

**A Template for Worksite Health Promotion
Based on a
Three-Year Case Study
of a Large Corporation and Union**

By

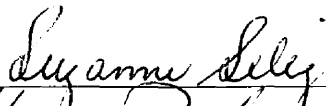
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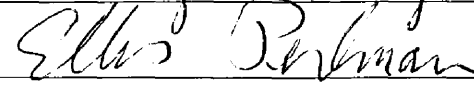


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Abstract

The purpose of this study is to describe a successful model for the implementation of a health promotion program for a company's entire workforce. The intent is to provide a template based on this writers' experience of implementing a health promotion program at a large manufacturing company, in conjunction with the unions representing the employees. This model can be extrapolated to any organization and can be monitored with measurable results. This study will review the longitudinal data gathered from this joint corporate and union program. This program is the largest, most comprehensive of its kind and has proven successful in reducing health risks among both blue-collar (hourly) employees and white-collar (salaried) employees. It has also shown the same success among retirees from both groups. The study will also include a review of current literature on health promotion programs that adds some comparison to this program. This study suggests that promoting wellness in a formal program that addresses health risk reduction can be a factor in increasing productivity and decreasing absenteeism, both of which are positive influences on the bottom line of any organization.

Introduction

Many public and private organizations acknowledge the importance of the incorporation of safety measures for the prevention of injury and illness into their Health and Safety programs, but few have focused as heavily on the health side of their business. OSHA has mandated certain codes of safety at the worksite with strong financial sanctions. This is not the case for the promotion of health, other than for factors related to exposure

control. However, many companies are now recognizing the benefit that can be gained by placing an emphasis on the overall wellness of their employees through health promotion programs. “ In general, participation in health promotion efforts is consistent with work sites’ long-term goals of survival, profitability, and productivity” (O’Donnell & Ainsworth, 1984).

The dramatic rise in the cost of health care is widely acknowledged, as well as its affect on the future bottom line of every organization and company. “From 1960 to 1997 the percentage of GDP spent on health care in the United States increased 8.3 percentage points” (Anderson & Poullier, 1999).

While there are many different points of view as to the causes for these rising health care costs, supply and demand are recognized contributors. Many believe that a more educated health care consumer could impact this rising cost by decreasing the demand side of the equation, through health promotion programs.

There is much written to support the business case for health promotion and the need for tools for education and for the promotion of awareness on issues related to personal health.

“As early as 1952 the President’s Commission on Health Needs of the Nation noted that such individual responsibility for health could be fully effective only if society ensures access to necessary education and professional services” (Breslow, 1999).

The World Health Organization recognized the importance of health promotion in its Ottawa Charter for Health Promotion, by describing health promotion as “the process of enabling people to increase control over, and to improve their health” and defined health as “a resource for everyday life....a positive concept emphasizing social and personal resources as well as physical capabilities” (Breslow, 1999). If we are to address these “resources for everyday life”, it seems appropriate that they be addressed at the workplace, since so many hours of our day are spent there.

Physical activity and fitness is an area of priority for the U.S. Public Health Service and its' *Healthy People 2000* Task Force. Overweight prevalence has increased substantially among adolescents and adults and this risk factor alone is a major contributor to many health risks and related illnesses such as diabetes and heart disease.

National objectives, such as *Healthy People 2000*, have set risk reduction goals, which can be related to the work setting. Physical activity and fitness, as well as Clinical Preventive services have been included in goals for *Healthy People 2000*. It refers to clinical preventive services such as immunizations, screening for early detection of disease or risk factors, and patient counseling.

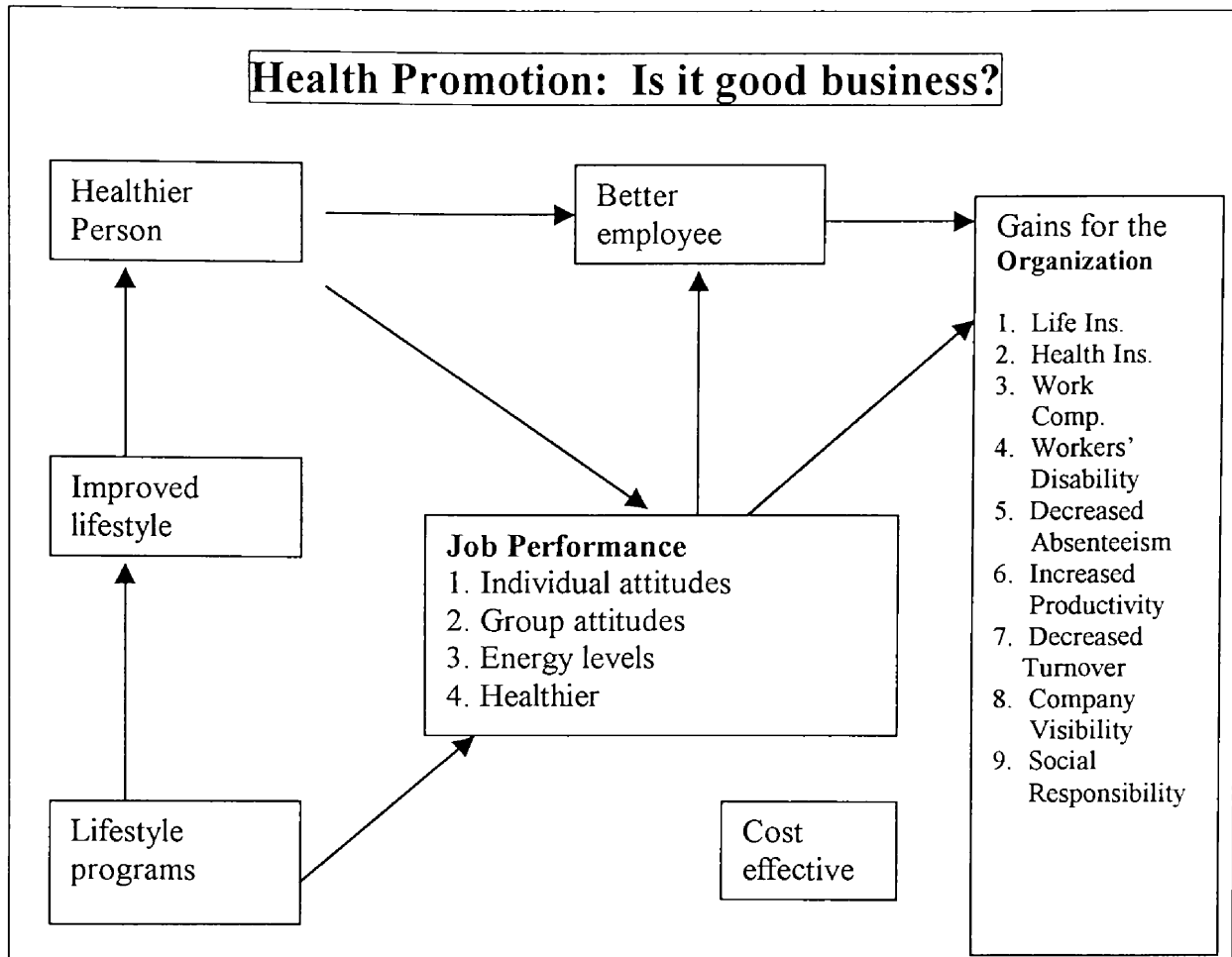
According to the U.S. Department of Health and Human Services, coronary heart disease is the leading cause of mortality in the United States each year. Educating employees in effective ways to reduce risk factors for chronic heart disease could result in a substantial savings in health care costs as well as improvement in overall well-being.

The worksite setting offers a huge potential for health promotion efforts since a high proportion (85%) of the U.S. population is employed. As part of an effort to support worksite programs, the New Hampshire State Department conducted a statewide survey of worksites from March through July 1992 to identify health promotion activities. A total of 304 (61%) of the eligible worksites responded; 150 (49%) were participants in a New Hampshire Health Forum to address worksite health promotion. Manufacturing firms represented 37% of the responses and 25% were service companies, with 17% health-care organizations. The most frequently offered activities were fitness and exercise (21.4%), smoking cessation (21.4%), weight control (21.0%), cholesterol control (19.9%), and blood pressure control (19.2%). Following this effort, the Division of Public Health Services published “Work Healthy New Hampshire: A Guide to Worksite Health and Safety programs”, that listed approximately 200 local businesses that provided health services for worksites. It became available from the CDC in 1993 and has been used as an operations manual for businesses establishing worksite programs.

Substantial evidence exists that promoting health at the worksite has the potential for doing more than just affecting health. It “enhances employees’ sense of personal responsibility, work/family balance and ability to take action” (Saphire, 1995). Most professionals in the field of Wellness share the opinion that when employees feel good, they work better and miss less work, and that well-being transcends into many aspects of life all with the end result of lower cost to the company. “The cost of an unhealthy employee can include the following: salary to the absent employee, medical expenses,

workers' compensation awards, distress to other employees during absence, cost of temporary replacement and administrative costs" (Sattler, 1995).

The model following, developed by D. W. Edington (1986), reflects the theory that health promotion is good business, and was a basis for gaining management support for the initiative described in this case study. The model attempts to show that healthier employees make better employees. This clearly fits one of the objectives of the Corporation; which is to make gains in productivity and improve employee performance.



Optimal Health, January/February, 1986, D.W. Edington, Ph.D.

“People do not seek health care solely because they are sick” (Lynch, 1996). Often it is due to unhappiness or dissatisfaction with their work or home life, or just personal disruptions that make them seek out medical services. Worksite health promotion programs try to affect this demand, by offering the tools for people to make more informed decisions about seeking care. By promoting less expensive and more appropriate avenues of care, such as 24-hour Nurse line numbers and self-care books, they attempt to reduce the use of emergency departments for non-emergent illnesses.

As Lynch and Edington propose in their article, "Predicting the Demand for Healthcare", other factors, such as their level of social support and their own attitudes, influence people's decisions to seek medical care. Educating people about their own health can change attitudes to reflect a more positive approach to their health. One tool that can be offered to add support is telephonic counseling. In, "Toward Appropriate Use of Medical Care", Vickery (1996) writes that demand management through telephonic systems has been shown to be very effective. He reports "HMO members who received self-care books made 17% fewer physician visits than members who did not receive the book." He found that "four years after an arthritis self-help course was initiated, participants were making 40% fewer doctor visits" for their arthritis symptoms.

A variety of case studies done in the past have shown that work environments that encourage and support healthy lifestyle choices see long-term benefits. These results not only provide long lasting benefits to the employee, but to the company as well, such as:

- Greater control over health care costs
- Decrease in absenteeism rates
- Healthier retirees who live longer and who have shorter illnesses
- Greater employee productivity
- Higher morale/Higher company enthusiasm
- Fewer unnecessary emergency room visits

The following are synopses of case studies, from several companies that describe health promotion activities and their reported results. (Mayo Clinic Health Quest, Special Report Series, 1996)

Travelers Insurance Company

The Travelers Insurance Company has a health promotion program that has been monitored in a long-term study. The program includes a health risk analysis, self-care book, monthly newsletter, videos, quarterly campaigns and other health classes and screening. It was projected that, after four years; the project would produce a 19 percent reduction in absenteeism, and cumulative savings of \$146 million or \$270 per employee per year from 1986 through 2000. The direct benefits of this program met its projected return of \$3.40 for each dollar invested over a 15-year period.

DuPont

At DuPont, the emphasis was placed on measuring the decrease in disability days. Approximately 46,000 blue-collar workers were offered health promotion interventions at selected DuPont sites. Results of these interventions were a reduction in disability days by 14 percent to yield a significant cost savings over two years. As part of the activity, employees completed a voluntary health risk survey and could attend a variety of classes on health topics such as stress management and weight control. All received a bimonthly health magazine. The direct benefits reported from this study was a \$2.05 return in lower disability costs for every dollar invested in the program.

Reynolds Electric and Engineering

A health promotion program was presented over a two-year period for the employees of Reynolds Electric and Engineering based in Las Vegas. The main components of their program were education, screening, intervention and maintenance, and follow-up. Their participation rates ranged from 51 percent, in some areas of the company, to an impressive 80 percent in other areas of their diverse population. The direct benefits of this program were that participants reduced their total cholesterol levels and weight significantly and moderately lowered over-all blood pressure levels, and registered a 21 percent decline in lifestyle related claims costs compared to non-participants. The company reported a savings of \$127.89 per participant for a cost-benefit ratio of \$1.68 for every dollar invested.

Steelcase Corporation*

The Steelcase approach attempted to build a healthy culture where the employees felt that their personal needs were of interest to the company. The design of their study used the health risk appraisal as the basis for data collection and claims data.

The employee sample in this study was 10,446 employees. Only those who were in the indemnity health plans were chosen so access to the individual claim forms were available. Personnel tapes were used to obtain the demographic information. Health related measures were collected voluntarily through the use of the health risk appraisal system. The employer paid for the health risk appraisal, as well as time off the job for the screening process. The University of Michigan Health Management Research Center

tracked low-risk and high-risk employees and measured their health care claims costs prior to the beginning of the program from 1984 through 1994.

It was found that the employees at high-risk incurred higher health care costs, and when employees changed from high-risk to low-risk, their health care claims also changed from high-cost to low-cost. “Our Steelcase data shows that employees who were high-risk in 1985 but had shifted to low-risk by 1988 had much lower medical claims from 1988 through 1990,” Edington said. A change from high-risk to low-risk means that a decrease in the number of risk factors associated with causing illness; e.g., high blood pressure, smoking, sedentary lifestyle, etc. Data for this study were collected over a three-year period. An unanticipated finding was that some employees moved from the low-risk category to high-risk. The message here was the need for health planners to provide health promotion activities for low-risk employees to maintain their low-risk/ low-cost status. In other words, if programs are only aimed at the high-risk group, a migration of individuals with low risks into a higher risk category can occur.

*The results of the Steelcase study were used as a basis for benchmarking the initiative described in this thesis.

Johnson & Johnson

Studies done by the University of Michigan and Johnson & Johnson have shown the considerable savings related to certain risks. For instance, they have indicated in their research that for every employee who quits smoking a savings of \$1,100/year can be realized. An employee who is sedentary and becomes active can save approximately \$269 per year. This sedentary lifestyle is probably the most expensive of all since it is related to so many other modifiable risk factors.

If only physical activity alone could be improved, there could be a savings of \$177 a year for every employee who goes from obesity to a healthy weight. There also could be savings of almost \$1,200 a year for employees who reduce their cholesterol levels from 240 milligrams to 190 milligrams, according to the University of Michigan and Johnson & Johnson studies. Similar studies show that for every dollar spent on a preventive health program, a company can save as much as \$6 in insurance costs.

NASA

A NASA study reported a 12.5% increase in productivity following the implementation of an employee exercise program. Those who exercised regularly worked at full efficiency for the entire day, while those who did not participate in the exercise program lost 50% efficiency at the end of their workday. Exercise participants also showed increased concentration ability and a better ability to make decisions. Job performance was strongly correlated to exercise adherence in this study of 3,231 white-collar workers.

When surveyed, 80% believed that the exercise helped to relieve work-related tension, improve co-worker relations, and enhanced their concentration.

Similar results are reported for many other companies.

- Bank of America reports a saving of approximately \$4,298 per person per year from a program on health promotion directed to retirees. The Minneapolis/St. Paul Metropolitan Area conducted a weight loss program over a 2-year period and produced an average weight loss of 4.8 pounds and a smoking quit rate of 43%.
- Blue Shield of California reports that a low-cost, mail-delivered health promotion program for California's active and retired public employees saved \$8 million in claims costs over 12 months for 54, 902 participants.
- Lower absenteeism has also been associated with health promotion programs. A 2-year study at Mesa Petroleum evaluated the effect of an exercise-based program on absenteeism. In the first year \$156 per employee were saved; in the second year, \$303 were saved.

The focus for all of these programs is on disease prevention and health promotion interventions to help reduce employee's health risk factors to benefit both the employee and the employer. The U.S Public Health Service recently issued a report titled "*Physical Activity and Health: A Report of the Surgeon General*" (1996) which provides a

comprehensive review of the available scientific evidence about the relationship between physical activity and an individual's health status. The report shows that over 60% of Americans are not regularly active and 25 % are not active at all. There is very strong evidence linking physical activity with improved health and a better quality of life. Ways in which these affect health are the reduction in the risk of dying from coronary heart disease, reduction in the risk of developing diabetes, hypertension and colon cancer, in helping to control weight, and enhancing mental health by reducing depression and anxiety.

These studies also demonstrate the dramatic growth in health promotion programs in the United States and the variety of activities that are being made available to employees. It is estimated that 85% of worksites with 50 or more employees now offer at least one health promotion program. These range from nutrition education and cancer screening, to aerobic classes and stress management. Most of the studies have focused on the relationship of worksite activities and cost-effectiveness and impact on utilization of health benefits.

More and more companies are providing health promotion activities to their employees for the potential savings in lost work time, as well as the reduction in utilization of health care services. The increasing cost of providing employee medical care has eroded profits in all economic sectors. Consistently, evidence now exists which relates the level of implementation of worksite health promotion programs to the level of utilization of

company-funded health care services. This supports the case for increasing health promotion efforts in all levels of business and within the public sector.

Development of Program

In 1995, the corporation, of which the author of this thesis was employed, and its' union initiated a Task Force to address the need for improvement of employee health, the rising cost of health care, and to study the feasibility of implementing a health promotion program. In order to involve expert opinion, The Task Force was made up of professionals in the field of Health Promotion and Wellness. Several members of the Task Force were active members of the National organization "The Association for Worksite Health Promotion", as well as, physicians, nurses and leaders from both the corporation and union.

A description of this initiative will begin with an examination of the following questions:

- What are the objectives?
- Who is the audience and what are the barriers?
- How will the program be delivered and communicated?
- What is to be measured and how?

The program objectives were health education and risk identification/reduction. The Task Force wanted to offer as many tools as possible to promote health through education, and the tools and opportunities necessary to provide risk identification and risk reduction.

The target audience included 1.2 million people across the United States, as well as Regional component, which served as a Pilot. The Pilot was a considered a longitudinal “study group”, for which would receive a more intensive risk identification/reduction effort, than would be possible with the National target audience. The Pilot locations were selected due to their high concentration of the company’s workforce and their existing community-based efforts to address health care utilization. Gaining strong community support would further the support of the worksite program. “Broad community wide support enhances the program’s ability to gain access to community organizations. This approach also has the potential for enhancing the company’s image and visibility in the community by demonstrating concern for the well being of its’ employees” (Sorensen, 1987).

Knowing the culture of the target audience is critical. In order to promote a successful program it was necessary to identify potential barriers. According to the literature, an assessment of differing perspectives of management and employees toward health promotion should be addressed prior to implementing the program. O’Donnell & Ainsworth, 1984; Sloan et al., (1987), have identified several barriers that might emerge when implementing a health promotion program

- Management attitudes: Some managers may feel that health promotion is not within their responsibility as a manager, and deny a relationship between health behaviors and health outcomes.

- Concern with benefit analysis: Many managers do not see an economic benefit to these programs and feel they produce more conflict between management and employees than benefit.
- Productivity concerns: Most managers are mainly concerned with producing a product and health promotion programs are seen as detracting from production time and therefore are too costly in terms of lost time on the job.
- Competing programs: There often are other programs that compete for the employees' time, e.g., EAP, injury/illness prevention programs.
- Confidentiality: Concern is strong regarding confidentiality both from a management and employee perspective.

Employee barriers include:

- Perception of inappropriate intrusion: Many employees and their union leadership view health behaviors as “life-style” choices, for which interference is inappropriate.
- Confidentiality: This is an employee concern especially where biometric screening is done, and the collection of personal data is involved.
- Diversion of concern: Some employee and union leadership feel that some health promotion programs, such as “smoking cessation” try to detract attention from other “workplace hazards” relating to air quality, etc.
- Logistics of program delivery: This can be a concern for both management and employees. Even when there is support by top management, middle management may not allow employees to participate due to “time off the job” as stated above. This can affect the participation rates (O'Donnell, et. al., 1987).

Another potential barrier that exists in health care is the charge for an office call to a physician when not covered by insurance. Often people will delay seeing their physician for routine preventive services to defray this cost. In traditional health care coverage, office visits are not covered. Approximately 75% of the study population had traditional coverage, posing another anticipated barrier. This is important because one goal of the risk identification and risk reduction efforts are to have the identified risk treated medically where appropriate.

Behavior change is believed to be the key to the success of risk factor reduction. Motivating people to change behavior is a widely studied challenge. Getting people to participate in the program is the first step; however, even then they may not be ready to make behavioral change. Far-reaching programs generally have less effect on changing behaviors. Programs that are directly connected to the population, with a small number of participants are often more successful than those less connected to their study population. Even if those programs successful in reaching a large number of employees, have a negligible impact if only a small portion choose to participate. Therefore, knowing what motivates people to participate is important.

Participation alone is a valuable measure of success. In 1985 and 1992, the office of Disease Prevention and Health Promotion of the U.S. Public Health Service conducted the National Survey of Worksite Health Promotion Activities (NSWHPA). Representatives from companies were interviewed and asked questions about availability of health promotion activities for their employees and their perceived benefits. The data

in the survey were used to measure the growing activity and availability of these programs across the United States, but did not measure the actual participation and use of the programs. Factors that influence participation in these programs are still difficult to identify and measure and are not widely reported in the literature.

Prochaska & DiClemente (1983) have written on theories regarding stages of change. Their report shows that most successful programs employ multifaceted interventions, which provide flexibility for the employee and reach employees at various levels or “stages of change” (Prochaska & DiClemente, 1983). They discuss four major stages of change, which include: precontemplation, contemplation, action, maintenance and relapse. These are “stages” of receptiveness of an individual at a particular moment in time.

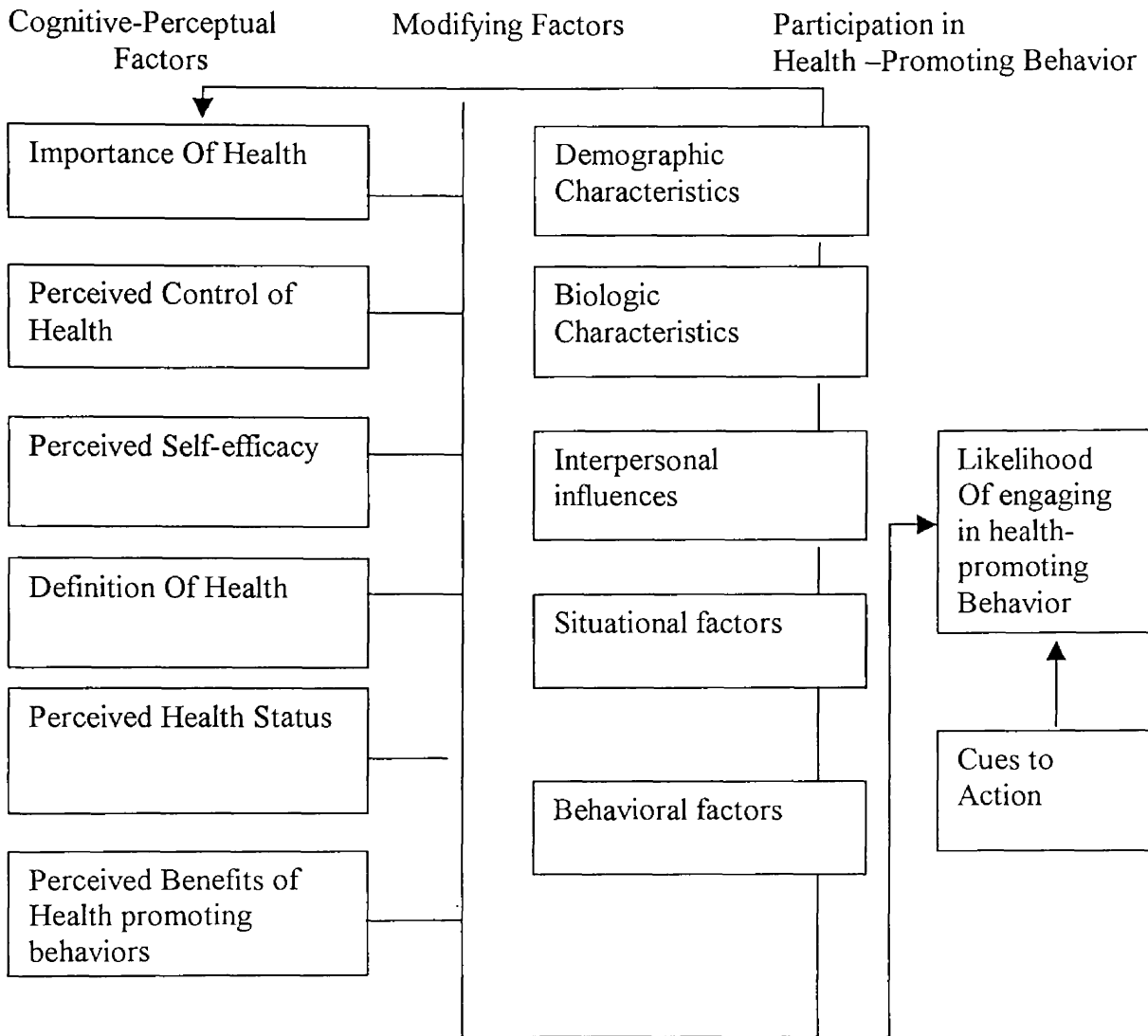
In order to have successful participation and true behavior change, programs need to be cognizant of these different stages, and focus their programs according to these levels of receptivity. This theory guided the design of this program by offering several portals of entry, modes of communication and tools for education. Another consideration noted was the likely barriers to program participation. The need to anticipate these barriers as important steps in creating high initial interest in the program was strongly emphasized (Prochaska & DiClemente, 1983).

Many of the characteristics of the target population were in themselves barriers that added to the complexity of the task. On-site situational factors that could be barriers, needed to be

identified and addressed, e.g., unhealthy foods in the cafeterias, availability of cigarette machines, etc. This would require a slow change in the overall culture. However, having a model to steer the course kept these efforts organized and lent validity to the goals. The Model shown below in (Figure 1) provided a framework from which to structure an approach to the promotion of health-enhancing behavior.

Figure 1

Health Promotion Model



Pender, N.J. (1987). Health Promotion in Nursing Practice. 2nd Edition

Since health promotion programs do not have the benefit of mandates to support them, the support must be gained through favorable cost benefit analyses, demonstration of risk reduction and decreased absenteeism resulting in increased productivity. In order to create a successful worksite health promotion program, it is important to have a clear understanding of the measures of success and a clear expectation of return on investment.

Key questions about the audience must be answered. What is the actual health status of the audience and their learning style? Is there support from all levels of the organization for a program promoting health and will there be champions for the cause? A successful program will consider these and other factors prior to implementation and constructing a model. A clear focus and a clear method for measurement and evaluation are also key factors in promoting and maintaining support of a program, requiring data analysis and reporting to stakeholders.

Leadership support is also critical for success. There must be support for the program and a belief in the need for prevention. In the business world it is difficult to sell need without a clear measurable return on investment. It is important for both stakeholders and decision makers to understand clearly the realistic measures of ROI and to formulate realistic expectations at the beginning to eliminate false expectations in terms of financial savings. Wellness has a slow return on investment and typical measures of ROI are not as clearly demonstrated through routine cost measures. “Although there is little systematic evidence that health promotion is a cost-effective means of decreasing health care costs, the potential for tangible benefits is real” (Warner, Wickizer, Wolfe, Schildroth, & Samuelson, 1988). The measures for ROI in the health promotion world are based on variables associated with risk reduction, decreased absenteeism, and decreased medical claims. These variables show change over time, and therefore are not substantial at the end of the early years of implementation. This program, according to the most recent data, will likely not break even, in terms of cost, until it has reached its’ seventh year. However, following that the potential for ROI is expected to be very high in terms

of positive financial impact for the company based on the impact of improvement of health status for the participating population.

Once support is gained from upper leadership, support must be gained from the “grass roots”. There must be champions for the cause who can carry the message and actually implement the program. Continuous communication and “branding” of the program is essential, so that it becomes a fixture in the culture. Effective communication is key to success.

Prior to beginning of any program it is important not only to answer the questions of, “Who is the target audience and what are the potential barriers?” but also, “What is the current health status of the prospective participants, their learning style, and their perceived level of health?” Obtaining this information prior to the implementation of this program also provided a baseline for later comparison for the measurement and evaluation process. The participants themselves can best answer these questions.

The easiest way to obtain this information with a population that covers a large geographic area is a survey. This method and subsequent analysis can provide information on the employees’ and management’s attitudes toward health promotion. These are essential to program success and also help to establish a connection between the program and both union and management. This was a very important aspect for consideration since 80% of the target audience of the program under review was unionized. It was very important to have the support of the union, as well as support of

management. The objective was to diminish the view that this was purely a management driven program for the benefit of the bottom line, and promote the idea that the main objective was the reduction of risks and improvement of health. The literature shows that participation and subsequent behavior change are directly related to the support and enthusiasm of both workers and managers. “Low participation may result if a health promotion program is seen as a management attempt to divert attention from employee concerns about working conditions rather than as a fringe benefit” (Sorensen, 1987). With this in mind, it was clear that what was needed was support and involvement of the employees and their unions’ and the leadership of the company.

The Task Force involved in the design of this program took into consideration the above literature research and findings, as well as the goals for *Healthy People 2000*, when planning the implementation of this encompassing program. Design of previous models, desired objectives and outcomes, factors in the workplace, the perceived values of the audience, and possible barriers, were all taken into consideration.

Through many meetings and discussions this review of the literature, and personal accounts of successes and failures of implementing Worksite Health Promotion programs, a framework for this program was designed.

Program Design/Components

The design of this program had to address all issues related to the stated considerations and objectives. Since this program had two separate objectives, one of education and awareness and the other risk identification and reduction, opportunities to address both were designed. Also considered were the two populations, one on a National level, and one on a Regional/Pilot level.

An important element of the Worksite model is access to a “captive audience” which makes for greater participation because of convenience, (Nathan, 1984).

This corporation had a large captive audience for which to apply the design and to retrieve longitudinal data to measure the effect. Reflecting the size of the population, (1.2 million), it was important to pilot the longitudinal study on a smaller scale prior to expanding to the whole workforce. Therefore, a Regional group was chosen by the Task Force to be the focus of the Pilot study. To address the perception of the appearance of giving program opportunities to only a few employees, the Task Force agreed that some program opportunities must be given to the entire population of 1.2 million.

National Program Elements

Using the knowledge obtained from the literature and from the professional consultants to the Task Force, elements of the National program were designed. The main objective of the National program was to educate the workforce about health promotion and create an awareness of the importance of healthy lifestyles while measuring the results of those efforts.

The National program included the following elements:

- Newsletter

The newsletter was used as a major communication tool and was distributed to all employees' homes four times a year from the start of the program. By using a newsletter sent to the home communication was disseminated to the entire family. Often the "decision maker" in the home is not the employee. This newsletter was an attempt to engage this "decision maker", as well as attract the attention and support of the dependents. The newsletter was also used to report to the readers the successes and results of the program so they would feel the success and take ownership by participating.

- Toll-free Number-Audio Health Library/24-Hour Registered Nurse

A toll free number was instituted for use seven days a week, twenty -four hours a day for any employee, retiree, or dependent of the company. The purpose was to give health care information at convenient times, and to assist in the health care decision-making. A Registered Nurse could be reached at any time to help identify symptoms, or to offer educational materials based on the need. An audio health library was also instituted for those who did not want to talk to a person, but wanted specific information on a certain health related topic.

- Self-care Book

A self-care book was also sent to every employee and retirees' home. The purpose of supplying a self-care book was to add to the health related resource tools in the home. Often, with the correct information at hand, adequate care can be given at home. This was another tool provided to assist in making the decision of whether or not medical care was necessary, and to provide the information needed to care for an injury or illness at home if it was appropriate.

- Health Risk Appraisal System

The major tool used to gather health information and identify health risks is the health risk assessment or appraisal (HRA). This has been used for several years to interpret health status. The editors of *Business & Health Special Report-Workplace Prevention: The State of the Nation*, report "a survey of 1,035 major employers found that 85% offer some form of health promotion. Since 1992 more companies have been using health risk assessments (HRAs) to identify high risk employees. Rates of participation and risk-factor modification can be assessed after one to two years of a program" (*Business & Health*, 1995). The HRA is not only a tool for risk identification, it is also a positive tool for education and awareness. The HRA involves constructing an estimated life expectancy or risk score by comparing a person's health profile to morbidity and mortality statistics associated with known risk indicators (Sorensen, 1987).

The HRA is designed to measure health status based on computer-based algorithm, that measure health risks based on self-reported behaviors, biometric data related to blood pressure, cholesterol, and height and weight measurement. This measurement tool is

utilized at least annually for each individual participating and the results are compared to identify changes in health risk status.

- Extensive Evaluation/Measurement

Once the baseline of knowledge of the target audience is completed, the elements of the program must be defined, as well as how they will be delivered and what will be used to measure the result. In this program, measurement and evaluation on the National level was focused on the level of participation and effectiveness of communication and education efforts, while the measurement of the Pilot study was more specifically focused on the results of risk identification and risk reduction efforts.

Reports were generated based on the data gathered by surveys and by the Health Risk Appraisal system. These data were used as rationale for program design and implementation efforts. The goal was to base all decisions on measurable statistically significant data.

Regional/Pilot Program Elements

Using the knowledge obtained from the literature and from the professional consultants on the Task Force, the Pilot study was designed. The main objective of the Pilot study was to identify health risks and provide opportunities for risk reduction and measure the results of those efforts. The Task Force recommendation was for the study to be conducted for a period of three years. As indicated, measurement and evaluation are the most important aspects of any program when attempting to gather results in an attempt to gain support from the decision makers.

The Regional (Pilot) study was based on a more intense approach than the National program design with a more comprehensive menu of programs to show a positive effect on health status by showing a reduction in the number of health risks. It was the intent of the Pilot study to explore the approach of the corporation and union working together in offering a number of different programs at the worksite, along with one-to-one counseling, to see if participation would be sustained at a level needed to substantially reduce risk. If a positive effect could be shown, and risks reduced, extrapolation of this model to the entire corporation would seem appropriate.

Elements of the Pilot study included the following:

- All of the components of the National program
 - Newsletter
 - 1-800 Number
 - Self-care Book
 - Health Risk Appraisal (mailed to home)
- Plus:**
- On-Site Health Risk Appraisal System/Feedback/Counseling
 - Wellness Support Programs
 - Office Visit Vouchers
 - Telephonic Counseling

- On-Site Health Risk Appraisal System/Feedback/Counseling

In order to provide the risk reduction opportunities in the Pilot, biometric health screening opportunities would be provided at each location. From the literature and consultants' input, it was also learned that risk reduction strategies would be more successful if provided at each location by a professional wellness team. This team of professionals would provide the screening as well as Wellness Support programs and other opportunities for education and risk reduction. An important element of the HRA process is on-site screening with face-to-face counseling. What contributes to the distinctiveness of this model is the one-to-one feedback and counseling that has been lacking in most health promotion programs. By providing feedback at the time of the screening process, the "teachable moment" can be utilized and each participant given information and further resources to assist in correcting or decreasing the risk identified.

- On-Site Wellness Support Programs

Also critical to the design of this program were the findings from the Steelcase study which showed that addressing only the high risk group was not sufficient. The Steelcase study showed that the low-risk group also needed tools to remain low risk, otherwise they could have a tendency to migrate to high-risk. "Reducing the flow of low-or medium-risk individuals to high-risk allows a program to successfully reduce the total number of high-risk individuals within a few years," (Edington, 1998). Therefore, an important component of the program included Wellness Support programs provided onsite to assist the low-risk individuals to remain in the low-risk category.

- Office Visit Vouchers

Part of the goal of the risk identification and risk reduction effort included medically treating the identified risk when appropriate. This program was designed to take a step beyond previous programs by directing the participants to the appropriate level of care, and by providing the necessary tools or services needed to reduce the identified risk factor through medical treatment. Therefore, a system was created for offering a voucher to pay for an office visit to a physician. This was seen as a major improvement over previous programs, and was a unique element of this program. The system provides program participants who are found to be at high-risk for illness, a voucher to their primary care physician to be used for the further evaluation and treatment of the identified risk/risks. Up to two vouchers were offered. The second voucher could be used either for a second visit to the primary care physician for follow-up, or for an office visit to a specialist if deemed necessary by the primary care physician. It was anticipated that after two visits, a diagnosis could be made which would initiate payment by the insurance provider. This provision of office visit vouchers, and the size of the population the program covers, places this study apart from previous studies in its comprehensiveness and scope. It differs in the level of data gathered, the level of evaluation of that data, and in the focus on risk reduction as the driver of cost savings.

- Telephonic Health Counseling Service

To further address high-risk factors, a Telephonic Health Counseling program was offered to those who participated in the health screening and were found to be at high-risk. This was made available for those who could benefit by having extra assistance in behavior change, such as quitting smoking, losing weight, etc. A health coach contacted

those who gave permission and helped them through the change process by offering extra printed materials, videos, and other tools for assistance, as well as check up calls to see how the participant was progressing. For the moderate or low-risk group, wellness classes were offered at every worksite. These classes were designed to assist the maintenance of low or moderate-risk and to encourage those at high-risk to become low-risk. All classes were free of charge and open to anyone interested.

Implementation/Methodology

With the objectives for each program (National vs. Regional/Pilot) defined, positive feedback from the target population and an established tool for measurement and evaluation, a strong case was made to corporate and union leadership for support of this effort.

It was recognized that a governing body for the decision making of this on-going program and its content was needed. To fulfill this, a Steering Committee, made up of leaders from each organization was established. This committee became the decision making body for all issues related to program design and implementation. All issues were presented to this Steering Committee for direction and feedback on the program options, ensuring both union and management involvement. “While members who support health promotion objectives can contribute substantially to program direction, involving subgroups who disagree with program objectives may help to defuse opposition” (Sorensen, et. al., 1987). The Steering Committee was an important factor

in influencing the “corporate culture” by carrying the message of success back to the top leadership.

The proposed program was presented to the leadership of both the corporation and the union to obtain their agreement and acceptance, and the Steering Committee was created to begin implementation. Implementation was begun by mailing a kit which included an introductory Newsletter, the Self-care book, a Health Risk Appraisal for each adult member of the family, information on the 1-800 number displayed on a refrigerator magnet, and a guide to the program with an introductory letter from the leadership of both the corporation and the union. These materials were mailed to the Corporations entire population.

A letter was sent from the leadership of both organizations, to add validity of the program, and was intended to show their support at the very beginning. While the components of any program may differ, effective communication is always critical. Therefore, one of the first components of this program considered was the communication effort. As it was given an extremely important role, a professional vendor for communication was hired to provide professional insight.

National Communication Strategy

In order to communicate to an audience of 1.2 million, expert knowledge of communication and marketing are needed. The Task Force consulted experts in the field of communication and Request for Proposals (RFP's) were distributed to communication

providers. There were two separate populations with which to communicate and two separate programs to market; the National program, dealing with education and the Pilot program dealing with both education and risk identification/reduction.

Following a thorough review of the potential bidders, a communication group was hired. They designed a communication package that would “sell” this program to the diverse population, taking into consideration all the barriers, the educational level of the audience, and the objectives of the two programs.

The first communication and marketing effort was in “branding” the product. This required naming the product or program and ensuring all of the program materials began using the name. Initiation of the “branding” of the program was accomplished through a letter of announcement from the top leaders of the corporation and the union. “Leadership commitment” is also a key factor to success. This letter was distributed to announce this new program, and to start setting the tone for its support. As one of the barriers faced involves false perceptions, it is important to set the tone early to alleviate any misconceptions about the leadership support of the program, and to address any negatively perceived values of the objectives. This paves the way for support at all levels of the organization and increases the prospects for participation.

Among the tools the Communication group designed was a Newsletter that would be mailed to all households, (part of the National educational element) as well as other printed materials that would be distributed at each worksite (part of the Regional/Pilot element). These other printed materials were in the form of table-top displays for the

cafeterias, posters, signs and note cards. All materials were “branded” with the program name and logo. The Newsletter was designed to be distributed quarterly as the main vehicle for communicating information on health related topics. It also was the main vehicle for marketing other elements of the program. To use all the tools available, a web site was created as an additional way to provide educational materials (Nationally), as well as, information regarding other program components (Regionally).

In an attempt to address all learning styles and educational levels, audio media were also made available. By calling a toll-free number, audio health library topics could be heard at the convenience of the employees, and health information could also be obtained via the number for self-paced learning, i.e., videos, books, etc. A Self-care book was also sent to every household as a tool to provide health education materials as indicated by the professional literature.

To further demonstrate a commitment of the Task Force to making education and information available on a National level, the toll-free number also provided 24 hour/7 days a week access to a Registered Nurse. This number was marketed in all written materials and on the web site. The literature informed the Task Force that telephonic services play a role in “demand management” by giving support and information for self-care, thus reducing the need for more expensive medical care (Lynch, 1996). It was not the intention of this program to keep people from care, but rather to provide decision support in choosing appropriate care.

To complete the communication effort for the National program a Health Risk Appraisal (HRA) was provided to each household. This was considered the most important tool in the program because of its ability to communicate and educate the personal health status and level of health risk for each employee. A personalized profile was returned to each participant, which outlined his/her risk status and offered tips for improvement. This was conducted on an annual basis to allow for tracking risk level change. To promote all the components of the National program, a “tool box” was sent to every home. It included an announcement letter and a guide to the program, the self-care book, an HRA for each adult with a self addressed envelope, a directory to the toll free number, and a Newsletter. The program was described and the employee was welcomed as part of the “team”. The consultants and the literature emphasized the importance of a feeling of ownership to each employee. This promoted a feeling of belonging to the program and provided positive support for the program.

By providing the HRA on a national level, it was possible to follow the health risk status on a national basis and compare it to the efforts in Pilot. It was anticipated that a more focused effort, with more opportunities offered for risk identification and risk reduction, would yield a more positive result in terms of levels of risk reduction, decreased absenteeism, and overall participation in the program.

Communication efforts were also considered of utmost importance on the Regional/Pilot level. Internal communications were used to promote the program wherever possible. Continual effort was made to communicate all aspects of the program to all levels of management and to the employees through internal documents, fliers, and internal

newsletters. Every effort was made to keep the lines of communication open to maximize accurate perceptions about the program. The Pilot elements were introduced to the participating locations on a more personal level with announcement letters as well as face-to-face meetings.

Measurement and Evaluation

To assure the validity and statistical significance of the data from the measurement and evaluation process, it was imperative to have an expert provider for this service. Request for proposals were again submitted to several companies and universities. The University of Michigan Health Management Research Center was chosen to provide the Health Risk Appraisal (HRA) tool, the data collection associated with it, and measurement and evaluation of all components related to the Program. The corporation and its union, and the University of Michigan Health Management Research Center developed the Health Risk Appraisal form used jointly.

A professional Wellness Program provider was contracted through the RFP process for delivery of these services to the Pilot locations. To facilitate the communication process, these professionals were formally introduced to each Pilot location and provided with worksites so that they could slowly become a part of the worksite culture. Locating the program in the physical environment was intended to eliminate the previously anticipated barriers identified by the literature and the consultants.

As described, the study included a National component and a more intensive Regional (Pilot) in two cities at several worksites. The National effort was extended to all households throughout the United States with either active or retired employees of the corporation. It was also available to dependents of both. The National program, as previously noted, included a Health Risk Appraisal for each adult family member. The Health Risk Appraisal (HRA) was to be completed and sent for processing to the University of Michigan Health Management Research Center to be processed through a computer generated algorithm. A Personal Profile is generated and returned to the individual, along with suggestions and tips regarding specific risk factors. This educational tool has reached over 550,000 people as of December 1999, which alone distinguishes it as the largest health promotion program in the world. While the major focus for the nationwide aspect of the program was on education, risk reduction was also measured; however, it was based on self-reported data, rather than screened biometrics, as in the Pilot.

To further insure data driven decisions, a survey was conducted both prior to the onset of the implementation process and at annual intervals. Obtaining this information prior to implementation of the program provided a baseline for later comparison. Analysis can provide insight into the employees' and managements' attitudes toward health promotion. This knowledge is essential to program success.

A baseline survey was conducted to a randomly selected group of both hourly employees and management, both nationally and regionally. The survey focused on four issues: awareness of health promotion, participation interest, satisfaction with concept and

perceived effectiveness. It was designed to measure perceptions on both the National effort and the Regional/Pilot effort. The mailed survey was sent to a randomly drawn study sample (N=36,002), which represented 3% of the target population. The surveys were coded with a unique number and associated with employees' social security number for tracking. A total of 7,308 responses were received for an overall response rate of 21.7%. The responses showed an 80% favorable opinion of the total program and a 75% overall feeling that it was beneficial and that it should proceed. It also presented a 70% positive response in attitude toward the company and the union for working together in this effort (Edington, et .al, 1998). These results pointed toward success for the program and its' efforts, and created a positive framework for successful participation.

Presentation of Results

Two core values professed by this Corporation are that of Customer Enthusiasm and Continuous Improvement. Employee health and wellness are consistent with these core values. However, in order to understand the level of risk of the participants, knowledge of their health status was needed. A baseline survey was conducted at all locations to provide the necessary data to support the need and allow measurement of impact.

This thesis is based on a longitudinal case study of this program, using data that measure the results over a three-year period, obtained from the same individuals or cohorts. The program was also evaluated by using surveys to obtain feedback on all of the components of the program. Participation in all aspects of the program is measured and reported

using data gathered and compiled by the University of Michigan Health Management Research Center using the survey tools and HRA.

The following, Example 1 shows the risks of a typical worksite from this study, and Example 2 shows the resulting level of illness and disease associated with those risks. It summarizes the potential for risk reduction that is prevalent among this population. The 2000 figure is used as an average worksite population.

**Risk Factors at a Worksite with
2000 Employees**

Example 1

Risk Factor	Number of Persons with Risk Factor
Smoke	424
Physically Inactive	412
High Blood Pressure	540
High Cholesterol	426
Over 10% Healthy Weight Range	824

The University of Michigan Health Management Research Center November 1998

**Self-Reported Disease at a Worksite with
2000 Employees**

Example 2

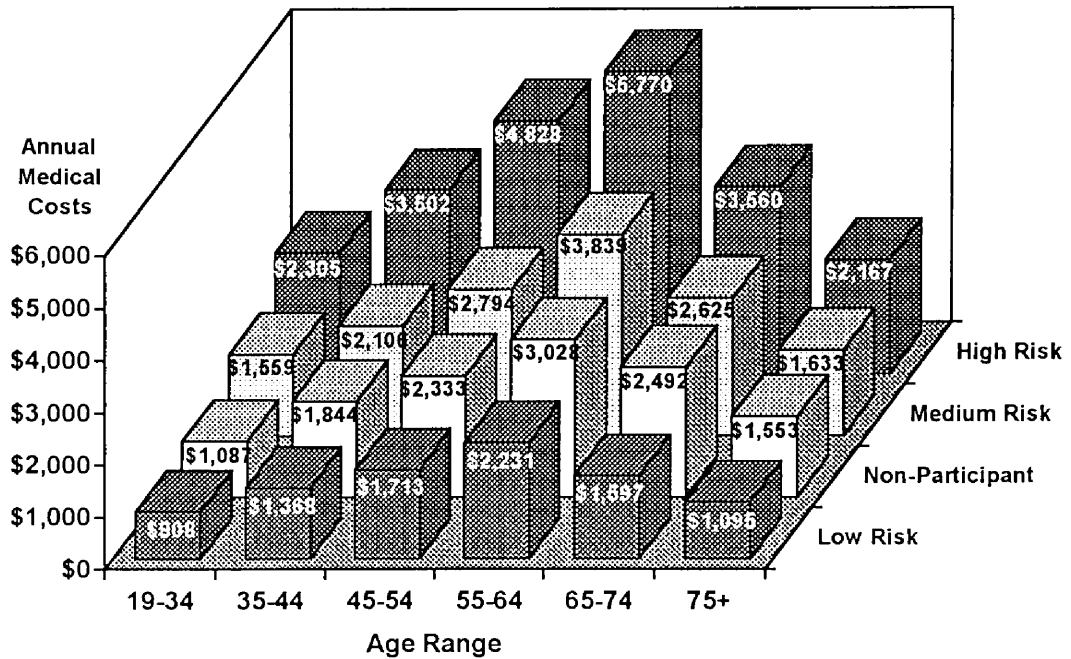
With this disease/illness	Number of Persons with condition
Heart Disease	120
Diabetes	89
Bronchitis/Emphysema	65
Cancer	22
Previous Stroke	19
Any Condition Above	271

The University of Michigan Health Management Research Center November 1998

With this prevalence of health risks in the study population, the cost factor related to these risks was an important factor. Since the average age of the active work-force of

this population is 47 years, it is clear that in the next 5-10 years these same people will be moving into an even higher risk category in relation to age, risk and cost. The following graph shows the relationship between medical cost by age, risk and participation in the program. It brings a clearer understanding to the relationship between high risk and high cost, and further emphasizes the benefit of risk reduction (Edington, 1998).

Medical Costs by Age, Risk and Participation



This graph, provided by the University of Michigan Health Management Research Center, shows the study population and the relationship between medical costs, age and level of risk. Clearly with an average age of 47 years, the next 5-10 years will be producing a shift into the higher cost area in all categories. The only apparent solution to this problem is risk reduction, which this program attempts to address. Moving those at

high risk into a lower category of risk, as well as keeping the low risk from migrating into a higher category, is the goal of this program (Edington, et. al., 1998).

However, the goal is not only to reduce cost. As with the Steelcase study, there is a commitment by the leaders of this corporation for culture change. It differs from many others by the level of importance placed on that commitment. The Corporations' Presidents' Council states: "We are committed to protecting the health and safety of each employee as the overriding priority of the Corporation. There will be no compromise of an individual's well-being in anything we do." Like the Steelcase study, there is an attempt by this corporation to promote a culture of "caring" for the well being of its employees through this program.

Along with the survey measurement, biometric health data were obtained via a health risk appraisal form. The information allowed for the measurement and data collection of actual health risk reduction from year one, (T1), of the screening compared to year two, (T2), and then again in year three, (T3), of the screening. Those individuals who participated in all three years were used as the study group. The risks were measured at T1, T2, and then at T3 to determine the change in level of risk. Data showing percentage of change from T1 to T2 are noted in Table 1.

Another survey was conducted at the end of the third year of the pilot study. This survey also measured non-trackable program usage, i.e. self-reported Self-care Book usage, readership of the Newsletter, etc. Adding these reports to the survey showed that the program reached even more people than previously reported. When taking these program

elements into consideration, the program touched 78% of the population within three years. The survey results indicated an 85% support to continue the program, and a 74% response of an improved opinion of the company and union. This indicated a positive overall opinion and suggested an expected increase in participation over time.

Table 1 shows the level of change in the number of risk factors in all groups. In the Nationwide Mailed HRA group, (n=46,635), 66.5% of the participants indicated they had 0-2 risk factors the first year. The HRAs returned in the second year showed a higher number in the low risk category by one percentage point. This is indicative of a migration of high-risk individuals into the low risk category. While this may not seem to be a significant change, it is significant since the average age of this group is 47 years, and the normal trend with age would be an increase in level of risk (Edington, 1998).

Table 1
Risk Change: Year One vs. Year Two

	Risk Level irst Year		Risk Level Second Year		
	Percentage with 0-2 Risks		%Pt. Change in 0-2 Risks	%Pt. Change in 3-4 Risks	% Pt Change in 5+ Risks
Program Participation Between Year One and Year Two Nationwide Mailed HRA	46,635	66.5%	+1.0	-0.8	-0.2
Pilot Mailed HRA	6,135	62.3%	+0.2	-0.5	+0.3
Pilot HRA with Screening	1,852	59.0%	+4.6	-2.4	-2.2
Pilot HRA + Screening + One Program	2,554	55.3%	+6.1	-3.8	-2.3
Pilot Prescreening + Two or More	2,256	41.6%	+13.1	-6.3	-6.8
A positive increase in the low risk Group (0-2 risks) is evident.					

University of Michigan Health Management Research Center, 1998

These results of two years of HRAs along with biometric screening and other additional programs showed a migration of medium and high-risk into the low-risk category. This is evidenced most significantly by the increase of 13.1 percentage points in the low-risk group, in the last category. This clearly points to the positive impact on risk reduction that is seen when two or more of the program elements are used along with the HRA and health screening, which adds validity to this design of multiple program components (Edington, 1998).

The data (Year 3) in the following Table 2 shows the continual migration into the low-risk category. These data would appear to support the thesis hypothesis and program design.

Table 2
Year Three Changes in Risk Level

Program Participation between First and Most Recent HRAs	Risk Level in First HRA		Risk Level Change in Most Recent HRA		
	N	Percent Point With 0-2 Risks	Percentage Point Change In 0-2 Risks	Percentage Point Change In 3-4 Risks	Percentage Point Change In 5+ Risks
Nationwide Mailed HRA	76,858	5.7%	+1.2	-1.2	-0.1
Pilot Mailed HRA	9,782	7.2%	-0.6	+0.2	+0.5
Pilot HRA with Screening	1,921	0.9%	+4.0	-1.7	-2.3
Pilot HRA with Screening +One other Program Element*	2,764	6.2%	+5.1	-2.7	-2.4
Pilot HRA with Screening + Two other Program Elements*	2,148	6.8%	+9.6	-4.8	-4.8
Pilot HRA with Screening + Three or More Program Elements*	1,320	5.2%	+13.6	-5.6	-8.0

*Other Program Elements Lifestyle Management, Wellness Support Program, Nurse Line, Voucher
The University of Michigan Health Management Research Center-December 31, 1999

To further differentiate the level of change and categories of change, data were further broken down in year three to show the difference in each variable of risk, and stratified

between salaried (white collar) workers, and hourly (blue collar workers). Table 3 shows the comparison in these categories (The University of Michigan Health Management Research Center, 1999).

Table 3
Categories of Change

Screening Participants Category	Salary		Hourly	
Number in Category	634		2,130	
Risks	Number	Percentage	Number	Percentage
Current Smoker	61	9.6%	429	20.1%
Physical Activity < 1 time/week	125	19.7%	474	22.3%
High blood pressure	240	37.9%	860	40.4%
Cholesterol>239mg/dL	155	25.0%	532	25.5%
HDL<35mg/dL	147	24.0%	679	32.6%
>10% over healthy weight range	251	39.6%	989	46.4%
Illness days>5/year	74	11.7%	494	23.2%
Alcohol drinks>14/week	36	5.7%	116	5.4%
Safety Belt usage<90%	65	10.3%	585	27.5%
Life partly or not satisfied	90	14.2%	337	15.8%
Stress (high)	83	13.1%	443	20.8%
Physical Health (fair or poor)	46	7.3%	346	16.2%
Existing medical problems	125	19.7%	550	25.8%
Overall				
0-2 risks	377	59.5%	887	41.6%
3-4 risks	183	28.9%	734	34.5%
5+ risks	74	11.7%	509	23.9%
Average number of risks	2.4		3.2	

The University of Michigan Health Management Research Center
June 1999

The significance of the data in Table 3 is the relationship between the levels of risks identified in the hourly workforce compared to the salaried workforce. In almost every category the percentage of risk is higher with the hourly worker. If the medium and high-risk categories are added together, the hourly workforce has a 68.4% population at risk,

compared to 40.6% of the salaried employees at risk. This would indicate a relationship between the level of education and level of risk, since the hourly employee (blue collar) worker has an average level of education of high school, and the salaried employee (white collar) average educational level is that of bachelor or masters degree. However, it is also noteworthy that the highest level of risk in both the hourly and salaried workforce is that of being overweight. This correlates with the findings of the 1994 NIHS in the relationship of education to participation and the prevalence of the risk factor of being overweight, with the findings of the *Healthy People 2000* government Task Force (Edington, 1998).

The following table identifies the number of actual risks reduced over the three-year period:

Table 4
Total Risks Reduced by Participants

	Risks Reduced	Population
Two Year Participants	69,045	80,335
Three Year Participants	62,231	40,016
Total	131,276	120,351
University of Michigan Health Research Center		
October 1999		

Health risk information was compared between HRAs of two time participants in year two and year three. The total number of risks was compared in both years. The total number of risks reduced is demonstrated in Table 4. There is a significant reduction in number of risks in this study population, which could be a result of this program.

To further study possible relationships to risk reduction, a study was conducted on the relationship of participation in the program and total disability days. This study was performed in two Pilot locations, where there was found to be high participation in the program and a significant level of employee disability.

Data were gathered from disability records for three years prior to the beginning of the program and then compared to data collected post program. The comparison was made between number of disability days of those who participated in the program and disability days of those who did not participate.

This is reflected in the following Table 5:

Table 5
Percent of Employees Absent per Day

	Pre-Program 7/1/95-6/30/96	Program Years 6/30/96-6/30/98	Percent Change
Program Participants (N=2,035)	2.89%	2.69%	-6.9%
Non-Participants (N=1,642)	3.48%	4.56%	+31.0%
ALL (N=3,677)	3.15%	3.53%	+12.1%
<p>A smaller percentage of Program participants were absent on any given day during both pre-program and program years. The percent of employees absent decreased 6.9% for participants, while increasing 31.0% for non-participants during program years.</p>			

The University of Michigan Health Management Research Center-October 1999

The findings seem to show a significant relationship between program participation and the number of days absent. Participants showed a decrease in number of days absent in comparison to an increase in number of days absent for those who did not participate.

While it is understood that there may be several variables affecting these results, there does appear to be a trend in the relationship to lost workdays and the participation in the program.

Another area of measurement in the three-year period was Preventive Services. These data were compared to that of the *Healthy People 2000* findings with the results as shown in Table 6.

Table 6

Preventive Services Summary Healthy People 2000/HRA Participants			
	Healthy People 2000 Criteria	Healthy People 2000 Objectives	HRA Participants
Cholesterol	<5yrs 18 yrs & over	75%	86%
Blood Pressure	2 yrs 18 yrs & over	90%	93%
Colon Cancer	2 yrs 50 yrs & over	50%	49%
Flu Shot	12 months 65 yrs & over	60%	NA
Pap Smear	3 yrs 18 yrs & over	85%	86%
Mammography	2 yrs 50 yrs & over	60%	83%

This comparison of preventive services indicates that program participants are exceeding the *Healthy People 2000* targets in almost every area. As the table shows, flu vaccine is not measured on the present HRA, however, it will be an added question on the Year 4 HRA. It is planned to add the Pneumonia Vaccine for the retiree population in the Year 4 HRA. While this data does not prove that it is a result of this program, it does seem to indicate a potential relationship and indicate the need for further study.

Conclusion

There are several areas in which this study is similar to others reported in the literature. However, there are major differences, e.g. the size of the population it can potentially impact, as well as the size of the population who have actually participated.

One of the most important differences of this program is its availability to the entire corporations' family, which includes the dependent and retiree population. There is no other health promotion program that is as encompassing. Most other programs identified in the literature are on-site health promotion programs that are available only for the active employee.

Also unique to this program is the office visit voucher. No other program has provided for payment of the cost for an office visit. This program offered two vouchers if the risk identified required a second visit, or if that primary care physician deemed a visit to a specialist necessary.

While these are other distinctive components to this model, the most important difference was found to be the design of the health screening activity. Other programs screened for similar risks, using a similar HRA tool, but then ended the process. This program carried the process further by adding professional counseling to the last phase of the activity. This one-to-one feedback was found to be the most valuable piece to the program. It is this “teachable moment” where the real education begins and the initiation for change and risk reduction takes place (Carey, 1998).

Another valuable component is the Wellness Support programs that are designed to provide avenues for the low-risk individuals to stay low-risk. A variety of programs are offered that provide fitness activities, and educational opportunities, which provide a healthy culture for those who are already at low-risk, and for those who are interested in becoming low-risk. It was learned through this study and others that the key to success in participation and in risk reduction lies with the low-risk group. They are the champions for the program and should be the focus in terms of potential cost savings and/or cost avoidance (Edington, 1998).

As demonstrated in Table 7, relative to cost savings per risk reduced vs. cost increase per risk added, maintaining the low-risk group is crucial. While the main focus of this study was on risk reduction, cost effectiveness is also an indicator and an important element to success. Table 7 shows the potential for savings relative to risk reduction available with this program. Most importantly it further demonstrates the importance of keeping individuals in the low-risk category from migrating to the higher risk category. It shows

there is a far greater affect on cost with the addition of a risk (\$533/risk added), than with the reduction of a risk (\$197/risk reduced).

The figures in Table 7 were derived by comparing the cost of the program per participants in each category and the savings associated with participation when compared to past and present claims data. The cost of each program component was considered along with the cost savings from the claims data to obtain a savings/cost ratio.

Table 7
Cost Effectiveness Summary

All Actives, Retirees & Dependents	Program Costs of Participants	Medical Savings of Participants	Savings to Cost Ratio
Overall Program	\$78	\$37	0.47
Non-Pilot	\$58	\$20	0.34
Pilot	\$144	\$95	0.66
All Employees	\$82	\$83	1.00
Overall Program			
Non-Pilot	\$59	\$56	0.96
Pilot	\$159	\$168	1.06
All Actives			
Overall Program	\$111	\$108	0.97
Non-Pilot	\$52	\$49	0.96
Pilot	\$223	\$28	0.98

Savings are associated with risk reduction, low risk maintenance and increased participation.
The University of Michigan Health Management Research Center-August 1999

	Cost Savings per Risk Reduced	Cost Increase per Risk Added
Non-Medicare Population	\$197	\$533
Medicare Population	\$96	\$193

The University of Michigan Health Management Research Center-August 1999

This study found that participation and results associated with levels of that participation showed the greatest relationship to cost effectiveness through risk reduction and maintenance of that reduced risk.

It is noted that level of risk reduction changes proportionately with the number of program elements with which the individuals participated. Those who participated in three to four elements of the program, i.e., sent in an HRA, called the 1-800 #, participated in a screening, etc., were six times more likely to show risk reduction (Edington, 1998).

Many independent variables affected the promotion and participation of this program and are difficult to measure. Many are behavior and belief based, and many are political in nature. The difference in levels of commitment of the parties and the lifestyle behaviors that are predominant in the hourly workforce, were major factors in the levels of risks identified and the levels of participation. What is noteworthy is the fact that the program did attract the high-risk individuals, and not just the "well" individuals as so many programs have in the past. The importance of maintaining the low-risk population was discovered as the key to cost savings as shown in the above table. This is due to the increased cost associated with the addition of a risk in comparison to a risk reduced

(Edington, 1998). It also appears there is a relationship between level of risk and level of disability. This would seem to further validate this program and programs of this kind in an attempt to increase productivity.

The mission of this joint program is to demonstrate that by working together to deliver programs that concentrate on the health and wellness of people, the demand on the health care system can be reduced with an increase on overall productivity. In addition, it was learned that if given the right tools and avenues for learning, people can maintain good health and reduce their health risks.

The positive outcomes shown over the three-year period demonstrate the possibilities of impacting the health status of a very large portion of the population.

The significance of these positive findings is the possible benefits they could have on work-site health promotion programs and society, if expanded throughout work settings across the country. The rationale could also be provided in the quest to promote more government spending and/or initiatives toward providing prevention programs to all Americans, in the effort to realize health care reform. Reducing risk in the overall population could result in lower demand for health care, resulting in more appropriate usage, reducing health care cost and encouraging a more productive population.

The anticipated future success of this program of reducing risk in a population previously assumed as averse to attempts on behavior change provides encouragement and a

benchmark for other companies, and public sector decision makers, to invest in the overall wellness of their employees and the population.

Finally, the objective is that this study thesis will lend further evidence to support joint public and private sector efforts to reduce overall health risk in our society as a whole, by improving overall health and well-being; reducing the demand on the health care system; increasing longevity and wellness resulting in the increased overall health and productivity of our society.

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