

Preliminary Evaluation of an Employer Sponsored Mammography Screening Program.

Abstract

Recognizing the importance of early detection of breast cancer, the Dow Chemical Company initiated the breast cancer awareness and screening program among active and retired employees and spouses in 1988. Mammograms were provided by an on-site mobile clinic as well as through arrangements made with the local hospital center, and the company paid for a substantial portion of the cost. A study was undertaken to evaluate the operational aspects of the mammography screening: participation, diagnostic results, and follow-up, focusing on employees and retirees at the Midland location who were at least 35 years of age and who had not had a recent mammogram. Of 1186 eligible women, half (53 per cent) elected to participate, mostly through the mobile on-site unit. Participation was three times higher for active than for retired employees. Eleven per cent of women screened at the mobile unit had positive mammograms, and 82 per cent of the women so diagnosed had follow-up medical services within one year of screening, as discerned from group insurance claims records. Since these records do not reflect all patient-physician communications, the follow-up rate is thought to be higher than indicated. Frequency and types of follow-up services were described. Two women with positive mammograms were diagnosed and treated for breast cancer within two months of screening. Available group insurance data resources were judged to be adequate for responding to health care delivery questions such as this.

A 5-Year Evaluation of Smoking Cessation Incentive Program for Chemical Employees Geary W. Olsen, D.V.M., Ph.D.,* Susan E. Lacy, R.M., J Michael Sprafka, Ph.D., Terri G Arceneaux, Terri A Potts, Brandi A. Kravat, B.S.,* Michael R. Gondek, M.D., and Gregory G. Bond, Ph.D.*

*The Dow Chemical Company, Health and Environmental Sciences, Epidemiology, 1803 Building, Midland, Michigan 48674; The Dow Chemical Company, Texas Operations, Occupational and Environmental Health, B101, Freeport, Texas 77541; and Division of Epidemiology, School of Public Health, University of Minnesota, Minneapolis, Minnesota 55455

Thirty-six percent of the participants who were considered exsmokers of 6 months duration at the conclusion of the program in 1985 remained long-term quitters 5 years later. Stress and enjoyment of smoking were the two most important reasons provided by participants for recidivism.

The results of this 5-year evaluation demonstrate the heterogeneity of employee participation and success with a worksite smoking cessation program.

Executive Summary

Introduction

The **Up With Life** study of health status changes among Dow employees analyzes individual changes in health measures recorded before and after the introduction of **Up With Life** health promotion efforts in Headquarters, Michigan, and Texas Operations divisions. Information was retrieved from the Health Surveillance medical data base, as well as Employee Work History, Dow Personnel System, and **Up With Life** participation data bases. A total of 11,496 employees were identified as having taken health surveillance medical exams, both prior to and after **Up With Life** was introduced. The specific health measures and behavioral risk factors for which possible changes were analyzed are:

- cigarette smoking
- alcohol use
- total cholesterol
- hypertension
- overweight

Differences between the health status measures of employees that chose to participate in **Up With Life** health promotion intervention activities and those that did not are analyzed and presented. Although all employees in this study have been exposed to **Up With Life** health promotion messages through newsletters, health surveillance exams, employee cafeteria changes, etc., only **Up With Life** activities that required registration are used to designate those employees that chose to utilize **Up With Life** resources as participants within the study.

Cigarette Smoking

Smoking is the single, most preventable cause of illness and premature death in the United States. Employers are faced with higher health care claims among smokers, as well as lower productivity, increased absenteeism, and other costs. With 1990 Michigan and Texas smoking rates of 29.1% and 22.9% respectively as a reference, Dow employees in this study lowered their smoking prevalence from 18.3% to 15.7%. Those employees that utilized **Up With Life** resources who were initially smokers were 1.62 times more likely to quit than non-participants. **Up With Life** participants who did continue to smoke reduced the number of cigarettes smoked by 6% more than did non-participants.

Alcohol Use

Chronic or heavier drinking is defined by the Centers for Disease Control as consuming two or more drinks per day. Alcohol accounts for huge productivity losses, and is related to more than half of all serious acts of violence and accidents. Heavier drinking occurs much more among men than women, the 1990 prevalence for adult men in Michigan and Texas being 8.5% and 11%, respectively. Heavier drinking among Dow

employees in this study dropped from 5.4% to 4.1%. **Up With Life** participants who reported heavier drinking prior to **Up With Life** were 1.17 times more likely to have dropped their consumption below two or more drinks per day than were non-participants heavier drinkers.

Total Cholesterol

Serum cholesterol levels are associated with heart disease, with every 1% reduction in total cholesterol values above 200 mg/dl corresponding to a 2% reduction in the risk of death from heart disease. The prevalence of Dow employees in this study whose cholesterol was at 200 mg/dl or above, dropped from 52.7% to 45.8%. Cholesterol levels were highest among male Dow employees in Texas, where 25% of **Up With Life** male participants were able to lower their cholesterol level below 200 mg/dl versus only 20% of male non-participants.

Hypertension

Elevated blood pressure increases the risk of stroke and heart disease dramatically. The prevalence of Dow employees with blood pressure at or exceeding 140/90 mmHg decreased from 19.7% to 16.7%., primarily because Texas Operations dropped from 28% to 21%. **Up With Life** participants at all three divisions had a 7% greater likelihood of bringing hypertension under control.

Overweight

Being overweight as measured by body mass index has been shown to be directly proportional to higher risks for premature death and chronic illness and increases the risk of worker's compensation claims. Compared to state surveys of adults in Michigan and Texas, Dow employees in Texas have about twice and Michigan Division employees have about 1.5 times the prevalence of overweight. In fact, Dow employees averaged a 9/10 of 1% increase in body weight each year. **Up With Life** participants were able to stem the tide somewhat by not gaining two-thirds of one year's expected added weight. If initially overweight, 8.5% of **Up With Life** participants succeeded in dropping out of the overweight category, versus 6.7% of the non-participants.

Conclusion

The overall health status, with the notable exception of increasing levels of overweight, improved among the Dow employees in this **Up With Life** study. The employees whose health measures were analyzed are probably somewhat healthier than those employees who did not utilize the health surveillance examinations regularly. Because all employees were eligible to utilize **Up With Life** health promotion opportunities, no conclusions can be drawn regarding any greater ability that such offerings might have had in improving any employee's health. Without random assignment, the possibility exists that employees who were motivated

to make changes were the ones who sought out **Up With Life** resources. On the other hand, the fact that employees willingly paid for these opportunities indicates that the employees consider the programs worthwhile. The improvement might have come without the skills and environment that **Up With Life** tries to create. Yet the fact that employees used **Up With Life** resources and achieved greater success rates than those that didn't participate in any **Up With Life** program indicates that Dow has provided a meaningful, health-related resource for its employees.

Health Care Claims Cost Analysis

UWL Participation vs. Non-Participation

Our initial analysis of Dow employee 1989-1991 health care claims shows that those employees that participated to any extent in **Up With Life** health promotion efforts had lower medical expenses than non-participants in all division in each of the last three years. Among the employees in the **Up With Life** study, participants averaged 17%, 21% and 15% lower medical claims costs in Corporate, Michigan, and Texas divisions. The total amount less that Dow paid for participants based on the differential between participants' and non-participants' claims costs and projected for the total 7,612 **Up With Life** participants amounts to more than \$3 million for each of the last three years.

Current Smokers vs. Non-Smokers

The one health risk category that was analyzed for health care claims differences among employees in the **Up With Life** study was smoking. Smokers experienced much higher health care costs than did non-smokers, and smokers that participated in **Up With Life** offerings had much lower health care expenses than did the smokers that did not participate. According to the health care claims data that was analyzed, those employees that reported that they currently smoked on their most recent health surveillance questionnaire submitted medical claims costs 45%, 27% and 14% more than non-smokers at Corporate, Michigan, and Texas Operations respectively. Dow's additional expense amounted annually to approximately \$540, \$405, and \$255 more per smoking employee in Corporate, Michigan, and Texas divisions. Using these cost differentials from the **Up With Life** study employees along with smoking prevalence rates of 7%, 16% and 18% for the three divisions approximates that smokers cost Dow almost \$1 million for each of the last three years.

Methodology & Potential

The health care cost analysis was done by matching employee master numbers in computer files divided by division, **Up With Life** participation, and smoking status with health care claims data files. If the employee was the dependent of another employee, no cost data was obtained for that employee. As a result, only

group data was analyzed, and only about 58% of the 11,496 study employees' health care claims were found for each year.

With access to each employee's annual total health care claims going back to before the introduction of **Up With Life** in 1985, analysis could be made regarding whether those that participate in **Up With Life** actually lowered their health care claims costs with the introduction of health promotion efforts. It is quite possible that those with lower health care costs initially are more likely to be interested in availing themselves of additional health-related resources. However, the higher costing smoker who quits during the study period offers the unique opportunity to examine whether health care costs for that individual drop after smoking ceases. In order to observe any change in health care costs, it is necessary to analyze as many years of health care claims data as possible, given the amount of variability in health care expenditures. With health care claims cost data going back to 1985 on each of the employees in the **Up With Life** study, possible cost savings among employees whose health status changed could probably be detected.