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Barriers to Preventive Health Screenings for Benefitted University of North Dakota Employees

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BARRIERS TO PREVENTIVE HEALTH SCREENINGS FOR
BENEFITTED UNIVERSITY OF NORTH DAKOTA
EMPLOYEES

by

Laurie Betting
Master of Physical Therapy
University of North Dakota, 1999

A Scholarly Project

Submitted to the Graduate Faculty
of the University of North Dakota
in partial fulfillment of the requirements

for the degree of
Doctor of Physical Therapy


Grand Forks, North Dakota
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2004



This scholarly project, submitted by Laurie Betting in partial fulfillment of the requirements for the Degree of Doctor of Physical Therapy from the University of North Dakota, has been read by the Faculty Advisor under whom the work has been done and is hereby approved.



Advisor



Chair, Department of Physical Therapy

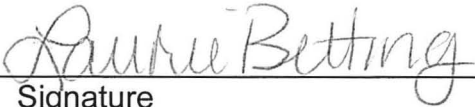
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 of North Dakota Employees

Department Physical Therapy

Degree Doctor of Physical Therapy

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I would like to thank my husband, Brad. He completes me. He is my strength, my friend, and my soul mate. I am deeply grateful for his patience and love as we have achieved this goal together.

Many individuals never have the opportunity to do work that excites them and fills them with anticipation for what is yet to come. I am blessed with living the exception. In May of 2002, I joined the University of North Dakota as Director on a newly created effort, wellness. This new vision for the University exists because of the contributions of many individuals dedicated to improving the campus climate for living and learning. My thanks to all who lead the way. May I be worthy of your trust.

Finally, I would like to thank my Lord. The writing of this scholarly project came at a time in my life when I was "blessed with cancer." My verse has been Philippians 4:13. Certainly my strength is through God. To him be the glory.

ABSTRACT

Background and Purpose:

The purpose of this study was to determine perception of the utilization of preventive health screenings as compared to actual utilization for benefitted University of North Dakota employees. The research was designed to determine the perception of compliance and barriers to receiving recommended health screenings for benefitted employees. The significance was that the University of North Dakota has created a Wellness Center and has begun the creation of a worksite wellness program for its employees. While there are a variety of worksite wellness program designs, very little has been done to ascertain utilization or barriers to utilization of preventive health screenings.

Subjects:

A stratified sample of 400 employees was selected from the 5,301 benefitted faculty and staff employed at UND. As staff members at the University of North Dakota comprised 75% of the workforce (n = 3969) and faculty were the minority of the workforce (25% of the overall population at UND (n = 1332)), a 3 to 1 ratio was set for target employees, staff to faculty. Of the 400 survey participants selected by random sample, a total of 102 survey instruments were returned, yielding a response rate of 26%.

All University of North Dakota benefitted employees were included in the NDPERS health insurance utilization data analysis for years 1998 through 2002.

Methods:

Data were obtained through the use of survey instruments distributed to the random sample of benefitted employees of the University of North Dakota. Actual utilization preventive health screening data for the years 1998 through 2002 were provided by NDPERS.

Results:

While numerous provider and patient barriers have been reported in literature, it is also reported that patients with a primary care provider, insurance benefits, and sick leave are the most likely to receive the appropriate preventive health screenings. Of the surveyed University of North Dakota benefitted employees, 86% indicated they have a primary care provider. All benefitted employees have 100% paid coverage for preventive health screenings and paid sick leave, yet utilization for the USPSTF screenings are nowhere near expected compliance levels.

Returned survey data indicate that over 49% of benefitted employees believe they are receiving the recommended preventive health screenings. The preventive health screenings are recommended yearly, every two years, or every five years. Actual health insurance utilization data for a five-year period, 1998-2002, indicates that overall compliance for all annual screenings is less than 30%; for screenings recommended every two years, overall compliance is less

than 5%; and for screenings recommended every five years, overall compliance for years 1998-2002 is less than 2%.

Conclusion and Discussion:

Lack of awareness of screenings and costs as well as the general sense of being healthy and not needing to be seen by a physician are the leading causes of low participation in receiving the appropriate health screenings. The findings indicated a need to re-examine patient barriers which have a negative effect on the use of recommended preventive services.

As the University of North Dakota is breaking ground for a new Wellness Center and recognizes the workplace is an ideal site for the establishment of a wellness program, it is more important than ever to re-examine existing benefits and barriers to preventive health screenings. Ultimately, ownership of our health belongs in the hands of each individual. Knowledge and empowerment are tools which worksite wellness can harness to assist the individual employee in taking that responsibility.

CHAPTER I

INTRODUCTION

So many of our health problems can be avoided through diet, exercise and making sure we take care of ourselves. By promoting healthy lifestyles, we can improve the quality of life for all Americans, and reduce health care costs dramatically.

Tommy G. Thompson, Secretary, DHHS

Chronic diseases account for seven of the ten leading causes of death in the United States, including the three leading causes of preventable deaths (tobacco use, improper diet and physical inactivity, and alcohol use). Seventy percent of the health-care costs in the United States are for chronic diseases (e.g., cardiovascular disease, cancer, and diabetes).¹

During the 20th century, the leading causes of death in the United States shifted from infectious to chronic diseases. Chronic diseases are now among the most prevalent, costly, and preventable of all health problems. Seven of every 10 U.S. residents who die each year (>1.7 million persons) do so as a result of a chronic disease. Chronic diseases affect the quality of life of 90 million U.S. residents,² and the cost of medical care for persons with these diseases accounts for 70% of total medical care expenditures.³

Although chronic diseases are among the most common and costly health problems, they may also be preventable. Regular screening can reduce

morbidity and mortality from cancers of the breast, cervix, colon, and rectum. Clinical preventive services can present debilitating complications of diabetes and cardiovascular disease.

From the health practitioner's perspective, the goal of preventive and screening health services is to preemptively strike at disease or detect it early enough so that successful treatment can be administered. The assumption is that early detection will improve health outcomes relative to detection at later stages of disease. This will also reduce the costs for medical treatments that are generally more expensive in the later stages of disease. Most preventative services are aimed at reducing the development of the most serious conditions, such as cancer and cardiovascular disease, which are typically the most expensive to treat.

Barriers

Barriers to making preventive screenings a routine part of patient care exist among clinicians, patients, and within clinical settings. Clinicians report they do not have enough time to provide these services because most of their time is spent responding to patients' needs for treatment.^{4,5} Clinicians also cite competing demands, uncertainty about conflicting recommendations, and lack of training in prevention as barriers.⁶ Patients often do not ask their health care providers about preventive services because they are unaware of the benefits or availability of these services, are not motivated to seek them out, are deterred by what they perceive as inconvenience and expense of preventive care, and are worried about the discomfort they think preventive care may entail.

Wellness Program

All efforts of any organization should be directed toward achieving its long-term goals. In a for-profit organization, the long-term goals are survival and generation of profit. In a not-for-profit organization, the goals are survival, provision of specific service to the community, and operation at acceptable spending levels. Sponsorship of employee wellness programs may serve to expedite achievement of all of these long-term goals. However, employee wellness programs are usually not considered by organizations' managers nor initiated without specific purpose and reasons. Typically, the usual ranges of reasons are related to the personal biases of a senior manager, high employee absenteeism, injury rates, or the concern about rapid increases in health care costs. The rationale for introducing a wellness program is usually based upon two major premises: tangible benefits, such as health benefit cost savings, sick leave reduction, fewer workplace injuries, and intangible benefits, such as improved employee morale, hardiness to change, increased loyalty, and increased productivity. There are more than 450 articles that now comprise the research and scientific evidence for the cost-effectiveness of employee wellness programs.⁷

In addition to the evidence and research literature about the tangible and intangible benefits of worksite-based wellness programs, from a theoretical basis, the workplace is an ideal site for the establishment of a wellness program. Approximately 121 million adults over the age of 18 work in America. This large group is essentially captive due to the nature of the workday. A large portion of

the population in the worksite is under benefit programs and policies and is stable enough to utilize a wide variety of formal and informal incentives. Due to the repeated exposure to possibilities associated with the worksite, the potential to influence the behavior of adults in the worksite is probably the greatest of any social setting in American society.⁷

The prevalence of employee wellness programs has greatly increased in the last three decades. What began as somewhat of a rare corporate perk in the early 70s is fast becoming a necessity in the increasing cost-conscious culture of American business. The approximately five years of relatively flat increases in per capita health costs during the mid-nineties have given way to double digit increase, usually in the 15% to 20% range.⁸

The purpose of this study is to examine barriers to preventive health services among benefitted University of North Dakota employees. Although much is known regarding clinician barriers, limited research exists that addresses patient barriers. In light of the fact that the University of North Dakota has recently created a Wellness Center, May 2002, it appears crucial to better understand the current health and wellness services, utilization, and factors that might impede the full measure of current health plan benefits.

The hypothesis: University of North Dakota employees who receive health benefits that pay for recommended preventive screenings chose to participate at the level recommended by the United States Preventive Health Task Force. Further research questions include: Do demographic variables

(age, gender, employment status, etc.) influence perception and actual utilization of preventive health screenings?

CHAPTER II

LITERATURE REVIEW

Clinical preventive services have a substantial influence on many of the leading causes of disease and death. People must have access to clinical preventive services that are effective in preventing disease (primary prevention) or in detecting asymptomatic disease or risk factors at early, treatable stages (secondary prevention). As in Health People 2000, the recommendations of the U.S. Preventive Services Task Force serve as a guide to quality preventive health care.⁹

The U.S. Preventive Services Task Force (USPSTF) is a non-Federal expert panel convened by the U.S. Public Health Service (PHS) to make recommendations on preventive health care. The USPSTF has endorsed a core set of evidence-based, clinical preventive services for asymptomatic individuals with no known risk factors. In 1994, the PHS estimated the cost of adding these recommended services to private health insurance companies, assuming 100 percent participation, to average \$84 per year for adult women and \$52 per year for adult men.

Preventive health services and promotion of healthy lifestyles continue to be seriously underutilized health strategies in the United States. In a publication titled, "Accelerating the Adoption of Preventive Health Services" from a

conference convened by The National Institute for Health Care Management (NIHCM) Research and Education Foundation held September 26-27, 2002, in Washington, D.C., researchers explored a) the confluence of forces responsible for the under usage of many preventive health services, b) the current science and evidence on the value of preventive care, and c) ways the adoption and use of preventive health services might be accelerated.¹⁰ The conference brought together participants from health plans, employers, medical groups, government, academia, benefits consulting firms, and the public health community.

Participants broadly concurred that the evidence base for many preventive health services is growing stronger and that employer, health plan, and government coverage has expanded significantly over the last decade. However, clinicians are highly variable in their embrace of preventive care even when services are a covered benefit for their patients. Fewer than half (44%) of primary care physicians consistently review their patients' health behaviors. At the same time, continuing lack of awareness about the health benefit of preventive care among consumers was cited as further impairing wider use.

Speakers at this conference supported the work of two government initiatives—the United States Preventive Services Task Force (USPSTF) and the Centers for Disease Control and Prevention's (CDC) efforts in creating the Guide to Community Preventive Services. Christina Wee, MD, MPH, assistant professor of medicine in the Division of General Medicine and Primary Care at the Beth Israel Deaconess Medical Center and the Harvard Medical School, addressed provider barriers to preventive health services. They included lack of

time, perception that behavioral counseling is ineffective, lack of training and knowledge, inadequate resources, and inadequate reimbursement. Short office visits do not permit physicians or other primary providers the time to address the multiple behavior changes that are necessary to effect patients' preventive health issues. Furthermore, Dr. Wee reported that surveys indicated that most physicians (71%) do not believe that patients comply with dietary counseling and more than one in three (35%) do not believe that counseling will lead to a lasting change in patients' behaviors. Further compounding that issue is the fact that many physicians feel inadequately trained to deliver advice on nutrition.

A WATCH study¹¹ found that physicians who get both training and office support are far more likely (by a factor of roughly 2 to 1) to counsel patients on nutrition. But this model needs both money and assistance in organizing the information systems and team approaches to preventive care strategies.

While provider issues are implicated in the lack of preventive health care, receipt of preventive services is strongly associated with insurance and a usual source of care.¹² A study utilizing data from 1996 Medical Expenditure Panel Survey, sponsored by the Agency for Health Care Research and Quality, was restricted to 14,995 participants aged 18 or older. A total of nine preventive services were analyzed (5 services among all respondents, 3 services among women only, 1 service among men only). Specific services included blood pressure check, cholesterol check, physical examination, flu shot, dental checkup, papnicolaou test (women only), breast examination (women only), mammogram (women only), and prostate examination (men only). These

particular items were selected because of recent recommendations by the U.S. Preventive Services Task Force about the usefulness of these services in improving health outcomes.

Data were analyzed in different subsets of the survey population of each of the nine preventive services based upon criteria for age and gender. Flu shots and prostate examinations were excluded because of the small number of people without both insurance and a usual source of care. For comparative analyses, responses about usual source of care and health insurance were divided into four categories: 1) yes, usual source of care/yes, insurance, 2) yes, usual source of care/no, insurance, 3) no, usual source of care/yes, insurance, and 4) no, usual source of care/no insurance. Demographics included in analyses were age, sex, race-ethnicity, completion of high school (head of household), residence within or outside metropolitan statistical area, and perceived health status.

Multivariate logistic regression was performed to assess associations of usual source of care and insurance with the use of preventive services among age and sex appropriate subgroups. More than 79% of the adults had a usual source of care. Similarly, nearly 83% had health insurance. Almost 70% had both a usual source of care and health insurance; whereas, fewer than 8% had neither. More than half the uninsured adults had a usual source of care (1573 of 2886; 54.5%).

Several demographic variables were strongly related to having health insurance and a usual source of care. For example, more than 90% of

respondents older than 64 years reported having both compared to 51% between the ages of 18 and 24 years. A higher percentage of women (74%) were insured and had a usual source of care compared with men (65%). Adults who had completed high school were more likely to be insured and have a usual source of care (72%) than those who had not completed high school (61%). Finally, people with insurance and a usual source of care were the most likely to have received services within the most recent 12 months. A consistent pattern was found, with likelihood of preventive services being highest for those with both insurance and a usual source of care, lowest for those with neither, and intermediate for those with one or the other.

As important as health insurance and usual source of care are to receipt of preventive services, they do not themselves insure adequate success. In 1996, Medical Expenditure Panel Survey respondents reported difficulty or delay in obtaining needed health care owing to transportation or communication problems as well as to their own physical problems. Others did not have time, child care, or authorization to miss work.¹³ Certain of the reasons for not having a usual source of care were related to health insurance. Respondents cited changing health plans, the cost of insurance, and not having a provider in their plan available nearby as reasons for not having a usual source of care.

Murasko,¹⁴ using the same 1996 Medical Expenditure Panel Survey (MEPS), modeled the demand for several forms of preventive health services as a function of an extensive set of job characteristics among wage-earners. The 1996 MEPS has information on 22,601 individuals. This analysis is unique in

that it uses a detailed set of employment variables combined with a complete set of demographic, socioeconomic, insurance, and health controls to model the demand for a number of preventive health services. Murasko's model is based upon the conceptual framework of time-costs of seeking preventive health services. He professes that an individual is assumed to have three uses for total time: paid work, household production (leisure time is lumped into household production), and health. The assumption is made that utilization of preventive services requires health-time and, therefore, will be more difficult for individuals with greater time-demands at work or home. He argued that the choice to pursue these services is, therefore, dependent on the perceived benefits of the services relative to the time-costs of forgoing work and household production. Benefits might include higher stock of future health, reduced future out-of-pocket expenditures, and reduced lost-time in the future due to illness. Costs include forgone wages and loss of household production.

The dependent variables used in this analysis were a series of preventive health services. For both genders, MEPS includes information on time since last flu shot, frequency of dental checkups, time since last blood pressure was taken by a health care professional, time since last check of cholesterol level, and time since last complete physical. For women only, MEPS included time since last Pap smear test, time since last breast exam, and time since last mammogram. For men only, MEPS included time since last prostate exam.

MEPS contained a good deal of information on job characteristics of wage-earners. The data included hours worked, hourly wage rates, employee

benefits, job schedules, and occupation groups. MEPS also contained information on age, gender, race, family structure, education, total family income, and health and insurance status.

Education is expected to have a positive association with the use of preventive health services. As the human capital model of health suggests, those with more education are more productive in their investments in health.¹⁵

The results did not indicate that working individuals lacked the time to use these services. Hours worked, irregular shifts, and working more than one job are not robust predictors of utilization. The strongest associations were found in wage levels, paid sick leave, and retirement benefits, all of which are related to the wage earner's cost of time. The effects of paid sick leave and retirement benefits are positive and significant for men, but much less so for women. For male wage-earners, having paid sick leave was associated with an increased probability of utilization of 3.6%, 5.1%, 4.8%, 6.9%, and 4.7% for flu shots, dental checks, blood pressure checks, cholesterol checks, and physical exams, all of which are significant effects.

Improving access to appropriate preventive care requires addressing many barriers, including those that involve the patient, provider, and system of care.^{16,17} Patient barriers include lack of knowledge, skepticism about the effectiveness of prevention, lack of a usual source of primary care, and lack of money to pay for preventive care. Although patient awareness and acceptance of some interventions are high (such as screening for breast cancer), other interventions (for example, colorectal cancer screening and sexually transmitted

disease [STD] screening) are less uniformly accepted. A small but significant number of patients remain skeptical of even widely accepted preventive measures, such as immunizations. Having health insurance, a high income, and a primary care provider are strong predictors that a person will receive appropriate preventive care. Although reimbursement for common screening tests, such as mammograms and Pap tests, is provided by most health insurance plans (and is required by law in some states), reimbursement for effective counseling interventions, such as smoking cessation, is less common.¹⁸

In 1993, the District of Columbia and all states except Wyoming participated in the Behavioral Risk Factor Surveillance System (BRFSS), a population-based, random-digit-dialed telephone survey of adults aged 18 years and older.¹⁹ All persons responding to the BRFSS questionnaire were asked whether they had health care coverage and which of selected preventive health services they had received, if they had a usual place of medical care, and how they perceived their health status. This study specifically targeted preventive health services identified by the national health objectives.

Of the 102,263 persons who participated in the 1993 BRFSS, 81,794 persons aged 18 to 64 years responded to the question about health care coverage. Of these respondents, 16% reported they were uninsured at the time of the interview. The prevalence of being uninsured was highest among men (18%), persons aged 18 to 24 years (27%), those with less than a high school education (35%), those with an annual household income less than \$10,000 (39%), blacks (21%), Hispanics (34%), and persons who were unemployed

(44%). Compared with women who were insured, women who were uninsured were twofold more likely to report having no usual place of medical care (10% versus 18%) and at least 50% less likely to have had both a mammogram and clinical breast examination during the previous two years (69% versus 35%). The prevalence of self-perceived health status was similar among women who were insured and uninsured.

The findings of this report indicated that uninsured persons were more likely to be younger, less educated, of races other than white, unemployed, and of lower economic status. In addition, uninsured persons were less likely to engage in preventive health care practices that could be effectively encouraged in a primary health care setting.

There were several limitations with this study. First, because the BRFSS included only household with a telephone, these findings probably underestimated the prevalence of being uninsured. Second, non-respondents or refusals in household with a telephone may have been younger and less educated persons who are more likely to be uninsured. Third, because estimates were based upon self-reported data, responses could not be validated.

A study conducted by Bindman et al,²⁰ sampling 3,846 women between the ages of 18 and 64 in urban California, examined whether health insurance, a regular place of care, and optimal primary care are independently associated with receiving preventive services. The participants were asked about their demographic characteristics, financial status, health insurance state, need for ongoing care, regular place of care, and receipt of blood pressure screening,

clinical breast examinations, mammograms, and Pap smears. In multivariate analyses that controlled for differences in demographics, financial status, and need for ongoing care, having a regular place of care was the most important factor associated with receiving preventive care services ($p,0001$). Having health insurance ($p<.001$) and receiving optimal primary care from the regular place of care ($p<.01$) further significantly increased the likelihood of receiving preventive care services.

Research was undertaken by Dr. Geetesh Solanki and Helen Schauffler²¹ to assess empirically the relationships between the utilization of recommended preventive services and different forms of patient cost-sharing and how the effect is mediated by type of preventive services, type of cost-sharing, and type of health plan. Sixteen logic models were estimated to assess variation in receiving recommended preventive care as a function of cost-sharing within plan type. The survey consisted of a sample of 10,872 employees, aged 18 to 64 years, of seven large companies served by 52 health plans with diverse cost-sharing arrangements that responded to the Pacific Business Group on Health, Health Plan Value Check Survey (response rate, 50.3%).

Prior health services research indicated that when individuals are required to share part of the costs of their services, they use fewer services. This has been found to be the case in public and private fee-for-service systems of medical care as well as HMOs.²²⁻²⁴ While cost-sharing strategies may have an effect on making consumers more cost-conscious and provide incentives for

reduced utilization, they may inadvertently contribute to underutilization of recommended preventive care.

Data were obtained from the 1994 Pacific Business Group on Health (PBGH) annual random sample survey of employees, the Health Plan Value Check.²² The survey had questions related to satisfaction of employees of member companies with various aspects of their health plans and their utilization of preventive services. Two forms of health plan cost-sharing were defined: 1) deductibles/coinsurance in PPO/indemnity plans and 2) co-payments in PPO/indemnity plans and HMOs. Three health plans were defined: 1) PPO/indemnity plans, where the plan pays for or reimburses the costs for individual services on a fee-for-service or discounted fee-for-service basis and enrollees have free choice of doctor or hospital; 2) group model HMOs, where the HMO contracts with one physician group and the physicians in that group provide care exclusively to that HMO's enrollees; and 3) all other HMOs, where the HMOs contract with one or more independent practice associations or medical groups.

Utilization of recommended preventive services was defined as a dichotomous variable for Pap smears, mammograms, blood pressure, and preventive counseling, based on the USPSTF guidelines.²² Two forms of cost-sharing, four types of preventive services, and three types of health plans were considered, resulting in 16 unique combinations of cost-sharing, type of preventive service, and type of health plan. The effect of cost-sharing on utilization of preventive services was significantly negative for 12 of the 16

combinations examined. The magnitude of the negative effect ranged from -15% (copayments and deductibles/coinsurance on counseling in PPO/indemnity plans) to -.09% (copayments on preventive counseling in group model HMOs).

The effect of cost-sharing on preventive counseling was significantly negative for all forms of cost-sharing.²² Cost-sharing had a mixed effect on blood pressure screening. Neither deductibles/coinsurance nor copayments in PPO/indemnity plans had a significant effect on blood pressure screening. The effect of cost-sharing on Pap smears was negative for all of the combinations of cost-sharing and plan type, except copayments in PPO/indemnity plans. The effect of cost-sharing on mammograms was negative and statistically significant for all combinations.

According to economic theory, different forms of patient cost-sharing are likely to have different effects on preventive service utilization.²² Deductibles require patients to spend, out-of-pocket, a defined amount of money toward the health care cost they incur before their health insurance benefits become effective. Thus, for relatively healthy patients without high utilization or costs, they may never incur costs up to their deductible, leaving preventive care completely uncovered. Coinsurance comes into play once the patient's deductible has been met. Coinsurance requires the patient to pay a fixed percentage, usually 20 to 25%, of the costs of care above the deductible for covered services that are used. For example, if a patient has a deductible of \$500 and has paid out-of-pocket at least \$500 for health care that year and then the patient receives a mammogram that costs \$150, the patient would be

responsible for paying \$30 out-of-pocket for the mammogram if the coinsurance rate is 20%. Co-payments, on the other hand, usually require patients to pay a small fixed fee, usually only \$5 or \$10 per visit to the provider. It is well established that the higher the level of patient cost-sharing, the greater the negative effect on health services utilization. In fact, the effect of cost-sharing on utilization of preventive services was significantly negative for 12 of the 16 combinations when using a 95% confidence interval.

Additional work by Faulkner and Schauffler²⁵ indicated that the level of health insurance coverage for preventive care is one of the most important determinants of receipt of recommended preventive services for men and women 18 to 64 years of age. The study samples 53,981 adults aged 18 to 64 from the CDC 1991 BRFSS. With results demonstrating a positive and statistically significant dose response relationship between level of health insurance coverage for preventive care and receipt of recommended preventive services. The odds ratio of men who had full coverage for preventive care compared to men with no coverage ranged from 1.8 to 2.8. For women, the odds ratio was 1.2 to 2.0.

There is literature that addressed utilization of preventive health services by retired employees aged 65 and older. A retrospective cohort study of 59,670 retired General Motors employees by Musich et al²⁶ used a nationwide mailed health risk assessment (HRA). Gender, HRA participation patterns, overall health risk status, medical plan selection, and disease status were examined as predictors of increased compliance. Multivariate logistic regression models were

developed to test the relative contributions of participant characteristics to increased utilization. The self-reported HRA data indicated that compliance levels were higher than national averages. Higher compliance was associated with being male, younger than 70 years, multiple-year HRA participation, overall low risk status, and HMO insurance plan selection.

University of North Dakota (UND)

Julie Gothman from the Department of Nutrition and Dietetics, in April of 2002, was charged with the task of assessing the worksite wellness needs for the University.²⁷ Her final report was distributed in September of 2002. The purpose of this worksite wellness needs assessment was to begin to define the health status of the University of North Dakota's workforce. The goal was to formulate and make recommendations to key stakeholders on "next steps" for implementation of a worksite wellness initiative at the University of North Dakota.

The University of North Dakota is composed of a large workforce that supports all the functions of the University as well as research that is generated from this campus. It is the state's largest employer outside of the two United States Air Force Bases located in North Dakota.

In 2002, the university human resources were comprised of 5,300 workers, with the majority of them female (54%). Slightly less than half (46%) of the total number of employees were considered full-time with 48% receiving health benefits. Regarding diversity in race/ethnicity, the University has a relatively homogenous population. Ninety-one percent of the workforce in the year 2002 was considered to be white. Of the remaining percentage, the

statistics rank in descending order with Asian being second (4%), American Indian being third (2.5%), and Black and Hispanic being 1% for each. Looking at the age distribution using total population demographic information for the year 2002, it appeared that there was a slight difference in distribution between the age groups 18 to 24, 25 to 34, 35 to 44, 45 to 54, and 55+, ranging from 14 to 25% in any given distribution.

There were some dramatic differences between two distinct groupings in the workforce, faculty and staff. Faculty were the minority of the workforce (25% of the overall population at UND (n = 1332). Slightly over half (51%) of the faculty were part-time employees and 49% were full-time. Males made up 55% of the faculty. The majority of the faculty (86%) was considered to be white. Asian faculty represented 7%, American Indian comprised 3%, Black faculty represented 2%, and Hispanic faculty represented less than 1%. Only 4% of the faculty fell into the 18 to 24 age category. The combined age distribution categories 25 to 34 and 35 to 44 comprised almost half of the faculty population (48%).

The staff members at the University of North Dakota comprised 75% of the workforce (n = 3969), with 46% being full-time and 54% being part-time employees. In 2002, 47% of the staff members received health benefits. Women made up 57% of the workers and 43% were male. Almost one-third (32%) of these employees were between the ages of 18 and 24, the same ages of most college students. The remaining age demographic groups range from 12 to 20%. The overwhelming majority of these employees were considered

white (93%). American Indians and Asians both comprised 2% (4% total) of the staff population. Hispanic origin and Blacks made up 1% and 1% of the population, respectively.

The University of North Dakota, in association with the North Dakota Public Employees Retirement System, has established an employee welfare benefit plan for eligible employees and their dependents. Blue Cross Blue Shield of North Dakota (BCBSND) is responsible for the health portion of the benefit plan. This plan is fully insured and issued by BCBSND.

Eligibility for participation in the health benefit plan is limited to active employees 18 years of age and older who work at least 17½ hours per week for five or more months per year, and whose positions are regularly funded and not of limited duration (i.e., permanent). If enrolled at the time of retirement, a person is eligible for 18 months of Consolidated Omnibus Budget Reconciliation Act, COBRA, continuation.

The initial enrollment period is 31 days from the date of employment. Coverage is effective the first of the month following the hiring date. If a person does not enroll during the initial 31-day eligibility period when hired or does not enroll within 31 days of a qualifying event, application for coverage can only be made during annual enrollment in May with coverage effective the following July 1. However, the employee and/or dependents may be subject to a 12-month pre-existing condition period.

The Preferred Provide Organization (PPO) is a group of hospitals, clinics, and physicians who have agreed to discount their services to members of

NDPERS. No referral is needed. If a person chooses a provider from the PPO, they will have lower out-of-pocket expenses. The Exclusive Provider Organization (EPO) is a managed care program and encourages the use of a Primary Care Physician. If enrolled in the EPO, lower out-of-pocket expenses for annual deductibles and reduced co-payments for office visits and diagnostic services are benefits. All plans run from July 1 through June 30 of the following year. Deductibles, diagnostic x-ray/lab copayments and coinsurance maximums accrue on a "calendar year" basis, January 1 through December 31.

NDPERS/BCBSND does cover five preventive health screening services for covered members and dependents. Table 1 describes screenings and frequency in which the screening can be utilized. Preventive services are paid at 100% of allowed charge. The deductible is waived.

In the fall of 2002, the Department of Nutrition and Dietetics administered a survey in order to ascertain information about the health status of the University of North Dakota's faculty and staff. The research was carried out under the direction of Julie Gothman, MPH, RD. A stratified random sample of 400 employees was selected from the 5,302 benefitted faculty and staff. Eighteen questions were asked on the survey instrument. Questions were based on validated questions from the Behavioral Risk Factor Surveillance Survey (BRFSS) from the Centers for Disease Control and Prevention. The survey yielded a response rate of 54%.

The survey population was representative of the workforce at UND in terms of gender, race, and employee category. The participants were asked a

Table 1. NDPERS Prevention Screenings for Employees Covered by ND BCBS

EPO	PPO
<u>Ages 19-39 (1x every 5 years)</u> Hemoglobin UA Fecal Occult Blood Total Cholesterol Blood Sugar Office Visit PSA	<u>Ages 19-39 (1x every 5 years)</u> Fecal Occult Blood Total Cholesterol Blood Sugar
<u>Ages 40-64 (1x every 2 year)</u> Hemoglobin UA Fecal Occult Blood Total Cholesterol Blood Sugar Office Visit	<u>Ages 40-64 (1x every 2 years)</u> Fecal Occult Blood Total Cholesterol Blood Sugar
<u>Ages 40-64 (1 per year)</u> PSA and Office Visit	<u>Ages 40-64 (1 per year)</u> PSA & Office Visit (subject to cost share)
<u>Over 65 (1 per year)</u> Hemoglobin UA Fecal Occult Blood Total Cholesterol Blood Sugar Office Visit Influenza Vaccine Pneumovax PSA & Office Visit	<u>Over 65 (1 per year)</u> Fecal Occult Blood Total Cholesterol Blood Sugar PSA & Office Visit (subject to cost share)
	<u>Both Plans</u> <u>(1 per year)</u> 1 TB test Mammography service Ages 35-40 1 service Ages 40+ 1 service Pap Smear & Office Visit

Please call BCBS at 1-800-223-1704 with questions about your insurance.

series of questions related to health and wellness. Questions focused on physical illness and injury, mental health, work habits, medical conditions, lifestyle activities, height, and weight.

Participants were asked how many days in the last 30 days was physical health not good due to illness or injury. Almost 90% reported 0 to 4 days of poor health. A similar question was asked in relation to mental health. Again, a majority of respondents, 84%, reported 0 to 4 days of poor mental health days in the last 30 days. Participants were asked how many days in the last 30 days were usual activities affected by poor physical or mental health status. Almost 66% reported 0 days of interruption. To gather information on health conditions, a question was asked if the respondent had ever been told by a health care professional if they had specific health conditions. Only 28% indicated that they had not been informed of any specific health condition. Back and neck problems were the most common condition at 22% with high cholesterol a close second at 21%. Another question addressed lifestyle behaviors that influence health status. Almost 90% of respondents indicated that they rarely or never smoke. Yet only 40% indicated a level of physical activity that met the minimum as suggested by the American College of Sports Medicine (ACSM). In addition, only 9% indicated that they ate five servings of fruits and vegetables per day. Participants were asked about their perception as to their personal health status, generally speaking. Almost 93% of respondents reported their general health to be either "excellent," "very good," or "good." Employees were asked their weight

and height and BMIs were calculated from those data. Males had an average BMI of 28.5 kg/m² and females 26.6 kg/m².

A series of employee health screenings were completed from March 5, 2005, through May 21, 2002. A total of 126 employees completed the health screening process. These employees were self-selected. The results only describe this specific population and cannot be generalized across the entire UND employee population. A health risk assessment tool was administered along with a lipid panel, flexibility, and strength testing. Of the 126 participants, 65% were female and 35% were male. The average age of the participants was 44 years of age. Based upon a line of questions and the data provided in the questionnaire, five health risks were found to be the most prevalent among UND's participants. They included cholesterol - 70%, self-care - 58%, back care - 56%, eating - 56%, and activity and exercise - 56%.

Participants were grouped as high risk and moderate risk for those same five health risks. Cholesterol screening values and related risk factors were established by the national Cholesterol and Education Program. Weight risk factors were based upon 1983 Metropolitan Life Insurance Tables. Risk levels for back care were based upon a weighted composite score on an index including the following factors: history of back pain, job requiring regular lifting or long periods of sitting or standing, high stress level, aerobic exercise, weight, flexibility, and strength. In the area of self care, level of risk was set based upon contacts with a health care provider in treating most common ailments. And, finally, the activity and exercise levels were based upon ACSM guidelines.

Over three-fourths of those screened over the age of 40 were at moderate or high risk for congestive heart disease. Approximately one-fifth of participants between the ages of 30 to 49 years had high weight risk, and of those individuals aged 50 to 59 years, 56% were at high risk. Males and females had equal risk for back and neck problems with over 60% between the ages of 30 to 59+ years either moderate or high risk. Approximately 25% of the sampled population was in the high risk category as indicated by not participating in moderate activity three or more times per week. An additional 47% were in the moderate risk in this category. Yet interestingly, 80% of those surveyed considered their health to be excellent or good.

In February of 2003, the University of North Dakota Wellness Center in conjunction with the United State Department of Agriculture Human Nutrition and Research Center, UND Student Health, School of Medicine and Health Sciences, College of Nursing, and Physical Education and Exercise Science Department conducted an employee health screening. A total self-selected population of 434 employees participated in the screening. A health risk assessment was administered. Lipid panel, blood pressure level, flexibility, height, weight, 3 site skin fold, strength, and sub-maximum VO_2 were also measured and reported. All screening tools and measures were optional.

Females represented 63% of the participants with males at 37%. Age category 40 to 49 had the largest percentage with 31% followed closely at 30% for ages 50 to 59 years. A total of 310 employees participated in the height and weight measurements. High risk was considered to be a body mass index (BMI)

of 30 or greater, moderate risk was 26 to 29.9 BMI. An astounding 98% of participants were rated as either moderate or high risk, with 54% in the high risk and 44% in moderate.

Cholesterol risk levels were based upon total, HDL, LDL, and triglycerides. For total cholesterol, low risk was less than 199, moderate 200 to 239, and high greater than 240. A total of 397 employees were screened. Twenty-seven percent were considered high risk and another 37% moderate risk. HDL risk levels were only measured as high or low, with high risk less than 40 and low risk greater than 40. Thirty-six percent were assigned to the high risk category. Triglyceride levels were defined as high risk greater than 200, moderate risk for ranges 150 to 199, and low risk less than 149. For triglyceride distribution, 74% of participants had a normal risk level, 14% moderate, and 12% of participants with high risk. LDL risk levels were set as less than 129 for low, 130 to 150 for moderate, and greater than 160 for high risk. There was almost even distribution across risk categories with low, moderate, and high at 36%, 31%, and 32%, respectively. This still classified approximately 64% of participants as moderate to high risk.

CHAPTER III

METHODOLOGY

In November of 2002, Dr. Edward Simanton, Dr. Jon Allen, and Laurie Betting met to discuss the pending employee health screening. Parties reviewed known utilization of preventive screening provided by NDPERS. The objective was to identify barriers to receiving preventive screenings and design a screening program to eliminate as many barriers as feasible. It was determined that a preliminary survey would be developed in an attempt to identify barriers.

A stratified sample of 400 employees was selected from the 5,301 benefitted faculty and staff employed at UND. As staff members at the University of North Dakota comprised 75% of the workforce (n = 3969), and faculty were the minority of the workforce (25% of the overall population at UND (n = 1332), a 3 to 1 ratio was set for target employees, staff to faculty. To determine the sample, a randomized list of names identifying full-time benefitted employees was obtained from Personnel Services at UND (one list for staff and another list for faculty only). By using every tenth name on the list, 100 faculty names and 300 staff names were chosen to achieve the overall sample size of 400. Surveys were color-coded, peach for staff and green for faculty.

Permission to collect data from these individuals was granted by the University of North Dakota Institutional Review Board (IRB) on December 16,

2002. The completion and return of each individual survey indicated voluntary participation. The survey (see Appendix A) included a cover letter (see Appendix B) explaining the research project and inviting them to participate. The cover letter also assured confidentiality of responses and gave a preliminary thank you for the response. Additionally, the cover letter asked for completion and return of the survey before January 5, 2003. The survey was sent via inter-campus mail on December 23, 2002. The closing date for acceptance of surveys was January 5, 2003.

The participants were asked a series of questions related to preventive screenings. Questions focused on barriers and convenience issues when seeking preventive screenings. In addition, a question was asked to address willingness to participate in funding for health screenings. This question was related to a then-future employee health fair.

Information regarding actual health preventive care utilization for benefitted UND employees was obtained through Bryan Reinhart at the North Dakota Public Employees Retirement System. These data included years 1998 through 2002 (See Appendix C).

Data from the returned surveys were entered into the computer for statistical analysis. The researcher elected not to interpret results when the probability exceeded .05. Statistical data were compiled via the Statistical Pack for Social Sciences (SPSS-Version 6.1) (SPSS Inc., 1994). Descriptive statistical cross tabulations were done to investigate any correlation between the dependent variable, perception of receiving recommended preventive health

screenings with the remaining question sets. Confidentiality was maintained for all aspects of the data analysis.

CHAPTER IV

RESULTS

Of the 400 survey participants selected by random sample, a total of 102 survey instruments were returned, yielding a response rate of 26%. Table 2 illustrates the demographic information found in the survey population and compared to UND population statistics for faculty and staff as reported by Personnel Services. Comparison data are present for gender, age, and employee categories. While the sample includes a slightly higher proportion of women than the UND employee population, the employee category proportions are quite similar and the age groups in the sample are almost a perfect match.

Table 2. Comparison of Survey Sample to UND Population Characteristics (n=102)

Characteristics (2002)	Sample (%)	UND (%)
<u>Gender (%)</u>		
Men	30	46
Women	70	54
<u>Age (years)</u>		
19 to 39	28	29
40 to 64	70	69
65 or over	2	2
<u>Employee Category (%)</u>		
Staff	82	75
Faculty	18	25

Survey Response Frequencies

Survey Question 1

Do you get the recommended preventive health screenings?

The information from this question would identify perception of compliance with receiving the appropriate preventive health screenings. A total of three options were provided: “yes,” “no,” or “not sure.” The respondents as a whole, 49.1%, indicated compliance with receiving the recommended preventive health screenings. Thirty-eight percent indicated a negative response and 13% indicated they were uncertain.

Survey Question 2

Do you have a physician in the Grand Cities Area?

Only positive and negative responses were solicited. Over 85% indicated affirmatively that they indeed did have a physician in the Grand Cities Area.

Survey Question 3

Which of the following are barriers to preventive health screenings for you? (Check all that apply.)

A total of four categories were listed. Respondents were instructed to check all that apply. Table 3 outlines responses in order of descending frequency.

Survey Question 4

Which of the following convenience issues do you consider when seeking preventive health screenings? (Check all that apply.)

Table 3. Barriers to Preventive Screenings

46.1%	I don't know what screenings I need.
42.2%	I don't know what cost is covered by my health plan.
23.5%	I feel healthy and assume I don't need screenings.
22.5%	The cost (not covered by the health plan) is too much.

A total of eight categories were listed. Respondents were instructed to check all that apply. Table 4 shows responses in order of descending frequency.

Table 4. Convenience Issues Considerations for Seeking Preventing Health Screenings

48.0%	I typically don't see doctors unless I'm sick.
26.5%	It's hard to get in to see a doctor (appointments scheduling far into the future).
19.6%	I often forget.
16.7%	It is difficult to take time away from work.
15.7%	I'm apprehensive about the medical procedures required (i.e., needles, blood pressures, scopes, etc.).
12.7%	I don't have the time.
2.9%	I don't think it makes any difference to my health.
0.0%	Health screenings are an intrusion into my privacy.

Survey Question 5

Would you be willing to pay a nominal fee for screenings?

A total of three options were provided: "yes," "no," and "not sure." The intent of this question was to determine whether some cost sharing would be a barrier to conducting an employee health screening at the worksite.

Approximately 53% indicated that they would be willing to pay a nominal fee for health screenings; whereas, 15% answered that they would not be willing to pay and approximately 31% were "not sure."

Examination of Research Questions

The dependent variable, “Do you get the recommended preventive health screenings” was used to perform cross tabulations with the remaining questions. Questions 3 and 4, which allowed for multiple responses, were cross tabulated for each individual option. The intent was to determine if the perception of receiving the recommended preventive screenings were correlated to perception of barriers to receiving those screenings. Furthermore, chi square analysis was utilized to determine statistical significance. Finally, actual percent of compliance is reported for preventive health screenings.

To answer research questions addressing demographic variables, cross tabulations were performed. Specifically, this researcher was interested in whether the following independent variables were statistically significant: having a physician in the Grand Cities area, perception of health status, not knowing what screenings are needed, not knowing what costs are covered by the health plan, the cost not covered by the health plan being too much, not having enough time, not seeing a doctor unless you are sick, having difficulty getting in to see a doctor, difficulty taking time away from work, apprehension about the medical procedure, health screenings being an intrusion to privacy, and willingness to pay a nominal fee.

Cross tabulations were performed comparing the dependent variable, recommended preventive screening, with the question regarding whether or not the responder had a physician in the Grand Cities area. Of the 85% who responded that they had a physician, 55.6% indicated that they received the

recommended screenings, 30% did not, and 14.4% were not sure (see Table 5).

This was statistically significant at a .05 level.

Table 5. Do You Have a Physician Here in the Grand Cities Area? Do You Get the Recommended Screenings? Cross Tabulation

		Do you get preventive health?				
			Yes	No	Not sure	Total
Do you have physician here In Grand Cities?	Yes	Count	50	27	13	90
		% within 2	55.6%	30.0%	14.4%	100.0%
	No	Count	2	13		15
		% within 2	13.3%	86.7%		100.0%
	Not sure	Count			1	1
		% within 2			100.0%	100.0%
Total		Count	52	40	14	106
		% within 2	49.1%	37.7%	13.2%	100.0%

Chi-Square Tests

	Value	df	Asymptomatic Significance (2-sided)
Pearson Chi-Square	24.278 ^a	4	.000
Likelihood Ratio	22.836	4	.000
Linear-by-Linear Association	4.575	1	.032
N of Valid Cases	106		

^a4 cells (44.4%) have expected count less than 5. The minimum expected count is .13.

Perception of health status was also cross tabulated against that of receiving the recommended preventive health screenings. Those that perceived

themselves as healthy and assumed they did not need screenings accounted for 23% of the total sample population. Of the remaining 77% who did not indicate that they felt healthy and did not need screenings, 58.5% reported they did get the recommended screenings, 32.9% did not, and 8.5% were not sure (see Table 6). This was determined to be statistically significant.

Table 6. I Feel Healthy and Assume I Don't Need Screenings. Do You Get the Recommended Screenings? Cross Tabulation

			Do you get preventive health?			Total
			Yes	No	Not sure	
I feel healthy and I don't need screenings	No	Count % within 1	48 58.5%	27 32.9%	7 8.5%	82 100.0%
	Yes	Count % within 1	4 16.7%	13 54.2%	7 29.2%	24 100.0%
Total		Count % within 1	52 49.1%	40 37.7%	14 13.2%	106 100.0%

Chi-Square Tests

	Value	df	Asymptomatic Significance (2-sided)
Pearson Chi-Square	14.837 ^a	2	.001
Likelihood Ratio	15.342	2	.000
Linear-by-Linear Association	14.539	1	.000
N of Valid Cases	106		

^a 1 cell (16.7%) has expected count less than 5. The minimum expected count is 3.17.

Of the 46.1% of the sample population who indicated they did not know what preventive screenings they needed, 71.9% reported that they received the recommended preventive screenings, 19.3% did not, and 8.8% were not sure (see Table 7). This was statistically significant at the .05 level.

Table 7. I Don't Know What Screenings I Need. Do You Get the Recommended Preventive Health Screenings? Cross Tabulation

		Do you get preventive health?				Total
		Yes	No	Not sure		
I don't know what screenings I need.	No	Count % within 1	41 71.9%	11 19.3%	5 8.8%	57 100.0%
	Yes	Count % within 1	11 22.4%	29 59.2%	9 18.4%	49 100.0%
Total		Count % within 1	52 49.1%	40 37.7%	14 13.2%	106 100.0%

Chi-Square Tests

	Value	df	Asymptomatic Significance (2-sided)
Pearson Chi-Square	26.095 ^a	2	.000
Likelihood Ratio	27.377	2	.000
Linear-by-Linear Association	18.435	1	.000
N of Valid Cases	106		

^a0 cells (0%) have expected count less than 5. The minimum expected count is 6.47.

Comparison of knowledge of what costs are covered by the health plan and receiving the recommended preventive screenings indicated that of the

49.1% of the total sample population, 28.9% reported they did not know what cost is covered by their health plan (see Table 8). Again, these data were statistically significant at the .05 level.

Table 8. I Don't Know What Cost is Covered by my Health Plan. Do You Get the Recommended Preventive Health Screenings? Cross Tabulation

		Do you get preventive health?				
			Yes	No	Not sure	Total
I don't know cost covered by my health plan.	No	Count	39	16	6	61
		% within 1	63.9%	26.2%	9.8%	100.0%
	Yes	Count	13	24	8	45
		% within 1	28.9%	53.3%	17.8%	100.0%
Total		Count	52	40	14	106
		% within 1	49.1%	37.7%	13.2%	100.0%

Chi-Square Tests

	Value	df	Asymptomatic Significance (2-sided)
Pearson Chi-Square	12.761 ^a	2	.002
Likelihood Ratio	13.078	2	.001
Linear-by-Linear Association	9.593	1	.002
N of Valid Cases	106		

^a0 cells (0%) have expected count less than 5. The minimum expected count is 5.94.

Cross tabulations of the perception that the costs not covered by the health plan are too much and receiving the recommended screenings indicated that of the 49.1% that believed they did receive the appropriate recommended

preventive screenings, 45.1% did not indicate that cost was an issue. Of the total population sample, 37.7%, who reported they did not receive the appropriate screenings, 62.5% indicated that cost not covered by the health plan was a factor. These data were not determined to be statistically significant at the .05 level.

Table 9. The Cost (Not Covered by the Health Plan) is Too Much. Do You Get the Recommended Preventive Health Screenings? Cross Tabulation

		Do you get preventive health?				Total
		Yes	No	Not sure	Total	
The cost (not covered by the plan) is too much	No	Count % within 1	37 45.1%	33 40.2%	12 15.6%	82 100.0%
	Yes	Count % within 1	15 62.5%	7 29.2%	2 8.3%	24 100.0%
Total		Count % within 1	52 49.1%	40 37.7%	14 13.2%	106 100.0%

Chi-Square Tests

	Value	df	Asymptomatic Significance (2-sided)
Pearson Chi-Square	2.305 ^a	2	.316
Likelihood Ratio	2.339	2	.310
Linear-by-Linear Association	2.087	1	.149
N of Valid Cases	106		

^a1 cell (16.7%) has expected count less than 5. The minimum expected count is 3.17.

Cross tabulations with the dependent variable, perception of receiving the recommended preventive health screenings with the statement, "I don't have time," indicated that 51.1% of those who reported they received the screenings did not indicate that time was a barrier to receiving those screenings (see Table 10). The issue of time was not determined to be statistically significant.

Table 10. I Don't Have Time. Do You Get the Recommended Preventive Health Screenings? Cross Tabulation

		Do you get preventive health?				
		Yes	No	Not sure	Total	
I don't have time	No	Count % within 1	47 51.1%	33 35.9%	12 13.0%	92 100.0%
	Yes	Count % within 1	5 13.3%	7 86.7%	2 14.3%	14 100.0%
Total		Count % within 1	52 49.1%	40 37.7%	14 13.2%	106 100.0%

Chi-Square Tests

	Value	df	Asymptomatic Significance (2-sided)
Pearson Chi-Square	1.242 ^a	2	.537
Likelihood Ratio	1.244	2	.537
Linear-by-Linear Association	.672	1	.412
N of Valid Cases	106		

^a1 cell (16.7%) has expected count less than 5. The minimum expected count is 1.85.

Those who indicated that they do not see a doctor unless they were sick and said they did receive the recommended preventive screenings accounted for 19.6% of the participants (see Table 11). This was a statistically significant finding at the .05 level.

Table 11. I Typically Don't See Doctors Unless I'm Sick. Do You Get the Recommended Preventive Health Screenings? Cross Tabulation

			Do you get preventive health?			
			Yes	No	Not sure	Total
I typically don't go to doctors unless I'm sick	No	Count % within 1	42 76.4%	10 18.2%	3 5.5%	55 100.0%
	Yes	Count % within 1	10 13.3%	30 86.7%	11 21.6%	51 100.0%
Total		Count % within 1	52 49.1%	40 37.7%	14 13.2%	106 100.0%

Chi-Square Tests

	Value	df	Asymptomatic Significance (2-sided)
Pearson Chi-Square	34.161 ^a	2	.000
Likelihood Ratio	36.348	2	.000
Linear-by-Linear Association	28.169	1	.000
N of Valid Cases	106		

^a0 cells (0%) have expected count less than 5. The minimum expected count is 6.74.

Cross tabulation with perception of receiving the recommended screenings with the barrier of getting in to see a doctor indicated that 51.3% of

those who reported receiving those screenings had no difficulty getting in to see a doctor. Of those receiving those screenings, 35.9% did have difficulty getting in to a doctor, and 12.8% were not sure (see Table 12). This item did not have statistical significance when measured at the .05 level.

Table 12. It's Hard to Get in to See a Doctor (Appointments Scheduling Far Into the Future). Do You Get the Recommended Preventive Health Screenings? Cross Tabulation

			Do you get preventive health?			
			Yes	No	Not sure	Total
It's hard to get in to see a doctor (scheduling far into the future)	No	Count % within 1	40 51.3%	28 35.9%	10 12.8%	78 100.0%
	Yes	Count % within 1	12 42.9%	12 42.9%	4 14.3%	28 100.0%
Total		Count % within 1	52 49.1%	40 37.7%	14 13.2%	106 100.0%

Chi-Square Tests

	Value	df	Asymptomatic Significance (2-sided)
Pearson Chi-Square	.596 ^a	2	.742
Likelihood Ratio	.597	2	.742
Linear-by-Linear Association	.404	1	.525
N of Valid Cases	106		

^a 1 cell (16.7%) has expected count less than 5. The minimum expected count is 3.70.

Convenience issue of “It is difficult to take time away from work” was cross tabulated against receiving recommended preventive health screenings. Forty-one percent of the total population indicated they received the screenings and had no difficulty taking time away from work (see Table 13). Difficulty taking time away from work was not determined to be statistically significant.

Table 13. It is Difficult to Take Time Away From my Work. Do You Get the Recommended Preventive Health Screenings? Cross Tabulation

			Do you get preventive health?			
			Yes	No	Not sure	Total
It is difficult to take time away from my work	No	Count % within 1	44 50.0%	34 38.6%	10 11.4%	88 100.0%
	Yes	Count % within 1	8 44.4%	6 33.3%	4 22.2%	18 100.0%
Total		Count % within 1	52 49.1%	40 37.7%	14 13.2%	106 100.0%

Chi-Square Tests

	Value	df	Asymptomatic Significance (2-sided)
Pearson Chi-Square	1.539 ^a	2	.463
Likelihood Ratio	1.367	2	.505
Linear-by-Linear Association	.807	1	.369
N of Valid Cases	106		

^a1 cell (16.7%) has expected count less than 5. The minimum expected count is 2.38.

Only nine individuals, or 8% of the total population sampled, perceived they received the appropriate screenings reported that they were apprehensive about the medical procedures. And 4% of the population who did not receive screenings also reported apprehension about the medical procedure as a barrier; whereas, 41% who received preventive screenings reported no apprehension (see Table 14). Apprehension regarding the medical procedure did not show statistical significance.

None of the sample population indicated that health screenings were an intrusion to their privacy (see Table 15). Thus, the cross tabulation with the constant variable of receiving the recommended preventive health screenings was consistent.

None of the participants who perceived themselves as receiving the recommended screenings selected "I don't think it makes any difference to my health." And only three individuals or less than 3% of the sample who did not receive preventive screenings reported they did not think it made a difference to their health (see Table 16). This was not determined to be statistically significant.

Willingness to pay a nominal fee for screenings was questioned mainly to address future wellness events. Almost 53% of the sample population indicated that they were willing to pay a nominal fee. Of that 53%, half, or 50%, reported that they received the recommended screenings (see Table 17). Willingness to pay a nominal fee was not statistically significant.

Table 14. I'm Apprehensive About the Medical Procedures Required (i.e., Needles, Blood Pressures, Scopes). Do You Get the Recommended Preventive Health Screenings? Cross Tabulation

		Do you get preventive health?				Total
		Yes	No	Not sure		
I'm apprehensive about the medical procedures required (i.e., needs, blood pressures, scopes, etc.)	No	Count % within 1	43 47.8%	35 38.9%	12 13.3%	90 100.0%
	Yes	Count % within 1	9 13.3%	5 31.3%	2 12.5%	16 100.0%
Total		Count % within 1	52 49.1%	40 37.7%	14 13.2%	106 100.0%

Chi-Square Tests

	Value	df	Asymptomatic Significance (2-sided)
Pearson Chi-Square	.416 ^a	2	.812
Likelihood Ratio	.420	2	.811
Linear-by-Linear Association	.236	1	.627
N of Valid Cases	106		

^a1 cell (16.7%) have expected count less than 5. The minimum expected count is 2.11.

Table 15. Health Screenings are an Intrusion into My Privacy. Do You Get the Recommended Preventive Health Screenings? Cross Tabulation

			Do you get preventive health?			
			Yes	No	Not sure	Total
Health screenings are an intrusion into my privacy	No	Count	52	40	14	106
		% within 1	49.1%	37.7%	13.2%	100.0%
Total		Count	52	40	14	106
		% within 1	49.1%	37.7%	13.2%	100.0%

Table 16. I Don't Think it Makes Any Difference to my Health. Do You Get the Recommended Preventive Screenings? Cross Tabulation

		Do you get preventive health?			
		Yes	No	Not sure	Total
I don't think it makes any difference to my health	No	Count 52 % within 1 50.5%	37 35.9%	14 13.6%	103 100.0%
	Yes	Count 3 % within 1	3 100.0%		3 100.0%
Total		Count 52 % within 1 49.1%	40 37.7%	14 13.2%	106 100.0%

Chi-Square Tests

	Value	df	Asymptomatic Significance (2-sided)
Pearson Chi-Square	5.094 ^a	2	.078
Likelihood Ratio	5.992	2	.050
Linear-by-Linear Association	.795	1	.372
N of Valid Cases	106		

^a3 cells (50.0%) have expected count less than 5. The minimum expected count is .40.

Table 17. Would You be Willing to Pay a Nominal Fee for Screenings? Do You Get the Recommended Preventive Health Screenings? Cross Tabulation

		Do you get preventive health?				Total
		Yes	No	Not sure		
Would you be willing to pay a nominal fee for health screenings	Yes	Count % within 5	28 50.0%	22 39.3%	6 10.7%	56 100.0%
	No	Count % within 5	9 60.0%	4 26.7%	2 13.3%	15 100.0%
	Not sure	Count % within 5	15 42.9%	14 40.0%	6 17.1%	35 100.0%
Total		Count % within 5	52 49.1%	40 37.7%	14 13.2%	106 100.0%

Chi-Square Tests

	Value	df	Asymptomatic Significance (2-sided)
Pearson Chi-Square	1.895 ^a	4	.755
Likelihood Ratio	1.920	4	.750
Linear-by-Linear Association	.691	1	.406
N of Valid Cases	106		

^a2 cells (22.2%) have expected count less than 5. The minimum expected count is 1.98.

As a whole, when compared, women (54.8%) were more likely to get the recommended preventive screenings as men (36.4%) (see Table 18). However, as previously stated, women (n = 73) were more likely than men (n = 33) to answer the survey.

Table 18. What is Your Gender? Do You Get the Recommended Preventive Health Screenings? Cross Tabulations

		Do you get preventive health?				Total
		Yes	No	Not sure		
What is your gender?	Male	Count % within 1	12 36.4%	19 57.6%	2 6.1%	33 100.0%
	Female	Count % within 1	40 54.8%	21 28.8%	12 16.4%	73 100.0%
Total		Count % within 1	52 49.1%	40 37.7%	14 13.2%	106 100.0%

Cross tabulations of age ranges, 19 to 39, 40 to 64, and 65 and older with perception of receiving the recommended health screenings suggest those 65 years and older are participating at 100%, and of those aged 40 to 64 years, 57.5% are receiving those screenings. Respondents aged 19 to 39 years who indicated they either did not receive the screenings or were uncertain accounted for 73.3% (see Table 19).

Table 19. What is Your Age? Do You Get the Recommended Preventive Health Screenings? Cross Tabulation

		Do you get preventive health?			
		Yes	No	Not sure	Total
19 to 39	Count	8	16	6	30
	% within 7	26.7%	53.3%	20.0%	100.0%
40 to 64	Count	42	23	8	73
	% within 7	57.5%	31.5%	11.0%	100.0%
65+	Count	2			2
	% within 7	100.0%			100.0%
	Count		1		1
	% within 7		100.0%		100.0%
Total	Count	52	40	14	106
	% within 7	49.1%	37.7%	13.2%	100.0%

The perception between faculty and staff with screening participation was similar. Of faculty, 52.6% and 48.3% of staff indicated they received the recommended preventive health screenings (see Table 20).

Table 20. Faculty/Staff. Do You Get the Recommended Preventive Health Screenings? Cross Tabulation

		Do you get preventive health?			
		Yes	No	Not sure	Total
Faculty	Count	10	7	2	19
	% within	52.6%	36.8%	10.5%	100.0%
Staff	Count	42	33	12	87
	% within	57.5%	31.5%	11.0%	100.0%
Total	Count	52	40	14	106
	% within	49.1%	37.7%	13.2%	100.0%

Actual utilization, for gender specific screenings recommended for yearly screening, was averaged for the five years, 1998 through 2002 (see Figure 1). Neither the mammogram nor PSA were recommended for ages 19 to 39 years.

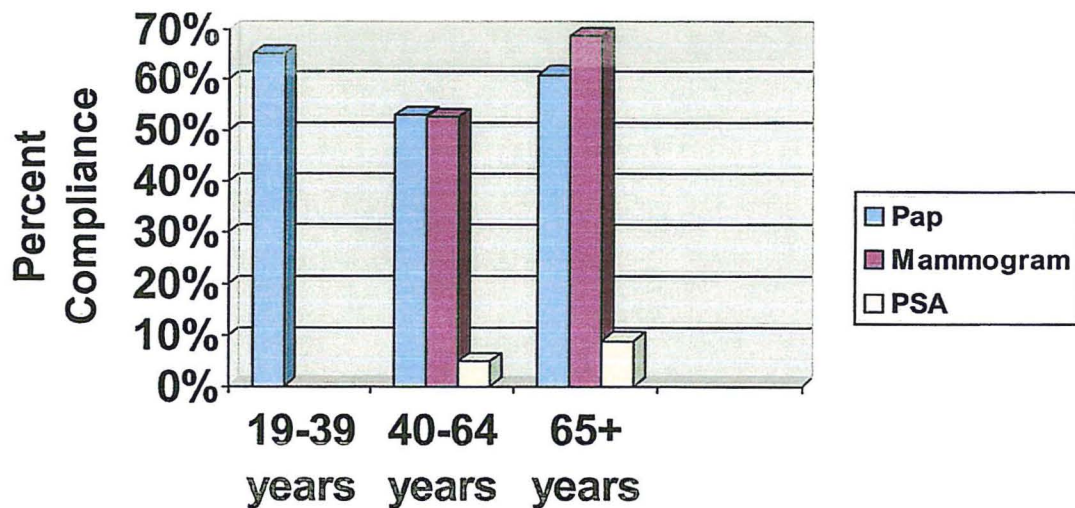


Figure 1. Gender specific screenings.

Other annual recommended screenings, for ages 65 and older, were also adjusted for five-year averages (see Figure 2). None of the six health screenings exceeded 15% compliance from benefitted UND employees by age and gender. In addition, none of the females represented participated in the screening for total serum cholesterol over the five years in review.

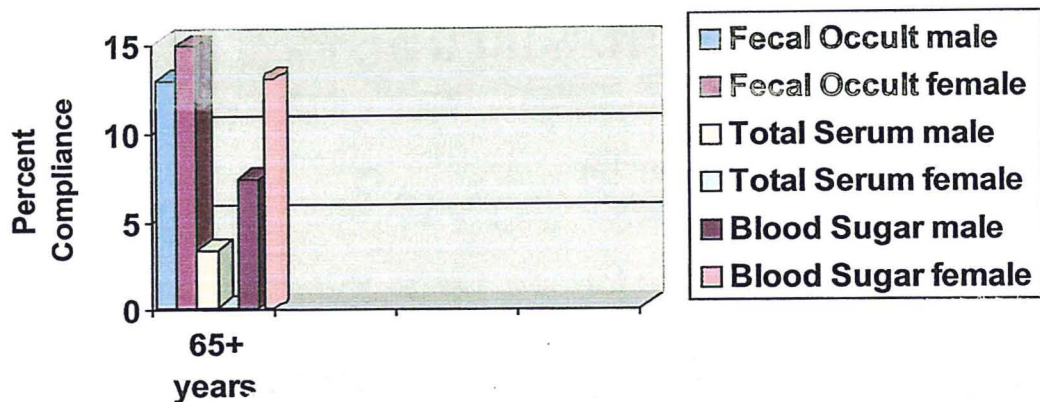


Figure 2. Compliance with annual screenings.

The same screenings, fecal occult, total serum, and blood sugar, for ages 40 through 64, are recommended on a once every two-year cycle. Percent compliance averaged over five years is reported in Figure 3. As a whole, none of the compliance percentages for those benefitted employees in the represented age groups exceeded nine percent. Total serum cholesterol for both male and female were less than two percent of the eligible population. Women were almost two times as likely as men to receive the appropriate screenings.

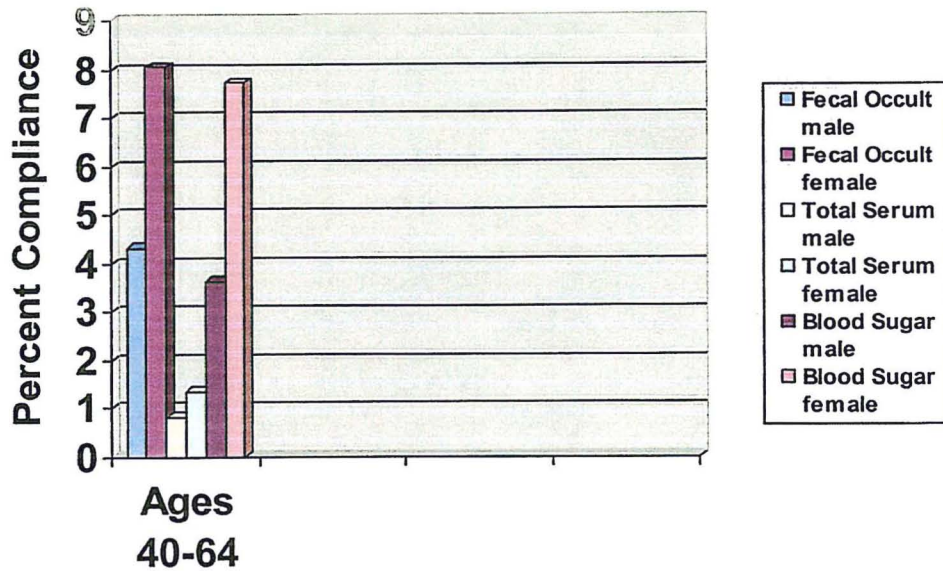


Figure 3. Recommended screenings, ages 40 to 64 years.

Compliance is also reported for a five-year average for those screenings which are recommended on a once every five-year cycle. Those represented in this category are benefitted employees aged 19 to 39 years. Screenings recommended at this interval include fecal occult, total serum, and blood sugar (see Figure 4). As a whole, none of the compliance percentages for those benefitted employees in the represented age groups exceeded three percent.

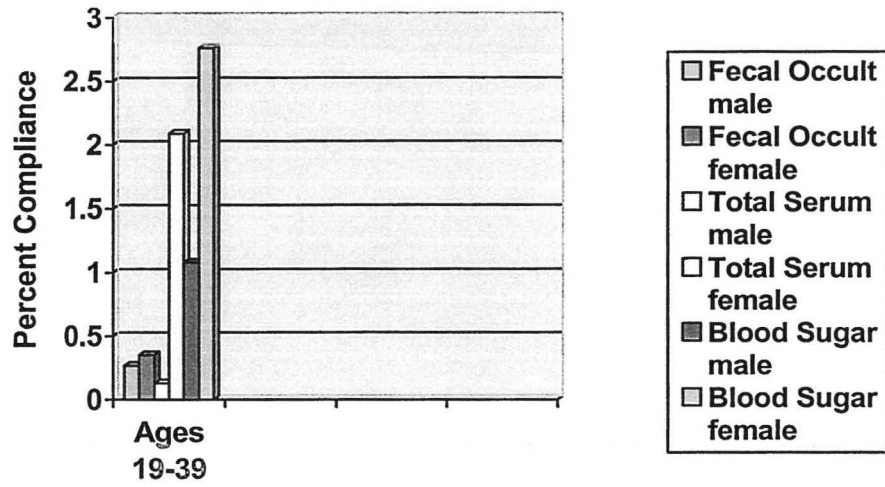


Figure 4. Recommended screenings, ages 19 to 39 years

CHAPTER V

DISCUSSION

From the results of this research, it was concluded that the survey assessment was a valuable tool for measuring and identifying perceptions of receiving recommended preventive health screenings. Addressed in this research were two independent but related data sets with a final objective to provide a clear picture of barriers to preventive health screenings, differences between perception and actual utilization. The results of this research will be of particular interest to administrative staff at the Wellness Center and others involved in the design of a worksite wellness program. At the conclusion of the research, a total of \$32 was spent in collecting the data and conducting the study.

The overall return rate for the survey instrument to benefitted employees was 26%. Low return rate may be, in part, attributed to several factors. First, employees received the survey tool at their worksite. Privacy issues or lack of time may have factored into the low return rate. Additionally, since the survey return address was inside as a fold-over option, those surveys that did not reach their intended audience were not returned. It would have been preferred to have questions related to each specific health screening, although the coverage varied between the EPO and PPO plans, thus adding an additional element of

confusion. The resulting sample population had a higher participation rate for women than men, but the sample was very similar for employee category and age.

The hypothesis that employees who receive health plan benefits which provide for preventive services in line with the recommendations from the USPSTF would participate in those screenings. Indeed, this is not the case. However, the perception of this sample population indicates over 49% believe they indeed receive the appropriate health screenings. The preventive health screenings are recommended yearly, every two years, or every five years. Actual health insurance utilization data for a five-year period, 1998-2002, indicates that overall compliance for all annual screenings is less than 30%. For screenings recommended every two years, overall compliance is less than 5%; and for screenings recommended every five years, overall compliance for years 1998-2002 is less than 2%.

DeVoe et al¹² reported that patients with insurance and usual source of care were the most likely to receive the appropriate health screenings. Yet, UND employees with insurance benefits for preventive screenings and 85%, by self report (survey question 2), have a primary care provider are seeking screenings at alarmingly low rates.

Over 40% of survey respondents indicated lack of knowledge on two issues: what screenings are needed and costs not covered by their health plans as barriers to receiving recommended health screenings. At an institution of

higher education, it is interesting to note that knowledge is a barrier to appropriate health care.

Almost half of the survey participants indicated they do not seek medical attention unless they are sick (survey question 4). Literature¹⁰ has indicated that fewer than half (44%) of primary care physicians consistently review their patients' health behaviors. If half of the employee population only seeks medical attention when ill and less than half of physicians review patients' health behaviors, then potentially only 25% of those who would benefit from preventive health screenings will be encouraged to do so by their physicians.

Survey question 5 was intended to give the researchers an idea of the willingness of employees to pay a nominal fee for health screenings. More than 50% indicated a willingness to do so, yet in survey question 3, costs were reported as a potential barrier 42.2% for the item "I don't know what cost is covered by my health plan," and 22.5% for "the cost not covered by the health plan is too much." Research by Solanki and Schaufler²¹ indicated that when individuals are required to share part of the costs of their services, they use fewer services. Yet for those participating in this survey, preventive health screenings under a physician's care are covered by the health plan at 100%.

The four items which were statistically significant when cross tabulated against the dependent variable of receiving the recommended preventive health screenings were having a physician in the Grand Cities area, feeling healthy and assuming that they do not need screenings, not knowing what screenings are needed, and not knowing what costs are covered by the health plan. Two of the

four are educational issues. At the Conference, Accelerating the Adoption of Preventive Health Services: Building New Partnerships and Community Commitment, the National Institute for Health Care Management Foundation, Washington, D.C., September 26-27, 2002, clinicians reported high variability in their embrace of preventive care even when services are a covered benefit for their patients. Thus, patients need to advocate for themselves to receive appropriate preventive care.

Recommended Annual Screenings

Age 65+ Years

For the years under study, 1998 through 2002, for those ages 65 years and older, compliance rates for any recommended annual health screenings ranged from 0% compliance to 69% compliance. Men aged 65 years and older for all annual screenings had a combined compliance rate of just over 8%. Women for the same age and sample were less than 32% compliant with receiving all the recommended screenings.

Age 40 to 64 Years

For men ages 40 through 64, the only annual screening recommended was PSA and the five years under study had an average compliance rate of 4.76%. Women for that same age range were eligible for annual Pap screens and mammograms; the five-year average compliance was much higher at 53.19% and 52.74%, respectively.

Age 19 to 39 Years

For this age range, only Pap screens are indicated. The average five-year compliance was 65.33%

Recommended Screenings One Time Every Two Years

Age 40 to 64 Years

Collectively, for those screenings indicated, fecal occult, total serum, and blood sugar, in the five years under study, men were less than 3% compliant with receiving the recommended screenings. Women were slightly higher for the same tests at 5.7% compliance. Note must be made that individuals who participated in a once every two-year screening either the year before or after the five-year sample would be excluded from this data set. There is little reason to suspect that survey participants were more or less likely to participate in different behavior prior to or after the years under study.

Recommended Screenings for One Time Every Five Years

Age 19 to 39 years

At intervals of one time every five years, the data set is valid only one out of nine times. However, collectively for both men and women, the reported actual compliance is less than 3% for those tests indicated.

Limitations

A limitation of this study was that use of preventive services is self-reported and may not reflect actual use. Prior studies have found, for example, in the case of mammography, self-reported use was higher than actual receipt of services based upon claims and records. Due to anonymity, it was not possible

to validate individual self-report of preventive services. However, there was little reason to suspect that survey participants were more or less likely to over or under report their use of preventive services.

In addition, there was no means of determining whether any participants were covered under another health plan, such as a spouse. This potentially could confound the comparison between perception and actual utilization of preventive health screenings. Those covered by another plan could, indeed, be compliant with receiving the appropriate screenings yet that would not be reflected in the NDPERS data. It must be noted that limitations of this research fall into six broad areas: potential selection bias, potential response bias, the study design, the generalizability of the findings, the self-report of preventive services utilization, and the inability to control for other potential important confounders.

A final limitation of the study was the inability to control for other variables which may, in part, explain the observed relationship between over report of services and under utilization. These potentially confounding variables included incentives for providers to deliver and patients who received recommended preventive care.

APPENDIX A

Barriers to Screening Survey

1. Do you get the recommended preventive health screenings?

- Yes No Not Sure

2. Do you have a physician here in the Grand Cities Area

- Yes No Not Sure

3. Which of the following are barriers to preventive health screenings for you?

Check all that apply)

- I feel healthy and assume I don't need screenings.
 I don't know what screenings I need.
 I don't know what cost is covered by my health plan.
 The cost (not covered by the health plan) is too much.

4. Which of the following convenience issues do you consider when seeking preventive health screenings?

Check all that apply)

- I don't have time.
 I typically don't see doctors unless I'm sick.
 It's hard to get into see a doctor (appointments scheduling far into the future).
 It is difficult take time away from my work.
 I often forget.
 I'm apprehensive about the medical procedures required (IE: needles, blood pressures, scopes, etc).
 Health Screenings are an intrusion into my privacy.
 I don't think it makes any difference to my health.

5. Would you be willing to pay a nominal fee for screenings?

- Yes No Not Sure

6. What is your gender?

- Male Female

7. What is your age?

- 19 - 39 years 40 - 64 years 65 or over

APPENDIX B

December 23, 2002

Dear Benefited UND Employee:

A study is being undertaken by Laurie Betting, Director of Wellness, to examine the barriers to preventative health screenings among benefited University of North Dakota employees. The purpose of the study is to learn more about the health habits of our employees and possibly find ways to encourage health screenings. Your participation in the survey is anonymous and voluntary. We have no way to determine which employees have, or have not, completed the survey and no attempt will be made to identify individual employees.

Your completion of the enclosed survey will constitute consent to participate. Responses will be analyzed and presented for dissemination only in the aggregate.

The highest possible return rate is essential to assure validity of the survey and to affirm that the results are representative of all benefited employees of the University of North Dakota. Please take the necessary time to complete the questionnaire and return it to the Department of Wellness before **January 5th, 2003**. If you have any questions regarding this study please contact Laurie Betting 777-6055, Edward Simanton 777-4713 or: ORPD 777-4278.

On the reverse side of this letter is a listing of current preventative health screenings covered by North Dakota Blue Cross and Blue Shield. If you have questions regarding your status as EPO or PPO, please call BCBS at 1-800-223-1704.

Your cooperation will help with Wellness program development at the University of North Dakota. Thank you for your time.

APPENDIX C

		All			
		19-39		40-64	
		Male	Female	Male	Female
SVCY	screen				
1998	Pap Smears	.	254	.	397
	Mammograms	.	22	.	307
	Fecal Occult	.	2	16	22
	Total Serum	.	18	2	13
	Blood Sugar	1	14	25	44
	PSA	.	.	63	.
	Tine Test	1	4	4	6
	Hemoglobin	4	19	9	35
	Influenza	12	41	86	110
	Pneumovax	1	.	16	9
	Urinalysis	6	29	28	39
1999	Pap Smears	.	267	.	385
	Mammograms	.	16	.	319
	Fecal Occult	.	.	21	44
	Total Serum	.	7	5	11
	Blood Sugar	2	10	32	64
	PSA	.	.	42	.
	Tine Test	2	7	2	13
	Hemoglobin	.	9	9	24
	Influenza	62	102	265	302
	Pneumovax	1	.	9	14
	Urinalysis	3	12	22	31

(Continued)

		All			
		19-39		40-64	
		Male	Female	Male	Female
SVCY	screen				
2000	Pap Smears	.	247	.	432
	Mammograms	.	20	.	350
	Fecal Occult	1	3	45	85
	Total Serum	1	5	8	8
	Blood Sugar	2	9	28	53
	PSA	.	.	15	.
	Tine Test	2	4	7	9
	Hemoglobin	1	5	7	17
	Influenza	95	125	369	483
	Pneumovax	2	2	8	7
	Urinalysis	1	10	17	29
2001	Pap Smears	.	261	.	436
	Mammograms	.	21	.	430
	Fecal Occult	2	.	36	85
	Total Serum	1	5	9	13
	Blood Sugar	4	12	32	79
	PSA	.	.	5	.
	Tine Test	1	5	5	8
	Hemoglobin	1	9	5	16
	Influenza	126	158	519	586
	Pneumovax	.	.	11	10
	Urinalysis	4	14	15	27

(Continued)

		All			
		19-39		40-64	
		Male	Female	Male	Female
SVCY	screen				
2002	Pap Smears	.	249	.	463
	Mammograms	.	29	.	689
	Fecal Occult	1	2	42	84
	Total Serum	.	6	6	8
	Blood Sugar	7	9	17	67
	PSA	.	.	14	.
	Tine Test	5	3	2	8
	Hemoglobin	2	5	3	11
	Influenza	101	169	471	608
	Pneumovax	.	1	6	10
	Urinalysis	3	4	10	29

(Continued)

		All	
		65+	
		Male	Female
SVCY	screen		
1998	Pap Smears	.	5
	Mammograms	.	4
	Fecal Occult	1	.
	Total Serum	.	.
	Blood Sugar	1	2
	PSA	4	.
	Tine Test	.	.
	Hemoglobin	.	2
	Influenza	9	5
	Pneumovax	1	.
	Urinalysis	.	.
1999	Pap Smears	.	7
	Mammograms	.	6
	Fecal Occult	3	1
	Total Serum	1	.
	Blood Sugar	.	.
	PSA	5	.
	Tine Test	.	.
	Hemoglobin	1	.
	Influenza	10	6
	Pneumovax	2	1
	Urinalysis	1	.

(Continued)

		All	
		65+	
		Male	Female
SVCY	screen		
2000	Pap Smears	.	6
	Mammograms	.	5
	Fecal Occult	3	1
	Total Serum	2	.
	Blood Sugar	2	1
	PSA	.	.
	Tine Test	.	1
	Hemoglobin	1	.
	Influenza	27	12
	Pneumovax	.	1
	Urinalysis	3	2
2001	Pap Smears	.	7
	Mammograms	.	9
	Fecal Occult	2	1
	Total Serum	.	.
	Blood Sugar	3	2
	PSA	1	.
	Tine Test	1	.
	Hemoglobin	1	.
	Influenza	23	16
	Pneumovax	1	1
	Urinalysis	2	.

(Continued)

		All	
		65+	
		Male	Female
SVCY	screen		
2002	Pap Smears	.	8
	Mammograms	.	13
	Fecal Occult	7	5
	Total Serum	1	.
	Blood Sugar	3	2
	PSA	1	.
	Tine Test	.	.
	Hemoglobin	1	.
	Influenza	23	17
	Pneumovax	1	.
	Urinalysis	3	.

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