweight and obesity at worksites.[113] One-year results from 1 of those studies suggest that such interventions, when superimposed on existing education programs at the worksite, can lower body mass index.

One successful strategy to increase consumption of lower-fat foods is to reduce prices. French[114] found that price reductions of 10% to 50% on lower-fat foods (eg, low-fat snacks and vegetables) resulted in a 9% to 93% increase in sales of those items. Numerous studies (for instance, those reported by the Robert Wood Johnson Foundation's Active Living Research program) have demonstrated that the built environment influences associated physical activity patterns. For example, open and accessible stairwells and on-site physical activity facilities at worksites increased the physical activity of employees.[115,116]

Reducing Health Risk in the Work Environment

An increased risk of adverse cardiac events has long been associated with chemical and physical hazards at work. For example, occupational exposure to carbon monoxide (often from gasoline combustion) may cause both angina and acute myocardial infarction. Methylene chloride (used in furniture stripping) is metabolized to carbon monoxide, which can trigger cardiovascular events. Lead exposure and noise have been associated with hypertension in some investigations.[117] Environmental tobacco smoke in workplaces such as casinos and bars poses a health risk to employees.[118] Environmental studies have long identified exposure to fine particulates as posing cardiac risk in the general population,[119,120] and toxicology studies have identified potential mechanisms for this risk.[121] Controlled exposure to dilute diesel exhaust elicits myocardial ischemia in men with coronary artery disease.[122] All of these exposures can be monitored and controlled.

Work shift, work pace, and work organization may also pose risks for CVD. A review of 17 studies of working atypical shifts concluded that shift workers had a significant increase in CVD risk (40%) compared with day workers.[123]

AQ: 13

Shift work is also associated with sleep disturbances that may increase CVD risk. Unusual bursts of vigorous physical activity can be hazardous, particularly in workers with underlying coronary artery disease. Bursts of activity in untrained or at-risk workers combined with particulate exposure may explain the increased risk of on-the-job cardiac events reported in some studies of firefighters.[124]

Regulatory Oversight of Worksite Wellness Programs

Policy Recommendations

- The regulatory environment should allow for increased opportunity for employers to reach a greater majority of the employee population and produce health benefits.
- Employers should adhere to all regulations that address hazards to employee health and safety, providing working conditions that are optimal for cardiovascular health and well-being.
- Regulatory provisions should provide wellness credits for employers who choose to provide healthy lifestyle behavior incentives in the workplace (eg, health promotion services, smoking cessation programs, exercise facilities on site, weight loss programs, or voluntary screenings), and financial incentives can be paid directly to the employee. However, financial incentives should not be attached to healthcare premiums or health status.

Legislative/Regulatory Oversight of Worksite Wellness Programs

Worksite wellness programs are affected by state laws and major federal laws, including the Americans With Disabilities Act of 1990, the Health Insurance Portability and Accountability Act of 1996 (HIPAA), the Age Discrimination in Employment Act of 1967, the Genetic Information Nondiscrimination Act of 2008, the Occupational Safety and Health Act of 1970, the Consolidated Omnibus Budget Reconciliation Act of 1985, the Employee Retirement Income Security Act of 1974, the Mental Health Parity Act of 1996, and the Pregnancy Discrimination Act of 1978. Conversations about health reform have led to a specific review of the HIPAA nondiscrimination provisions and a debate about whether employees who engage in unhealthy behaviors should be held accountable via an increase in their healthcare premiums or an adjustment to their deductibles. HIPAA provisions generally prohibit a group health plan from charging individuals different premiums based on a health factor. However, Congress did not want to prevent the many promising efforts that are using health-plan–related incentives to encourage worksite health promotion, so it permitted group health plans to establish premium discounts or rebates or modification of otherwise applicable copayments or deductibles in return for adherence to programs of health promotion and disease prevention.[125] Subsequent regulation delineated between participation-only programs that have no outcome requirements and those programs that require an employee to achieve a certain standard.[126] Participation-only programs do not have to meet additional requirements provided they are available for all relevant employees; however, programs that are standard-based must meet additional benchmarks.[126,127]

AQ: 15

The Americans With Disabilities Act regulations are administered by the US Equal Employment Opportunity Commission, which covers all civil rights and disability legislation affecting employment.[126] The Equal Employment Opportunity Commission[126] has expressed concern about incentives and other components of worksite wellness programs, including completion of an annual mandatory health risk assessment; the use of monetary incentives connected to program participation or wellness activities; mandatory medical examinations or testing; employers making inquiries about obesity, heart disease, diabetes, or other disabilities; triggers for refusal to participate in disease management or behavior change programs; and employer inquiries concerning prescription drug use. At this time, the Equal Employment Opportunity Commission has not issued formal opinions on these issues. Consequently, employers who develop programming that violates these initial rulings risk Equal Employment Opportunity Commission–imposed prosecution and fines.

Financial Incentives

Behavior change is difficult, especially over the long term, and voluntary programs to encourage lifestyle modification are not consistently effective.[128] Employee wellness program managers generally find that once the newness and curiosity about a health promotion/wellness program wears off, employee participation drops off in a dramatic way.[8] The proportion of employees taking advantage of such programs falls short of the *Healthy People 2010* goal of 75% participation, with average participation rates of only 61%.[108] Accordingly, employers are increasingly using incentives to maintain program participation and enhance compliance.[129]

Incentives provide the employee with an immediate and tangible reward that helps make it easier to modify behaviors that may yield long-term benefits.[130] Studies show the favorable outcome associated with the use of financial incentives to foster long-term behavior change, such as quitting smoking or losing weight, especially if the financial incentives are sufficient.[131–134] Finkelstein and colleagues[133] found that a 3-month incentive-based intervention led to weight loss in employees who were provided 2 levels of incentives ($7 and $14 per percentage point of weight loss), which suggests that modest financial incentives can be effective in motivating overweight employees to lose weight. These programs indicate that employers could use incentives (eg, price reduction, monetary incentives, awards, and prizes) to encourage employees to undertake health improvement practices. Other studies have not found incentives to be effective; however, many of these studies are limited by small numbers of participants, cross-sectional designs, and/or very modest awards.[135]

Traditionally, incentives have been directed toward providers of healthcare services through pay-for-performance programs. There is a growing consensus that incentives should be provided directly to the individual who is engaging in the behavior change.[132,136] Additional studies are needed to determine the true efficacy of incentive rewards within worksite wellness programs and whether these promote

robust, long-term behavior change, whether incentives should be linked to the associated outcomes, and whether positive or negative incentives are more effective. Accordingly, the regulatory environment should provide employers the latitude to offer incentives that are not discriminatory and are appropriate for employees, incorporate serial outcome evaluations, determine the influence on disparate populations, and include an analysis of unintended consequences.

Although the AHA supports financial incentives paid directly to employees, there is significant concern with incentives tied directly to health insurance premiums or deductibles. Premium surcharges or other cost-sharing measures can make coverage less affordable for those who need it most and increase health disparities among low-income and minority populations. People who cannot afford coverage may have reduced access to therapies and interventions that can help curb unhealthy behaviors (eg, prescription smoking cessation therapy, medically supervised weight loss programs, and medications to control cholesterol and blood pressure). When policies cover a family, the surcharge penalizes every family member.

The current regulatory environment allows employers to offer a premium discount or waiver of a cost-sharing requirement based on participation in a program of health promotion or disease prevention. These programs have not been evaluated to determine whether (1) reduced costs result from improved health outcomes or segmentation of the insurance pool, (2) individuals with chronic conditions who may have medical or physical limitations have been treated fairly with regard to these policies, and (3) privacy issues and individual autonomy in the workplace have been protected.

Vulnerable Populations

Policy Recommendations

- Wellness programs must address the needs of all employees, regardless of sex, age, ethnicity, socioeconomic status, culture, job type, or physical or intellectual capacity.
- Worksite wellness programs should be designed to be culturally sensitive and all-inconclusive, and employers should also consider targeted, complementary interventions for their more vulnerable employees specifically designed to engage those who are economically challenged, less educated, or underserved.
- Worksite wellness programs should help working families balance work and family commitments and incorporate policies around child care, elder/dependent care, telecommuting, and flexible work schedules.
- Research should be conducted to determine how to improve participation among employees who have the highest-risk behaviors.

Blue Collar/Service Workers

Lower socioeconomic status is an established risk factor for CVD and stroke,[137] yet blue collar workers, who predominantly fall into those lower socioeconomic classes, are often overlooked. Blue collar and service workers generally have less access to worksite wellness programs and are at greater risk of practicing lifestyle behaviors that place them at higher risk for coronary heart disease and stroke.[138] Lower-income, less-educated, and lower-job-status employees have a higher burden of CVD than their higher-status counterparts.[121,133,139] Although social conditions outside of work contribute to their disease experience, so do factors associated with their jobs, including higher levels of job stress, job insecurity, long working hours, sedentary work, work scheduling issues, shift work, bullying, and harassment.[71,140] These factors underscore the need to specifically target employees with lower income and less education in worksite wellness programs.[141,142] AQ: 16

Blue collar workers and lower-paid workers are, for example, more likely to smoke than those who are white collar or higher paid[143] and are less likely to participate in worksite fitness programs.[144] The combining of efforts at worksite health promotion with improved worksite protection appears to overcome some of these obstacles. A prospective controlled investigation of smoking cessation in blue collar manufacturing workers demonstrated significantly higher quit rates and cessation maintenance through a program that addressed both individual behavior change and risk reduction in the work environment.[82] A controlled investigation of a comprehensive intervention in matched groups of Dutch manufacturing workers showed significantly greater cardiac risk reduction in the cohort that underwent individual- and organizational-level interventions.[145]

Race/Ethnicity

A limited number of intervention studies have specifically addressed issues unique to race and ethnicity in the working population. One group-randomized study in Hawaii found that after a 2-year intervention, Pacific Islanders, men, and those in managerial positions had a higher body mass index than women and other ethnic groups.[146] Cultural barriers and roles within the workplace were considered obstacles to weight loss. In North Carolina, the Centers for Disease Control and Prevention provided Racial and Ethnic Approaches to Community Health 2010 funds to the Eastern Band of Cherokee Indians to develop a community-based intervention to improve the health of a rural, mountainous community with a Native American population that has higher rates of obesity and type 2 diabetes mellitus than the state or the US general population. The program had a significant worksite wellness component for adults. During the first year, team members conducted formative research, formed coalitions, and developed a culturally appropriate community action plan to prevent type 2 diabetes mellitus. Participants in the worksite wellness component met dietary and physical activity goals, demonstrated reductions in body weight, and enjoyed the program. These results led to an expanded worksite wellness initiative to achieve further healthcare cost reductions.[147]

Women

Women in the workplace are often overlooked as a vulnerable population despite unique challenges posed by

pregnancy, family responsibilities, and menopause, a transition associated with heightened cardiovascular risk. A worksite wellness program that focused on middle-aged women working in the healthcare environment[148] found that a preponderance of the women had undiagnosed hypertension, abnormal lipid profiles, glucose intolerance, and/or obesity. Thus, an employee population that would typically be well educated about personal health, wellness, and disease prevention was characterized by numerous unhealthy behaviors, unrecognized disease, inadequate use of preventive health screenings, and numerous obstacles to program participation and follow-up.

Time pressures continue to represent major challenges for women (and men) balancing professional, family, and personal commitments and should be considered when worksite wellness programs are developed. In 2002, 77% of single mothers, just over 60% of married mothers with children under the age of 6 years, and 76.8% of married mothers with school-aged children were in the labor force.[149] Because working mothers and families balance time spent in their personal commitments and job responsibilities, workplace policies should incorporate child care, flexible schedules, and elder/dependent care as a key feature of workplace health promotion.[150]

Additional Research

Few data are available regarding the effectiveness of worksite wellness programs in diverse populations. Often, the most disadvantaged workers, who have the greatest need for preventive screenings, health promotion, and/or worksite wellness programs, have the least access and are the most reluctant to participate in these programs.[142,151] The fundamental causes of vulnerability are rooted in employees' daily lives and are most often beyond the scope of public health.[152] It would be beneficial for employers to engage with nontraditional partners to consider ways to reduce health disparities in communities and improve employee well-being overall. Additional research is needed to determine how best to reach and engage underserved populations and optimize worksite wellness for employees of all races, ethnicities, and income levels. Research should focus on whether worksite wellness programs in high-risk and vulnerable populations improve health and reduce health disparities.

Conclusions/Summary

Successful worksite wellness programs engage employees in activities that maximize their potential for health and well-being, grow rapidly in response to their perceived value, and prove sustainable as they establish the business case for their existence. As such, government agencies could have a substantial influence by supplementing private sector investment in large-scale, objective, longer-term studies on programming and outcomes research to better inform the development, implementation, and evaluation of worksite wellness programs.[153] Government agencies should also model worksite wellness programs and serve as laboratories for testing research-based lifestyle interventions. The health outcomes for high-risk and health-disparities populations should be particularly scrutinized. The Centers for Disease Control and Prevention recently developed the Healthy Workforce Initiative, a World Wide Web site designed as a resource for worksite health promotion program planners in state and federal government that is also an excellent resource for planners in nongovernment workplaces.[154] Federal and state governments should encourage employers to offer programming by providing tax incentives for employers who implement comprehensive worksite wellness programs.

Even the most well-designed and well-intentioned worksite wellness programs are ineffective if employees do not participate. Employers should seek to reduce or eliminate barriers that discourage use of worksite wellness programs to increase participation and employee engagement. One of many obstacles for programs to overcome is the low participation rate among those most likely to have greater health risk. Offering health promotion services such as fitness centers, weight loss programs, and exercise classes on site and providing healthy vending and food choices throughout the workplace environment are small steps. More innovative and forward-thinking employers might consider providing a convenient time and location for exercise and wellness programs during the workday and offering employer-provided paid time off during the workday for exercise, health screenings, or prevention/wellness programs.[155] AQ: 17

Programs that combine individual and organizational changes boast the greatest success rates in part because combined approaches engender a reciprocal relationship in which employees have a perception that their needs are valued.[156] An Institute of Medicine exploration of the design of worksite health programs has embraced this kind of comprehensive approach,[157] and the National Institute for Occupational Safety and Health recommendations for effective worksite programs endorse comprehensive efforts that combine health protection and promotion.[158] However, continued research is needed to determine the effectiveness of comprehensive programs compared with programs that provide only selective services. Additionally, more work is needed to assess the effectiveness of programs on hard outcomes such as ischemic heart disease and stroke.

Visionary employers are looking beyond healthcare costs to consider the total value of health. They understand the importance of establishing work environments that engender fulfillment, improve quality of life, forge positive links with the community, and increase productivity. An effective worksite wellness program can attract exceptional employees, improve on-the-job decision-making and work efficiency, enhance employee morale and organizational commitment, decrease turnover, and reduce organizational conflict.[108] Despite the numerous and varied documented benefits of incorporating programming to promote healthy lifestyles in the workplace, such programming has not achieved adequate penetration into the workplaces of America.

Disclosures

Writing Group Disclosures

Writing Group Member	Employment	Research Grant	Other Research Support	Speakers' Bureau/Honoraria	Ownership Interest	Consultant/ Advisory Board	Other
Mercedes Carnethon	Northwestern University	NIH/NHLBI*†	None	None	None	None	None
Barry A. Franklin	William Beaumont Hospital & Health Center	None	None	Honoraria* received throughout the year, generally from hospitals, medical centers, or cardiac rehabilitation associations for selected invited presentations.	None	None	None
Penny Kris-Etherton	Pennsylvania State University	None	None	None	None	Advisory Board for Health Fitness*	None
Richard Milani	Ochsner Clinic Foundation	None	None	None	None	None	None
Charlotte A. Pratt	National Heart, Lung, and Blood Institute, National Institutes of Health	None	None	None	None	None	None
Gregory R. Wagner	National Institute for Occupational Safety and Health/Centers for Disease Control and Prevention, Harvard University School of Public Health	None	None	None	None	None	None
Laurie P. Whitsel	American Heart Association	None	None	None	None	None	None

This table represents the relationships of writing group members that may be perceived as actual or reasonably perceived conflicts of interest as reported on the Disclosure Questionnaire, which all members of the writing group are required to complete and submit. A relationship is considered to be "significant" if (1) the person receives $10 000 or more during any 12-month period, or 5% or more of the person's gross income; or (2) the person owns 5% or more of the voting stock or share of the entity, or owns $10 000 or more of the fair market value of the entity. A relationship is considered to be "modest" if it is less than "significant" under the preceding definition.

*Modest.

†Significant.

Reviewer Disclosures

Reviewer	Employment	Research Grant	Other Research Support	Speakers' Bureau/Honoraria	Expert Witness	Ownership Interest	Consultant/Advisory Board	Other
Dee Edington	University of Michigan	None	None	None	None	None	None	None
Anthony LaMontagne	The University of Melbourne (Australia)	None	None	None	None	None	None	None
Paul Landsbergis	State University of New York–Downstate Medical Center	NIOSH†; New York State Workforce Development Institute†; National Cancer Institute*; Transport Workers Union, Local 100†; Uniformed Sanitationmen's Association†	None	None	None	None	None	None
Glorian Sorensen	Dana Farber Cancer Institute & Harvard School of Public Health	None	None	None	None	None	None	None

This table represents the relationships of reviewers that may be perceived as actual or reasonably perceived conflicts of interest as reported on the Disclosure Questionnaire, which all reviewers are required to complete and submit. A relationship is considered to be "significant" if (1) the person receives $10 000 or more during any 12-month period, or 5% or more of the person's gross income; or (2) the person owns 5% or more of the voting stock or share of the entity, or owns $10 000 or more of the fair market value of the entity. A relationship is considered to be "modest" if it is less than "significant" under the preceding definition.

*Modest.

†Significant.

References

1. Anderson DR, Whitmer RW, Goetzel RZ, Ozminkowski RJ, Dunn RL, Wasserman J, Serxner S. The relationship between modifiable health risks and group-level health care expenditures. Health Enhancement Research Organization (HERO) Research Committee. *Am J Health Promot.* 2000;15:45–52.
2. US Department of Health and Human Services. *Healthy People 2010, Volume II: Objectives for Improving Health (Part B).* Washington, DC: US Government Printing Office; November 2000.
3. Lloyd-Jones D, Adams R, Carnethon M, De Simone G, Ferguson TB, Flegal K, Ford E, Furie K, Go A, Greenlund K, Haase N, Hailpern S, Ho M, Howard V, Kissela B, Kittner S, Lackland D, Lisabeth L, Marelli A, McDermott M, Meigs J, Mozaffarian D, Nichol G, O'Donnell C, Roger V, Rosamond W, Sacco R, Sorlie P, Stafford R, Steinberger J, Thom T, Wasserthiel-Smoller S, Wong N, Wylie-Rosett J, Hong Y. Heart disease and stroke statistics–2009 update: a report from the American Heart Association Statistics Committee and Stroke Statistics Subcommittee [published correction appears in *Circulation.* 2009;119:e182]. *Circulation.* 2009;119:480–486.
4. Lloyd-Jones D, Adams R, Carnethon M, De Simone G, Ferguson TB, Flegal K, Ford E, Furie K, Go A, Greenlund K, Haase N, Hailpern S, Ho M, Howard V, Kissela B, Kittner S, Lackland D, Lisabeth L, Marelli A, McDermott M, Meigs J, Mozaffarian D, Nichol G, O'Donnell C, Roger V, Rosamond W, Sacco R, Sorlie P, Stafford R, Steinberger J, Thom T, Wasserthiel-Smoller S, Wong N, Wylie-Rosett J, Hong Y. Heart disease and stroke statistics–2009 update: a report from the American Heart Association Statistics Committee and Stroke Statistics Subcommittee [published correction appears in *Circulation.* 2009;119:e182]. *Circulation.* 2009;119:e21–e181.
5. Taylor TN, Davis PH, Torner JC, Holmes J, Meyer JW, Jacobson MF. Lifetime cost of stroke in the United States. *Stroke.* 1996;27:1459–1466.
6. Linnan L, Bowling M, Childress J, Lindsay G, Blakey C, Pronk S, Wieker S, Royall P. Results of the 2004 National Worksite Health Promotion Survey. *Am J Public Health.* 2008;98:1503–1509.
7. US Census Bureau. Statistics about Business Size (including Small Business) from the U.S. Census Bureau. Available at: http://www.census.gov/epcd/www/smallbus.html. Accessed September 21, 2009.
8. O'Donnell MP. The rationale for federal policy to stimulate workplace health promotion programs. *N C Med J.* 2006;67:455–457.
9. Leatherman S, Berwick D, Iles D, Lewin LS, Davidoff F, Nolan T, Bisognano M. The business case for quality: case studies and an analysis. *Health Aff (Millwood).* 2003;22:17–30.
10. Anderson DR, Serxner SA, Gold DB. Conceptual framework, critical questions, and practical challenges in conducting research on the financial impact of worksite health promotion. *Am J Health Promot.* 2001;15:281–288.
11. Aldana SG. Financial impact of health promotion programs: a comprehensive review of the literature. *Am J Health Promot.* 2001;15:296–320.
12. Burton WN, Pransky G, Conti DJ, Chen CY, Edington DW. The association of medical conditions and presenteeism. *J Occup Environ Med.* 2004;46(suppl):S38–S45.
13. Tsai SP, Wendt JK, Ahmed FS, Donnelly RP, Strawmyer TR. Illness absence patterns among employees in a petrochemical facility: impact of selected health risk factors. *J Occup Environ Med.* 2005;47:838–846.
14. Goetzel RZ, Carls GS, Wang S, Kelly E, Mauceri E, Columbus D, Cavuoti A. The relationship between modifiable health risk factors and medical expenditures, absenteeism, short-term disability, and presenteeism among employees at Novartis. *J Occup Environ Med.* 2009;51:487–499.
15. Boles M, Pelletier B, Lynch W. The relationship between health risks and work productivity. *J Occup Environ Med.* 2004;46:737–745.
16. Hemp P. Presenteeism: at work–but out of it. *Harv Bus Rev.* 2004;82:49–58, 155.
17. Pelletier B, Boles M, Lynch W. Change in health risks and work productivity over time. *J Occup Environ Med.* 2004;46:746–754.
18. Burton WN, Chen CY, Conti DJ, Schultz AB, Edington DW. The association between health risk change and presenteeism change. *J Occup Environ Med.* 2006;48:252–263.
19. Cyr A, Hagen S. Measurement and quantification of presenteeism. *J Occup Environ Med.* 2007;49:1299–1300; author response 1300–1301.
20. Mattke S, Balakrishnan A, Bergamo G, Newberry SJ. A review of methods to measure health-related productivity loss. *Am J Manag Care.* 2007;13:211–217.
21. Koopman C, Pelletier KR, Murray JF, Sharda CE, Berger ML, Turpin RS, Hackleman P, Gibson P, Holmes DM, Bendel T. Stanford presenteeism scale: health status and employee productivity. *J Occup Environ Med.* 2002;44:14–20.
22. Lofland JH, Pizzi L, Frick KD. A review of health-related workplace productivity loss instruments. *Pharmacoeconomics.* 2004;22:165–184.
23. Sanderson K, Tilse E, Nicholson J, Oldenburg B, Graves N. Which presenteeism measures are more sensitive to depression and anxiety? *J Affect Disord.* 2007;101:65–74.
24. Prasad M, Wahlqvist P, Shikiar R, Shih YC. A review of self-report instruments measuring health-related work productivity: a patient-reported outcomes perspective. *Pharmacoeconomics.* 2004;22:225–244.
25. Evans CJ. Health and work productivity assessment: state of the art or state of flux? *J Occup Environ Med.* 2004;46(suppl):S3–S11.
26. Stewart WF, Ricci JA, Chee E, Morganstein D. Lost productive work time costs from health conditions in the United States: results from the American Productivity Audit. *J Occup Environ Med.* 2003;45:1234–1246.
27. Rumsfeld JS, Ho PM. Depression and cardiovascular disease: a call for recognition. *Circulation.* 2005;111:250–253.
28. Stewart WF, Ricci JA, Chee E, Hahn SR, Morganstein D. Cost of lost productive work time among US workers with depression [published correction appears in *JAMA.* 2003;290:2218]. *JAMA.* 2003;289:3135–3144.
29. Stewart WF, Ricci JA, Chee E, Morganstein D, Lipton R. Lost productive time and cost due to common pain conditions in the US workforce. *JAMA.* 2003;290:2443–2454.
30. Lerner D, Adler DA, Chang H, Berndt ER, Irish JT, Lapitsky L, Hood MY, Reed J, Rogers WH. The clinical and occupational correlates of work productivity loss among employed patients with depression. *J Occup Environ Med.* 2004;46(suppl):S46–S55.
31. Simon GE, Ludman EJ, Unützer J, Operskalski BH, Bauer MS. Severity of mood symptoms and work productivity in people treated for bipolar disorder. *Bipolar Disord.* 2008;10:718–725.
32. Dubois RW, Aguilar D, Fass R, Orr WC, Elfant AB, Dean BB, Harper AS, Yu HT, Melmed GY, Lynn R, Singh A, Tedeschi M. Consequences of frequent nocturnal gastro-oesophageal reflux disease among employed adults: symptom severity, quality of life and work productivity. *Aliment Pharmacol Ther.* 2007;25:487–500.
33. Burton WN, Conti DJ, Chen CY, Schultz AB, Edington DW. The impact of allergies and allergy treatment on worker productivity. *J Occup Environ Med.* 2001;43:64–71.
34. Burton WN, Chen CY, Conti DJ, Schultz AB, Pransky G, Edington DW. The association of health risks with on-the-job productivity. *J Occup Environ Med.* 2005;47:769–777.
35. Mâsse LC, Ainsworth BE, Tortolero S, Levin S, Fulton JE, Henderson KA, Mayo K. Measuring physical activity in midlife, older, and minority women: issues from an expert panel. *J Womens Health.* 1998;7:57–67.
36. Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health. Fact sheet: health effects of cigarette smoking. Available at: http://www.cdc.gov/tobacco/data_statistics/fact_sheets/. Accessed September 3, 2009.
37. US Department of Health and Human Services. *The Health Consequences of Involuntary Exposure to Tobacco Smoke: A Report of the Surgeon General.* Atlanta, Ga: US Department of Health and Human Services, Centers for Disease Control and Prevention, Coordination Center for Health Promotion, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health; 2006.
38. Centers for Disease Control and Prevention. Annual smoking-attributable mortality, years of potential life lost, and productivity losses: United States, 1997–2001. *MMWR Morb Mortal Wkly Rep.* 2005;54:625–628.
39. Halpern MT, Shikiar R, Rentz AM, Khan ZM. Impact of smoking status on workplace absenteeism and productivity. *Tob Control.* 2001;10:233–238.
40. Kristein MM. How much can business expect to profit from smoking cessation? *Prev Med.* 1983;12:358–381.
41. Jackson FN, Holle RH. Smoking: perspectives 1985. *Prim Care.* 1985;12:197–216.
42. Centers for Disease Control and Prevention, Office on Smoking and Health. *Making Your Workplace Smokefree: A Decision Maker's Guide.* Atlanta, Ga: US Department of Health and Human Services, Centers for Disease Control and Prevention, Office on Smoking and Health.

AQ: 20
AQ: 22
AQ: 23

Available at: http://www.cdc.gov/tobacco/secondhand_smoke/00_pdfs/fullguide.pdf. Accessed March 27, 2009.
43. Cahill K, Moher M, Lancaster T. Workplace interventions for smoking cessation. *Cochrane Database Syst Rev.* 2008 Oct 8:CD003440.
44. Shields M. Smoking bans: influence on smoking prevalence. *Health Rep.* 2007;18:9–24.
45. Centers for Disease Control and Prevention. State smoking restrictions for private-sector worksites, restaurants, and bars: United States, 2004 and 2007. *MMWR Morb Mortal Wkly Rep.* 2008;57:549–552.
46. Blake SM, Murray KD, El-Khorazaty MN, Gantz MG, Kiely M, Best D, Joseph JG, El-Mohandes AA. Environmental tobacco smoke avoidance among pregnant African-American nonsmokers. *Am J Prev Med.* 2009; 36:225–234.
47. Graham H, Francis B, Inskip HM, Harman J; SWS Study Team. Socioeconomic lifecourse influences on women's smoking status in early adulthood. *J Epidemiol Community Health.* 2006;60:228–233.
48. Jain NB, Hart JE, Smith TJ, Garshick E, Laden F. Smoking behavior in trucking industry workers. *Am J Ind Med.* 2006;49:1013–1020.
49. Levin L, Silverman D, Hartge P, Fears T, Hoover R. Smoking patterns by occupation and duration of employment. *Am J Ind Med.* 1990;17: 711–725.
50. Haskell WL, Lee IM, Pate RR, Powell KE, Blair SN, Franklin BA, Macera CA, Heath GW, Thompson PD, Bauman A. Physical activity and public health: updated recommendation for adults from the American College of Sports Medicine and the American Heart Association. *Circulation.* 2007;116:1081–1093.
51. Powell KE, Thompson PD, Caspersen CJ, Kendrick JS. Physical activity and the incidence of coronary heart disease. *Annu Rev Public Health.* 1987;8:253–287.
52. Hu FB, Stampfer MJ, Colditz GA, Ascherio A, Rexrode KM, Willett WC, Manson JE. Physical activity and risk of stroke in women. *JAMA.* 2000;283:2961–2967.
53. Lee IM, Hennekens CH, Berger K, Buring JE, Manson JE. Exercise and risk of stroke in male physicians. *Stroke.* 1999;30:1–6.
54. Fardy PS, Ilmarinen J. Evaluating the effects and feasibility of an at work stairclimbing intervention program for men. *Med Sci Sports.* 1975; 7:91–93.
55. Meyer P, Kossowsky M, Kayser B, Sigaud P, Carballo D, Lambert NF, Pichard C, Mach F. Stair instead of elevator use at work: cardiovascular preventive effects on healthy employees. The Geneva stair study. *Eur Heart J.* 2008;29(suppl 1):385–386. Abstract.
56. Proper KI, de Bruyne MC, Hildebrandt VH, van der Beek AJ, Meerding WJ, van Mechelen W. Costs, benefits and effectiveness of worksite physical activity counseling from the employer's perspective. *Scand J Work Environ Health.* 2004;30:36–46.
57. Church TS, Earnest CP, Skinner JS, Blair SN. Effects of different doses of physical activity on cardiorespiratory fitness among sedentary, overweight or obese postmenopausal women with elevated blood pressure: a randomized controlled trial. *JAMA.* 2007;297:2081–2091.
58. Gemson DH, Commisso R, Fuente J, Newman J, Benson S. Promoting weight loss and blood pressure control at work: impact of an education and intervention program. *J Occup Environ Med.* 2008;50:272–281.
59. Goris A HR. The effect of a lifestyle activity intervention program on improving physical activity behavior of employees. Paper presented at: Proceedings of the Third International Conference on Persuasive Technology 2008; June 4–6, 2008; Oulu, Finland.
60. Hamilton MT, Hamilton DG, Zderic TW. Exercise physiology versus inactivity physiology: an essential concept for understanding lipoprotein lipase regulation. *Exerc Sport Sci Rev.* 2004;32:161–166.
61. Hamilton MT, Hamilton DG, Zderic TW. Role of low energy expenditure and sitting in obesity, metabolic syndrome, type 2 diabetes, and cardiovascular disease. *Diabetes.* 2007;56:2655–2667.
62. Franklin BA, Pamatmat A, Johnson S, Scherf J, Mitchell M, Rubenfire M. Metabolic cost of extremely slow walking in cardiac patients: implications for exercise testing and training. *Arch Phys Med Rehabil.* 1983; 64:564–565.
63. McCrady SK, Levine JA. Sedentariness at work: how much do we really sit? *Obesity (Silver Spring).* Published online ahead of print April 23, 2009. doi:10.1038/oby.2009.117. Available at: http://www.nature.com/oby/journal/vaop/ncurrent/abs/oby2009117a.html. Accessed June 10, 2009.
64. Levine JA. Nonexercise activity thermogenesis: liberating the life-force. *J Intern Med.* 2007;262:273–287.
65. Fidler JL, MacCarty RL, Swensen SJ, Huprich JE, Thompson WG, Hoskin TL, Levine JA. Feasibility of using a walking workstation during CT image interpretation. *J Am Coll Radiol.* 2008;5:1130–1136.
66. McAlpine DA, Manohar CU, McCrady SK, Hensrud D, Levine JA. An office-place stepping device to promote workplace physical activity. *Br J Sports Med.* 2007;41:903–907.
67. Spector PE, Jex SM. Development of four self-report measures of job stressors and strain: Interpersonal Conflict at Work Scale, Organizational Constraints Scale, Quantitative Workload Inventory, and Physical Symptoms Inventory. *J Occup Health Psychol.* 1998;3:356–367.
68. Motowidlo SJ, Packard JS, Manning MR. Occupational stress: its causes and consequences for job performance. *J Appl Psychol.* 1986;71: 618–629.
69. Nurminen M, Karjalainen A. Epidemiologic estimate of the proportion of fatalities related to occupational factors in Finland [published correction appears in *Scand J Work Environ Health.* 2001;27:295]. *Scand J Work Environ Health.* 2001;27:161–213.
70. Landsbergis PA, Theorell T. Measurement of psycho-social workplace exposure variables: self-report questionnaires. In: Schnall P, Belkic K, Landsbergis PA, Baker DB, eds. *The Workplace and Cardiovascular Disease.* Philadelphia, Pa: Hanley & Belfus; 2000:163–188.
71. LaMontagne AD, Keegel T, Vallance DA, Ostry A, Wolfe R. Job strain-attributable depression in a sample of working Australians: assessing the contribution to health inequalities. *BMC Public Health.* 2008;8:181. AQ: 25
72. Belkic KL, Landsbergis PA, Schnall PL, Baker D. Is job strain a major source of cardiovascular disease risk? *Scand J Work Environ Health.* 2004;30:85–128.
73. Bonde JP, Munch-Hansen T, Agerbo E, Suadicani P, Wieclaw J, Westergaard-Nielsen N. Job strain and ischemic heart disease: a prospective study using a new approach for exposure assessment. *J Occup Environ Med.* 2009;51:732–738.
74. van der Klink JJ, Blonk RW, Schene AH, van Dijk FJ. The benefits of interventions for work-related stress. *Am J Public Health.* 2001;91: 270–276.
75. Lamontagne AD, Keegel T, Louie AM, Ostry A, Landsbergis PA. A systematic review of the job-stress intervention evaluation literature, 1990–2005 [published correction appears in *Int J Occup Environ Health.* 2008;14:24]. *Int J Occup Environ Health.* 2007;13:268–280.
76. Noblet A, LaMontagne AD. The role of workplace health promotion in addressing job stress. *Health Promot Int.* 2006;21:346–353.
77. Egan M, Bambra C, Thomas S, Petticrew M, Whitehead M, Thomson H. The psychosocial and health effects of workplace reorganisation, 1: a systematic review of organisational-level interventions that aim to increase employee control. *J Epidemiol Community Health.* 2007;61: 945–954.
78. Kawakami N, Takao S, Kobayashi Y, Tsutsumi A. Effects of web-based supervisor training on job stressors and psychological distress among workers: a workplace-based randomized controlled trial. *J Occup Health.* 2006;48:28–34.
79. Nyberg A, Alfredsson L, Theorell T, Westerlund H, Vahtera J, Kivimäki M. Managerial leadership and ischaemic heart disease among employees: the Swedish WOLF study. *Occup Environ Med.* 2009;66: 51–55.
80. Olsen O, Albertsen K, Nielsen ML, Poulsen KB, Gron SM, Brunnberg HL. Workplace restructurings in intervention studies: a challenge for design, analysis and interpretation. *BMC Med Res Methodol.* 2008;8:39.
81. Kompier M, Cooper C, Guerts S. A multiple case study approach to work stress prevention in Europe. *Eur J Work Organ Psychol.* 2000;9: 371–400.
82. Sorensen G, Stoddard AM, LaMontagne AD, Emmons K, Hunt MK, Youngstrom R, McLellan D, Christiani DC. A comprehensive worksite cancer prevention intervention: behavior change results from a randomized controlled trial (United States). *Cancer Causes Control.* 2002; 13:493–502.
83. Recommended schedule for screening tests. American Heart Association Web site. Available at: http://www.americanheart.org/presenter.jhtml?identifier=3046593. Accessed September 2, 2009.
84. DeNavas-Walt C, Proctor BD, Smith JC. *Income, Poverty, and Health Insurance Coverage in the United States: 2007.* Washington, DC: US Government Printing Office; 2008. Current Population Reports, P60-235.
85. Deeks JJ. Systematic reviews in health care: systematic reviews of evaluations of diagnostic and screening tests. *BMJ.* 2001;323:157–162.

86. US Preventive Services Task Force. Screening for obesity in adults: recommendations and rationale. *Ann Intern Med.* 2003;139:930–932.
87. Kelly JT. Evaluating employee health risks due to hypertension and obesity: self-testing workplace health stations. *Postgrad Med.* 2009;121: 152–158.
88. Pickering TG, Miller NH, Ogedegbe G, Krakoff LR, Artinian NT, Goff D. Call to action on use and reimbursement for home blood pressure monitoring: a joint scientific statement from the American Heart Association, American Society of Hypertension, and Preventive Cardiovascular Nurses Association. *J Cardiovasc Nurs.* 2008;23:299–323.
89. Lichtenstein AH, Appel LJ, Brands M, Carnethon M, Daniels S, Franch HA, Franklin B, Kris-Etherton P, Harris WS, Howard B, Karanja N, Lefevre M, Rudel L, Sacks F, Van Horn L, Winston M, Wylie-Rosett J. Diet and lifestyle recommendations revision 2006: a scientific statement from the American Heart Association Nutrition Committee [published corrections appear in *Circulation.* 2006;114:e629 and 2006;114:e27]. *Circulation.* 2006;114:82–96.
90. Chiuve SE, Rexrode KM, Spiegelman D, Logroscino G, Manson JE, Rimm EB. Primary prevention of stroke by healthy lifestyle. *Circulation.* 2008; 118:947–954.
91. Centers for Disease Control and Prevention. Preventing Obesity and Chronic Diseases through Good Nutrition and Physical Activity. *US Department of Health and Human Services.* Available at: http://www.healthierus.gov/steps/summit/prevportfolio/PA-HHS.pdf. Accessed September 21, 2009.
92. Pearson TA, Bazzarre TL, Daniels SR, Fair JM, Fortmann SP, Franklin BA, Goldstein LB, Hong Y, Mensah GA, Sallis JF Jr, Smith S Jr, Stone NJ, Taubert KA. American Heart Association guide for improving cardiovascular health at the community level: a statement for public health practitioners, healthcare providers, and health policy makers from the American Heart Association Expert Panel on Population and Prevention Science. *Circulation.* 2003;107:645–651.
93. Matson-Koffman DM, Brownstein JN, Neiner JA, Greaney ML. A site-specific literature review of policy and environmental interventions that promote physical activity and nutrition for cardiovascular health: what works? *Am J Health Promot.* 2005;19:167–193.
94. Seymour JD, Yaroch AL, Serdula M, Blanck HM, Khan LK. Impact of nutrition environmental interventions on point-of-purchase behavior in adults: a review. *Prev Med.* 2004;(suppl 2):S108–S136.
95. Green KL. Issues of control and responsibility in workers' health. *Health Educ Q.* 1988;15:473–486.
96. Sorensen G, Stoddard A, Hammond SK, Hebert JR, Avrunin JS, Ockene JK. Double jeopardy: workplace hazards and behavioral risks for craftspersons and laborers. *Am J Health Promot.* 1996;10:355–363.
97. Sorensen G, Stoddard A, Ockene JK, Hunt MK, Youngstrom R. Worker participation in an integrated health promotion/health protection program: results from the WellWorks project. *Health Educ Q.* 1996;23: 191–203.
98. Harris Interactive Survey. *Worksite Wellness.* Dallas, Tex: American Heart Association; 2007.
99. Schulte PA, Wagner GR, Ostry A, Blanciforti LA, Cutlip RG, Krajnak KM, Luster M, Munson AE, O'Callaghan JP, Parks CG, Simeonova PP, Miller DB. Work, obesity, and occupational safety and health. *Am J Public Health.* 2007;97:428–436.
100. Gabel JR, Whitmore H, Pickreign J, Ferguson CC, Jain A, Shova KC, Scherer H. Obesity and the workplace: current programs and attitudes among employers and employees. *Health Aff (Millwood).* 2009;28: 46–56.
101. Thorpe KE, Florence CS, Howard DH, Joski P. The impact of obesity on rising medical spending. *Health Aff (Millwood).* 2004;Suppl Web Exclusives:W4-480–W4-486.
102. Finkelstein E, Fiebelkorn C, Wang G. The costs of obesity among full-time employees. *Am J Health Promot.* 2005;20:45–51.
103. Katz DL, O'Connell M, Yeh MC, Nawaz H, Njike V, Anderson LM, Cory S, Dietz W; Task Force on Community Preventive Services. Public health strategies for preventing and controlling overweight and obesity in school and worksite settings: a report on recommendations of the Task Force on Community Preventive Services. *MMWR Recomm Rep.* 2005;54: 1–12.
104. American Heart Association Web site. Heart attack, stroke, and cardiac arrest warning signs. Available at: http://www.americanheart.org/presenter.jhtml?identifier=3053. Accessed September 2, 2009.
105. Centers for Disease Control and Prevention Web site. Heart disease. Available at: http://www.cdc.gov/heartdisease/. Accessed September 2, 2009.
106. Centers for Disease Control and Prevention Web site. Stroke. Available at: http://www.cdc.gov/stroke/. Accessed September 2, 2009.
107. Weinstein ND, Rothman AJ, Sutton SR. Stage theories of health behavior: conceptual and methodological issues. *Health Psychol.* 1998; 17:290–299.
108. *Healthy Workforce 2010: An Essential Health Promotion Sourcebook for Employers, Large and Small.* Washington DC; Partnership for Prevention; 2001.
109. Fisher BD, Golaszewski T. Heart check lite: modifications to an established worksite heart health assessment. *Am J Health Promot.* 2008;22: 208–212.
110. Deleted in proof.
111. Story M, Kaphingst KM, Robinson-O'Brien R, Glanz K. Creating healthy food and eating environments: policy and environmental approaches. *Annu Rev Public Health.* 2008;29:253–272.
112. Engbers LH, van Poppel MN, Chin A Paw M, van Mechelen W. The effects of a controlled worksite environmental intervention on determinants of dietary behavior and self-reported fruit, vegetable and fat intake. *BMC Public Health.* 2006;6:253.
113. Pratt CA, Lemon SC, Fernandez ID; Goetzel R, Beresford SA, French SA, Stevens VJ, Vogt TM, Webber LS. Design characteristics of worksite environmental interventions for weight control and obesity prevention. *Obesity (Silver Spring).* 2007;15:2171–2180.
114. French SA. Pricing effects on food choices. *J Nutr.* 2003;133: 841S–843S.
115. Eves FF, Webb OJ, Mutrie N. A workplace intervention to promote stair climbing: greater effects in the overweight. *Obesity (Silver Spring).* 2006;14:2210–2216.
116. Robert Wood Johnson Foundation. Active Living Research. Available at: http://www.activelivingresearch.org. Accessed April 14, 2009.
117. Rosenman KD. Occupational heart disease. In: Rom WN, ed. *Environmental and Occupational Medicine.* 4th ed. Philadelphia, Pa: Lippincott Williams & Wilkins; 2007;733–742.
118. Howard J. Smoking is an occupational hazard. *Am J Ind Med.* 2004;46: 161–169.
119. Bates DV. Health indices of the adverse effects of air pollution: the question of coherence. *Environ Res.* 1992;59:336–349.
120. Dockery DW, Pope CA III, Xu X, Spengler JD, Ware JH, Fay ME, Ferris BG Jr, Speizer FE. An association between air pollution and mortality in six U.S. cities. *N Engl J Med.* 1993;329:1753–1759.
121. Mills NL, Törnqvist H, Gonzalez MC, Vink E, Robinson SD, Söderberg S, Boon NA, Donaldson K, Sandström T, Blomberg A, Newby DE. Ischemic and thrombotic effects of dilute diesel-exhaust inhalation in men with coronary heart disease. *N Engl J Med.* 2007;357:1075–1082.
122. Mills NL, Törnqvist H, Robinson SD, Gonzalez MC, Söderberg S, Sandström T, Blomberg A, Newby DE, Donaldson K. Air pollution and atherothrombosis. *Inhal Toxicol.* 2007;19(suppl 1):81–89.
123. Knutsson A. Health disorders of shift workers. *Occup Med (Lond).* 2003;53:103–108.
124. Kales SN, Soteriades ES, Christophi CA, Christiani DC. Emergency duties and deaths from heart disease among firefighters in the United States. *N Engl J Med.* 2007;356:1207–1215.
125. Health Insurance Portability and Accountability Act of 1996. Pub L No. 104-191, 110 Stat 1945–1946. August 21, 1996.
126. Chapman LS. Regulatory and tax issues for worksite wellness programs. *Am J Health Promot.* 2007;21(suppl):1–11.
127. *Wellness Programs: Selected Legal Issues.* Washington, DC: Congressional Research Service; July 22, 2009.
128. Serxner S, Anderson DR, Gold D. Building program participation: strategies for recruitment and retention in worksite health promotion programs. *Am J Health Promot.* 2004;18:1–6, iii.
129. Chapman L. Employee participation in workplace health promotion and wellness programs: how important are incentives, and which work best? *N C Med J.* 2006;67:431–432.
130. Volpp KG. Paying people to lose weight and stop smoking. *LDI Issue Brief.* 2009;14:1–4.
131. Volpp KG, Troxel AB, Pauly MV, Glick HA, Puig A, Asch DA, Galvin R, Zhu J, Wan F, DeGuzman J, Corbett E, Weiner J, Audrain-McGovern J. A randomized, controlled trial of financial incentives for smoking cessation. *N Engl J Med.* 2009;360:699–709.
132. Volpp KG, Pauly MV, Loewenstein G, Bangsberg D. P4P4P: an agenda for research on pay-for-performance for patients. *Health Aff (Millwood).* 2009;28:206–214.

AQ: 27

133. Finkelstein EA, Linnan LA, Tate DF, Birken BE. A pilot study testing the effect of different levels of financial incentives on weight loss among overweight employees. *J Occup Environ Med.* 2007;49:981–989.
134. Volpp KG, John LK, Troxel AB, Norton L, Fassbender J, Loewenstein G. Financial incentive-based approaches for weight loss: a randomized trial. *JAMA.* 2008;300:2631–2637.
135. Hey K, Perera R. Competitions and incentives for smoking cessation. *Cochrane Database Syst Rev.* 2005 Apr 18:CD004307.
136. Loewenstein G, Brennan T, Volpp KG. Asymmetric paternalism to improve health behaviors. *JAMA.* 2007;298:2415–2417.
137. World Health Organization Web site. Commission on Social Determinants of Health: final report. Available at: http://www.who.int/social_determinants/thecommission/finalreport/en/index.html. Accessed September 2, 2009.
138. Santana V, Amable M, Ballell P, Benach J, Castedo A, Chung H, Demiral Y, Lippel K, Muntaner C, Quinlan M, Ramos J, Santana V, Sarkar A, Solar O. *Employment Conditions and Health Inequalities: Final Report to the WHO Commission on Social Determinants of Health.* Geneva, Switzerland: World Health Organization, Employment Conditions Knowledge Network; 2007.
139. LaMontagne A, Vallance D, Keegel T. Occupational skill level and hazardous exposures among working Victorians. *Aust J Labour Econ.* 2008;11:47–70.
140. Moure-Eraso R, Flum M, Lahiri S, Tilly C, Massawe E. A review of employment conditions as social determinants of health part II: the workplace. *New Solut.* 2006;16:429–448.
141. Kanjilal S, Gregg EW, Cheng YJ, Zhang P, Nelson DE, Mensah G, Beckles GL. Socioeconomic status and trends in disparities in 4 major risk factors for cardiovascular disease among US adults, 1971–2002. *Arch Intern Med.* 2006;166:2348–2355.
142. Lewis RJ, Huebner WW, Yarborough CM III. Characteristics of participants and nonparticipants in worksite health promotion. *Am J Health Promot.* 1996;11:99–106.
143. Giovino GA, Pederson LL, Trosclair A. The prevalence of selected cigarette smoking behaviors by occupational class in the United States. Paper presented at: Work, Smoking and Health: A NIOSH Scientific Workshop; Washington, DC; June 15–16, 2000.
144. Heaney CA, Inglish P. Are employees who are at risk for cardiovascular disease joining worksite fitness centers? *J Occup Environ Med.* 1995; 37:718–724.
145. Maes S, Verhoeven C, Kittel F, Scholten H. Effects of a Dutch work-site wellness-health program: the Brabantia Project. *Am J Public Health.* 1998;88:1037–1041.
146. Williams AE, Vogt TM, Stevens VJ, Albright CA, Nigg CR, Meenan RT, Finucane ML. Work, Weight, and Wellness: the 3W Program: a worksite obesity prevention and intervention trial. *Obesity (Silver Spring).* 2007;15(suppl 1):16S–26S.
147. Bachar JJ, Lefler LJ, Reed L, McCoy T, Bailey R, Bell R. Cherokee Choices: a diabetes prevention program for American Indians. *Prev Chronic Dis.* 2006;3:A103.
148. Angard N, Chez RA, Young C. Personal health among midlife women hospital employees. *J Womens Health.* 1998;7:1289–1293.
149. Employment status of women by marital status and presence and age of children:1970 to 2002. In: *The 2007 Statistical Abstract: The National Data Book.* Washington, DC: US Census Bureau; 2007. Table 584. AQ: 29
150. Sloan Work and Family Network Research Network. *Policy Leadership Series: An Introduction to Work-Family Issues for State Legislators.* 2005. Available at: http://wfnetwork.bc.edu/pdfs/policy_makers.pdf. Accessed August 4, 2009.
151. Thompson SE, Smith BA, Bybee RF. Factors influencing participation in worksite wellness programs among minority and underserved populations. *Fam Community Health.* 2005;28:267–273.
152. Frohlich KL, Potvin L. Transcending the known in public health practice: the inequality paradox: the population approach and vulnerable populations. *Am J Public Health.* 2008;98:216–221.
153. Ozminkowski RJ, Goetzel RZ. Getting closer to the truth: overcoming research challenges when estimating the financial impact of worksite health promotion programs. *Am J Health Promot.* 2001;15:289–295.
154. Healthier Worksite Initiative. Centers for Disease Control and Prevention Web site. Available at: http://www.cdc.gov/nccdphp/dnpa/hwi/index.htm. Accessed August 19, 2009.
155. Kruger J, Yore MM, Bauer DR, Kohl HW. Selected barriers and incentives for worksite health promotion services and policies. *Am J Health Promot.* 2007;21:439–447.
156. Muse L. Harris SG, Giles WF, Feild HS. Work-life benefits and positive organizational behavior: is there a connection? *J Organ Behav.* 2008; 29:171–192.
157. Institute of Medicine. *Integrating Employee Health: A Model Program for NASA.* Washington, DC: National Academies Press; 2005.
158. National Institute for Occupational Safety and Health. Essential Elements of Effective Workplace Programs and Policies for Improving Worker Health and Wellbeing. Washington, DC: National Institute for Occupational Safety and Health; 2008.

KEY WORDS: AHA Scientific Statments ■ wellness programs ■ risk factors ■ prevention

OFFICE OF HAWAIIAN AFFAIRS
Legislative Testimony

SCR94
REQUESTING THE DEPARTMENT OF HEALTH AND THE DEPARTMENT OF LABOR AND INDUSTRIAL RELATIONS TO CONDUCT A STUDY TO PROMOTE WORKPLACE WELLNESS PROGRAMS.
Senate Committee on Health and Committee on Judiciary and Labor

March 27, 2012 1:46 p.m. Room 229

The Office of Hawaiian Affairs (OHA) **SUPPORTS** SCR94, which requests that a study be conducted by the State Departments of Health and Labor & Industrial Relations on the promotion of workplace wellness programs.

OHA's strategic priorities include Mauli Ola (Health), which represents OHA's commitment to ensure the improvement of Native Hawaiians' quality of life and reduction in the onset of chronic diseases. Obesity is a common condition of chronic diseases, and data suggests that Native Hawaiians and other Pacific Islanders are more likely to become obese and develop obesity-attributable health complications. As such, OHA's Health Advocacy Initiative Core & Advisory Team is focusing its efforts on decreasing Native Hawaiian obesity rates in relation to Hawai'i's general population. Consistent with this effort, OHA is interested in designing healthy worksites that support workplace wellness for employees and possibly embed positive attitudes and values in the larger beneficiary population.

Just a few years ago, OHA partnered with Papa Ola Lokahi - 'Imi Hale and the National Cancer Institute to assist in designing worksites that would have positive effects at organizations working with Native Hawaiians. Our work is enormous, but we are optimistic. We support a comprehensive look at impacts on the labor industry and longitudinal health impacts of your proposed study. We offer to share what we've learned from our small study for the overall wellness of Hawaii nei.

Workplace wellness initiatives have great potential to reorganize us and focus us on our most valuable commodity – our health. Therefore, OHA urges the committee to PASS SCR94. Mahalo for the opportunity to testify on this important measure.