



The Employer as Health Coach

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A couple of years ago, Jennifer Gardiner and Pamela Matovich, who work in the Information Systems Division at the Minneapolis headquarters of General Mills, were at risk for serious medical

problems. The women, both in their 30s and mothers of young children, were obese and had diabetes. Gardiner weighed over 200 lb, smoked heavily, and avoided physical activity. Matovich weighed 230 lb, took insulin several times a day, had had episodes of severe hypoglycemia, and could not lift her babies because of pain from herniated lumbar disks. Both wanted to feel better and to reduce their risk of future illness. Their employer had a stake in their health, too: studies correlating medical claims data with individual risk factors show that obese, physically inactive employees with diabetes are likely to get sicker and rack up high medical bills.

Through determination and company-sponsored health-promotion programs, both women have transformed themselves — doing so largely at work. They attend Weight Watchers meetings at the office and exercise at the company's well-equipped gym, where Matovich has been treated by a physical therapist and Gardiner works with a personal trainer. They eat lunch at a corporate cafeteria that offers many nutritious, low-calorie choices, including a subsidized salad bar. Gardiner was motivated to quit smoking in part by the promise of a substantial reduction in her health insurance premium, and coworkers helped her get through the difficult ear-

ly weeks of tobacco withdrawal. She has lost 27 lb to date and has run two half-marathons during the past year; Matovich has dropped 72 lb so far. Both have been able to cease taking diabetes medications. They told me that without the health services available at their workplace, they would not have had the time and opportunity to make these changes. Gardiner says not only does she feel better, but “I think they probably get more out of me, because I’m a healthier person.”

With 28,500 employees worldwide and more than 18,000 in North America, General Mills is one of a growing number of big U.S. companies that are tackling high medical costs by promoting wellness in their workforce. Corporate health executives, once mainly concerned with workplace safety and health insurance benefits, have begun tracking em-

employees' modifiable risk factors and persuading workers to change unhealthy habits. Companies have adopted various strategies — promoting annual health risk assessments, or HRAs (questionnaires and screening tests to identify risk factors); offering incentives for participation in risk-reduction programs; providing free preventive services at work; covering most or all of the cost of medications for certain chronic diseases; offering special programs for stressed-out or depressed workers; and opening on-site medical clinics, gyms, and pharmacies.

The trend is driven by more than two decades of occupational health research indicating that health care for employees with multiple risk factors tends to cost more than care for other workers and that getting workers to adopt or maintain healthy behaviors can save money, reduce absenteeism, and increase productivity. Reviews of the literature on workplace interventions at individual companies have concluded that some companies have both improved employee health and reduced costs, at least in the short to medium term.¹⁻³ The Task Force on Community Preventive Services of the Centers for Disease Control and Prevention (CDC) recently stated, in a draft recommendation, that the use of HRAs with individualized feedback and health education shows “strong evidence of effectiveness in improving one or more health behaviors or conditions in populations of workers” (see box).

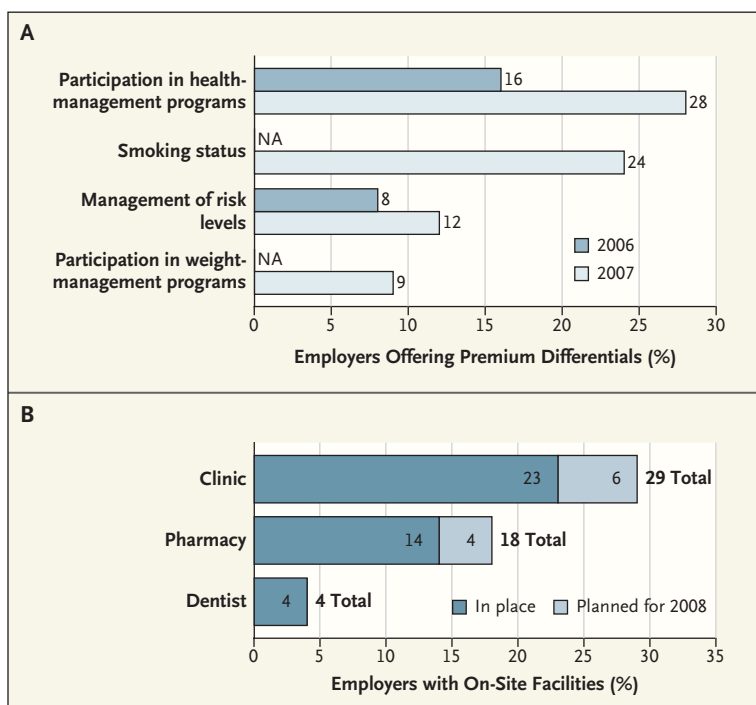
Large employers — faced with an aging workforce and escalating health care expenses — are desperate to curtail rising costs.

Summary of Draft Recommendations of the CDC Task Force on Community Preventive Services.	
The task force recommends the use of assessments of health risks with feedback when combined with health education programs, with or without additional interventions, on the basis of strong evidence of effectiveness in improving one or more health behaviors or conditions in populations of workers.	
Such programs show strong or sufficient evidence of effectiveness for	
	Reducing tobacco use.
	Reducing at-risk alcohol use.
	Improving measurements of physical activity.
	Decreasing nonuse of seat belts.
	Reducing dietary intake of fat.
	Reducing overall (median) measurements of blood pressure among participants and reducing the proportion of participants at risk because of elevated blood pressure.
	Reducing overall (median) measurements of total cholesterol and reducing the proportion of participants with elevated cholesterol measurements.
	Improving the summary health risk estimates of at-risk participants and reducing the proportion of participants with high risk estimates.
	Reducing the number of days lost from work because of illness or disability.
	Improving a range of measures of use of health care services.
The task force found insufficient evidence to determine the effectiveness of such programs in	
	Increasing dietary intake of fruits and vegetables.
	Altering body composition (body-mass index and percentage of body fat).
	Improving fitness.

“Doing nothing is not an option,” said Nico Pronk, executive director of the Health Behavior Group at Minnesota-based HealthPartners, which designs, manages, and studies health-promotion programs. “Companies aren’t going to wait 5 years for randomized, controlled trials — they would go out of business.” A 2007 survey of 573 U.S. employers with a total of 11 million employees found that 72% were offering HRAs, 42% had obesity-reduction programs, and 28% offered reduced health insurance premiums for participants in health-management programs. Additional employers plan to institute such programs in 2008 (see graph).⁴ In effect, many companies are

doing what public health experts have long advocated: trying to shift health care spending away from treatment and toward prevention.

Experts say that to be effective, health-promotion programs must be comprehensive, tailored to the employee population, marketed creatively, and given the emphatic support of top management. In addition, federal and state laws require the protection of worker privacy — for example, an organization separate from the employer must collect and store personal health data, and managers may use only de-identified, aggregated data to assess risk factors, choose health interventions, and monitor their effect. Incentives must also



Employers' Health-Promotion Strategies.

Increasing numbers of U.S. employers are offering reductions in health insurance premiums to workers who take steps to reduce their risk of illness (Panel A), and many are establishing work-site clinics and pharmacies (Panel B), according to a 2007 survey of 573 large employers.⁴ NA denotes not available.

be accessible to all — for example, all nonsmokers must be eligible for rewards offered to employees who quit smoking.

The possibility that employers could use employee health information to discriminate worries Patricia Werhane, a professor of business ethics at the Darden School of Business, University of Virginia. “Anyone with any talent can interpret the data and find out who the people at risk are,” she said. “We should reward people who lose weight or stop smoking,” she adds, but the failure to make such changes shouldn’t affect hiring or firing decisions. A few employers have instituted smoking restrictions — the Cleveland Clinic, for instance, administers a cotinine test to all job candi-

dates to detect tobacco use and won’t hire anyone who tests positive — and some require that workers meet physical-fitness standards or impose financial penalties on overweight employees. Last year, Scotts Miracle-Gro, an Ohio-based lawn-care firm, was sued by a former employee alleging that before becoming eligible for health care benefits (including help with quitting smoking), he was fired for being a smoker. In 2005, executives of Wal-Mart, the country’s largest employer, sent a memo to the company’s board about reducing health costs; among other proposals, it reportedly suggested that all jobs include some tasks requiring physical activity to discourage unhealthy people from applying.⁵

However, Pronk says that most companies use carrots rather than sticks and that benefits such as HRAs, fitness programs, and work-site clinics are popular among employees. Making an effort to change, rather than attaining results, should be sufficient to qualify an employee for rewards, Pronk added. Requiring workers to achieve a certain outcome “is the wrong message,” he said. “We’re talking about health. You can’t force people into health.” Health-promotion programs work best when accompanied by other corporate policies that send the message that managers care about workers’ well-being, said Glorian Sorensen, a professor of health and social behavior at the Harvard School of Public Health. “Workers may be viewing their health risks in a very holistic way,” she said. “Among blue-collar workers, smoking-cessation rates are increased when we incorporate changes at the work site to reduce exposures [to hazardous substances] on the job.”

Employees at General Mills assess their risk factors and compute their “Health Number” by answering seven behavior-related questions — concerning exercise, diet, alcohol intake, tobacco use, stress management and mood, seat-belt use, and cancer screening — plus three questions concerning body-mass index, blood pressure, and blood lipid levels. Employees with a Health Number indicating intermediate risk are advised to consider lifestyle changes, and those with high risk are urged to initiate such changes, either on their own or with the company’s help. (Completing an HRA is voluntary, but employees are offered incentives to par-

ticipate; most companies aim for a participation rate of 80% or higher, with about half of participants typically going on to use a health-promotion program, according to Pronk.) Timothy Crimmins, an emergency physician and the General Mills vice president of health, safety, and environment, said the company uses aggregated data to set health priorities for groups of employees: a group of executives who have multiple medical risk factors but report little stress, for example, require services that are different from those required by workers in a division that is being downsized, who may have high levels of stress and depression. "People can only change one or two things at a time, and you have to really focus resources around some key goals," Crimmins said.

After several years of trying to reduce cardiac risk company-wide by promoting the appropriate use of aspirin, statins, blood pressure control, and smoking-cessation programs, said Crimmins, "we're seeing our heart disease claims start to dip down." Meanwhile, in response to rising rates of obesity and musculoskeletal disorders, the firm has been rolling out diet and fitness programs, ranging from weight-loss campaigns and free appointments with a nutritionist to ballroom-dancing sessions, running races, yoga classes, and dodgeball tournaments. With almost 5000 employees in the Minneapolis area, "we're a small town here," he said. "You've got to have a critical mass of people to do this."

Most General Mills employees, however, are dispersed among other locations, where local managers must implement much of

the company's health-promotion mission. At a plant in Cedar Rapids, Iowa, safety manager Patrick Killean worked with an employee committee last year to design a weight-loss contest based on a



Three of the Four Members of the Second-Place Weight-Loss Team at General Mills, Cedar Rapids, IA.

popular television show. Of the plant's 700 workers, 188 competed on 4-person teams that weighed in weekly on the factory's giant product scale. The members of the team that lost the highest percentage of its starting weight over 3 months each won a \$500 gift certificate from a sporting-goods store or fitness center.

The first- and second-place teams lost 269 and 244 lb, respectively, representing 25.45% and 25.42% of their starting weight. (The average lost by all teams was 6.4%.) When the contest began, "I was the heaviest I had ever been," said Brian Fetzter, a member of the second-place team, called Larry's Kids. He changed his eating habits and "probably dropped 40 lb just on diet alone." Teammate Kevin Redig ran on a

treadmill and was able to build up from a quarter-mile to about eight miles at a stretch. Despite Killean's efforts to keep team weights secret and to provide sound nutritional advice, competition became so fierce that one member of the winning team, Flab-U-Less, resorted to a regimen of lemon juice, water, maple syrup, and liquid cayenne pepper during the final 10 days. Most participants I interviewed said that competitiveness and support from teammates had helped them to adopt healthier habits and that they had kept much of the weight off.

Although obesity is increasingly being targeted by corporate programs, there is little scientific evidence regarding which work-site strategies are effective, particularly in producing lasting weight loss. So the National Heart, Lung, and Blood Institute is funding seven randomized, controlled trials of work-site weight-control interventions, involving more than 23,000 workers. The trials are scheduled to end in mid-2008. The CDC is also funding scientific evaluations of the effectiveness of various work-site health-promotion interventions.

Besides seeking to improve risk profiles, some companies have gone to extraordinary lengths to increase access to preventive care and help employees manage chronic illnesses. Health benefits managers at Connecticut-based Pitney Bowes, which has 24,000 employees in the United States and 35,000 worldwide, studied workers' medical claims and disability records and identified their highest-cost diseases: diabetes, heart disease, musculoskeletal disorders, asthma, and depression. They also found that two types of employees ul-

timately had the highest medical costs: those who normally filed no medical claims and those with chronic diseases who filled monthly prescriptions for maintenance medications fewer than 10 times per year. To encourage the first group to seek primary care, managers decided to charge employees nothing for most preventive services, no more than \$20 for the most expensive ones, and \$20 for visits to primary care providers. To encourage workers with chronic diseases to take medication, the company reduced copayments on all drugs for hypertension, asthma, and diabetes to 10%. Although the company's spending on these drugs increased, its overall costs for the three diseases dropped, and it ex-

panded the policy to cover several other conditions. Today, the firm says its health costs per employee are roughly 20% below those of comparable employers.

Of course, most Americans work for much smaller employers, but Michael Critelli, chief executive officer at Pitney Bowes, believes such programs make economic sense even for those organizations, because having one or two workers with high-cost illnesses can be catastrophic for a small business. "Our philosophy was [that] people get sick for the most part because of behaviors that are preventable and changeable," Critelli said. "Taking care of your health is free. If you do it right up front, it's by far

the most cost-effective way to deliver health."

Dr. Okie is a contributing editor of the *Journal*.

1. Aldana SG. Financial impact of health promotion programs: a comprehensive review of the literature. *Am J Health Promot* 2001;15:296-320.
2. Pelletier KR. A review and analysis of the clinical- and cost-effectiveness studies of comprehensive health promotion and disease management programs at the worksite: 1998-2000 update. *Am J Health Promot* 2001;16:107-16.
3. Ozminkowski RJ, Ling D, Goetzel RZ, et al. Long-term impact of Johnson & Johnson's Health & Wellness Program on health care utilization and expenditures. *J Occup Environ Med* 2002;44:21-9.
4. 12th Annual National Business Group on Health/Watson Wyatt survey report. No. 2007-US-0031. Washington, DC: Watson Wyatt Worldwide, 2007.
5. Abelson R. Wal-Mart's health care struggle is corporate America's too. *New York Times*. October 29, 2005.

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Pluripotency Redux — Advances in Stem-Cell Research

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A cell's ability to give rise to all the cell types of the embryo and the adult organism is called pluripotency. Pluripotent cells are found within mammalian blastocysts and persist briefly in embryos after implantation. Embryonic stem cells, derived from the inner cell mass of blastocysts, are a renewable source of pluripotent stem cells that are proving valuable in basic science studies and may eventually become a source of cells for safe, effective cell-based therapies. Much embryonic stem-cell research has focused on determining the molecular signature of pluripotency, and a picture is emerging of a complex interaction among transcription factor net-

works, signaling pathways, and epigenetic processes involving modifications in the structure of DNA, histones, and chromatin.

Deciphering the molecular basis of pluripotency will facilitate the development of procedures for efficiently deriving patient-specific stem cells. In somatic-cell nuclear transfer, which has held the greatest promise for generating such cell lines, the nucleus of a somatic cell is introduced into an enucleated oocyte or mitotic zygote and is "reprogrammed" to an embryonic state, resulting in the formation of a blastocyst from which embryonic stem cells can be derived. Although this procedure has been demonstrated in animals, it

has yet to be accomplished with human oocytes or zygotes. An alternative approach to reprogramming a somatic cell is to fuse it with an embryonic stem cell, but the resulting hybrid pluripotent cell is tetraploid and of limited practical application.

Against this background, a study published last year by Takahashi and Yamanaka¹ surprised and excited stem-cell biologists. Using a novel strategy, the investigators showed that fibroblasts derived from tissues of adult and fetal mice could be induced to become embryonic-stem-cell-like cells with the introduction of four genes expressing transcription factors. Twenty-four genes