

Medical Claims Analysis Used to Determine
Proactive Solutions for Reducing
Health Care Costs

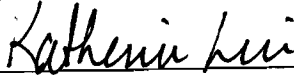
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A handwritten signature in cursive script, appearing to read "Katherine Lui", is written over a horizontal line.

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ABSTRACT

The purpose of this study is to analyze the medical claims for Company Q in search of medical trends which have the potential for improvement under a proactive company sponsored health program. If there are significant medical trends present, a proactive health wellness program may be a solution to curbing those trends. There are different types of programs currently available which include disease management, transparency in healthcare, and general wellness programs which include health risk assessments and employee education. Currently Company Q has a disease management program in place for the population being evaluated in this study. This study will prove if there are any gaps in the administration of that program.

If there proves to be useful results from this study, Company Q will continue this analysis with all of their employee groups. This analysis is made possible due to the use of a medical data warehouse program. This program allows the researcher to analyze specific data relative to this population. By using this program and researching if opportunities exist to improve the health trends of the employee population, Company Q can realize financial savings from an insurance premium and claims perspective. Additionally, improved employee health will benefit the company by improved productivity and reduced presenteeism.

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Chapter I: Introduction

Why do people work? According to Neff (1985), work is a social institution with its own subculture of values and norms. We live in a strongly work-oriented society and it could be said that for a majority of the population, the motivation to work is a function of our culture. The motivation to work is complex because different motives are predominant with different people and in different situations. Some motivators can be respect based on status in the hierarchy, the desire to achieve something, to create something or to leave a mark on the world. These are all internal motivators for why a person chooses a certain profession, or decides to change roles and/or companies over time. Yet, external motivators of compensation, benefits and other incentives and rewards are what most companies focus on to attract new employees and retain current ones. Sometime benefits can be a deciding factor in selecting a job and become very important when an employee is providing for a family.

One of the most confusing, often changing, but very necessary benefits offered is group health insurance for the employee and, often times, their family. Offering health insurance has become a standard part of an employee's benefit package with the majority of U.S. companies. In fact, benefits and health insurance can be a major influencing factor when recruiting new talent and retaining current talent within an organization. An important, and sought after, component of employee benefits is healthcare (Oubert, 2006). Companies use healthcare and other benefits to help increase productivity and reduce absenteeism.

This important benefit is often a source of conflict between the employee and employer due to what can seem like constantly rising costs, the shifting of these costs

onto the employee and the overall changes in plan designs. As important as this benefit is to employees it is also important to employers. It benefits the employer to have healthy individuals working for them versus employing individuals who are unhealthy, but this comes at cost to the company. Health insurance is one tool that employers use to encourage employees to seek medical care not only when it is needed but also on a preventive basis.

Benefits in general, and health insurance in particular, have a direct impact on the financial bottom line for a company. The third largest expense for a company is employee benefits, and healthcare is the fastest growing component of that cost (Serafini, 2006). A case in point is Starbucks, they spent more on U.S. employees' health insurance than they did on coffee beans for U.S. sales in 2004. The money being spent by companies to offer health insurance is growing to astronomical levels. Because of this growth to the cost of offering health insurance, employers becoming more savvy about paying attention to how their plans are utilized by their employees and then curbing any negative aspects of that usage. Employers have the power to influence the way that their health insurance plans are utilized by their employees. There are a variety of ways to influence employees in such a way that they live a healthier lifestyle and therefore have a lower usage rate of the health insurance plan. Employers are demanding creative and effective solutions to control increasing healthcare costs (Oubre, 2006). Healthcare costs are driven by advancing technologies, blockbuster medications and an aging population. The largest driver of healthcare costs is chronic conditions such as diabetes, depression and heart disease. Sixty to seventy five percent of the current annual U.S. medical costs are due to chronic diseases.

This study takes place within Company Q. Q is involved in the consumer goods manufacturing industry and has multiple locations across the country. Q is concerned about the increasing healthcare costs and the increasing share contributed by the employees. Q is interested in investigating proactive options which they believe will benefit their employee's health and reduce high-cost health plan usage which would therefore increase the company's profitability. Company Q does not want employees to stop seeing medical providers, but they do feel that if they can increase the overall general physical health levels of their employees that there would be less need to see healthcare providers as often. Also, implementing certain programs may potentially identify health risks earlier to reduce the number of high-cost claims for preventable conditions. Company Q has maintained health plan options which are contemporary in nature in regards to plan design including coinsurance amounts, deductible levels and employee contributions. Because the hourly employee population of Q is union based any changes the company wishes to make in regards to plan design needs to be approved through the contract negotiation process which takes place every few years. Q is very interested in possibly taking advantage of a proactive type of option because that is not something that needs to be negotiated with the unions, so the company could implement it at any time. Company Q has taken different steps in preventive care with different locations. For the population located at the facility where this study is concentrated on, there is a disease management program in place. This analysis will assist Company Q's management to determine if the disease management program is effective at this location and if any other additional opportunities for improvement exist.

Company Q has taken the first step on this endeavor by contracting with a medical claims data warehousing vendor who collects data from all of the various insurance vendors for the company and compiles the information into a searchable database. The data can be separated by the different facilities, union or other factors yet individuals remain anonymous. The data can be used to run detailed reports to gather information on the employee population such as the average cost of an inpatient stay, primary diagnosis, and prevalence of certain diagnosis. With this data it can be determined if there are any trends which exist within a particular employee group or across the entire company. This program has been purchased and initial training was provided for the benefits department employees who will use this product, however since it was purchased and set up for usage six months have passed and it has yet to be utilized in the manner it is intended to.

This researcher will use this program to compile reports with data pertaining to a particular employee group. Once this data has been gathered, the researcher will analyze the data for trends or opportunities which can be acted upon by the company. The researcher will then look at the proactive options which exist and determine if any of them may be appropriate for implementation due to the trends which were found within this particular company.

The remainder of this chapter will present the problem statement objectives and significance of this study.

Statement of the Problem

In depth medical claims analysis will be used to determine if a proactive health

program is an appropriate solution to reducing healthcare spending for Company Q. Company Q is looking for strategies which will increase or maintain employees' general level of health while decreasing overall dollar expenditures.

Purpose of the Study

This study is being conducted because of the impact that rising healthcare costs have on a company's financial state. Employers have a responsibility towards their employees to maintain, and reduce if possible, business expenses to allow the company to be profitable. If a company allows healthcare costs to rise unchecked, then they are doing themselves and their employees a disservice. By analyzing healthcare data and evaluating if a preventive option is appropriate, Company Q is working to fulfill their social responsibility towards their employees while maintaining fiscal responsibility towards the healthcare budget. There are three specific research objectives guiding this study:

1. Analyze health insurance data to determine trends within a specific employee group of Company Q.
2. Conduct a literature review to define different proactive options available to employers which can increase the physical health of their employees.
3. Recommend future action for Company Q which may include a specific program(s) to be implemented by the company.

Assumptions of the Study

This study has a few basic assumptions governing the outcomes. First, it is

assumed that all of the medical data contained in the medical data warehouse is an accurate compilation of the claims data received by the third party administrator from each of the different insurance vendors. A second assumption is that the researcher is not investigating offering different health plan designs or health plans administered by different health insurance companies. The researcher is investigating opportunities where a new health wellness program could be implemented, if that data warrants it. Third, it is to be assumed that the data analysis will only be valid for a relative period of time because as the workforce changes the medical claims experience will also change. For example if there is a large number of older employees who retire and then new employees join the company, the claims experience can be vastly different due to health related age and gender differences.

Definition of Terms

Managed Care. These types of plans provide comprehensive health services and offer incentives for patients who use providers who belong to the plan (Federal Government's Interdisciplinary Committee, 2006).

Disease Management. Disease management is a proactive, integrated systems approach which makes use of educational and prevention initiatives, careful monitoring techniques, patient self-care and evidence-based clinical practice guidelines. These programs target individuals who are, or may be, at risk for chronic conditions (IFEBCP, n.d.).

Health Risk Assessment. "A wellness program instrument that can evaluate the health status of an individual and the relative risk of disease, injury or death

associated with a specific set of lifestyle behaviors when combined with specific information about the individual involved” (IFEBP, n.d.).

Wellness Program. Employer-sponsored activities and facilities which promote safety and good health. These programs aim to increase morale and reduce the cost of ill health, such as absenteeism, lower productivity and health care costs. This may include physical fitness programs, smoking cessation, health risk assessments, diet and weight loss information and blood pressure screening. (Brzezinski, 1993)

Healthcare Consumerism. A partnership between employers and employees which is focused on managing health care costs and quality (Towers Perrin, n.d.). Employees are educated about healthcare and costs and ensures that employees pay a more meaningful portion of the costs. Employees can make informed decisions about their health care while using cost effective and high quality providers (Havlin & Slavney, 2004).

Transparency. Providing consumers with understandable and comparable information on quality and price which enables them to make informed health care decisions (Clarke, 2006). Price transparency will provide the total patient payment after all other payments, adjustments and discounts are applied for an episode of care.

Limitations of the Study

The results of this study will be limited to only one particular employee group within Company Q. If the analysis stage of this study proves that there are significant health trends which can be acted upon and improved by the company, subsequent studies will be completed to analyze all of the employee groups within Company Q. Also, medical claims data is only available from mid-2004 to current. Therefore, this analysis is only based on this time frame, there is no further historical medical claims data available at this point in time. Two complete years worth of incurred medical claims will be analyzed from October 2004 to September 2006. By setting this time frame two periods of time can be compared to each other.

Methodology

Company Q has recently contracted with a medical data warehouse vendor who collects medical, dental and vision claims information from the various insurance vendors on a monthly basis. All claims history are kept and maintained by the outside vendor not with Company Q. Currently there is a claims history of approximately 30 months in the system. The researcher has been trained to create and run reports on the medical data warehousing system. The reports which are generated will provide information regarding the financial impact (i.e., allowed amount per member per year for inpatient stays) and health impact (i.e., length of inpatient stays for particular procedures, number of people with an ER visit). The researcher is able to create detailed reports and limit the reports to certain populations (by state, gender, or plant location) but there are no individual identifiable characteristics used in this program. Built into the program are benchmarks and the researcher can setup reports to compare this particular population to

the U.S. benchmarks (i.e., visits per 1000 Emergency Room Albany, GA compared to the U.S. benchmark). By utilizing these benchmarks, the researcher can analyze the plant's health comparatively to the nation.

Chapter II: Literature Review

Health Insurance: A Historical Overview

Prior to 1920 most sick people were treated in their homes and there was usually very little that a medical professional could do to help them due to the level of medical technology at that time (Thomasson, 2003). At that time, the major cost of an illness was the loss of wages due to a person not being able to work versus the actual cost for the medical treatment they received. Because of this low level of treatment costs, most people felt they did not need health insurance, “sickness” insurance was purchased instead. Sickness insurance was designed to replace income in the event of an illness, which is very similar to the current concept of disability insurance.

According to Gorman, (2006), employers were rarely the provider of the early sickness insurance. Instead sickness insurance was provided by associations not related to employment such as fraternal societies like the Loyal Order of Moose and the Knights and Ladies of Security. Many of these groups would contract or employ physicians for due paying members to utilize. For as little as \$1.00 or \$2.00 per month, members would have access to medical care. Eighty Eight percent of New Orleans’ population was covered by ‘lodge medicine’ or contract medicine by 1888. During this time of fraternal societies there were insurance companies present in society, such as The Massachusetts Health Insurance Company of Boston who were the first in 1847, to issue sickness insurance (ERBI, 2002).

According to Thomasson (2003), there was unwillingness for insurance companies to offer private insurance policies because of the potential for adverse selection and moral hazards which meant that they couldn’t accurately calculate risks and

therefore write premiums. Insurance companies were worried about sick people saying they were healthy in order to obtain coverage as well as the fact that people could change their behavior to be less risk adverse once they had obtained health insurance.

By 1920, many European nations were using some form of compulsory, nationalized health insurance (Thomasson, 2003). Theodore Roosevelt proposed a national health plan in the U.S. which would cover medical aid and sick pay in the early twentieth century (Ross, 2002). According to Thomasson(2003), it was due to American's attitude towards health insurance (as opposed to sickness insurance) that a national compulsory insurance was defeated in the U.S.. Physicians feared these plans would limit their chargeable fees, pharmacists feared the plans would undermine their business, and lastly, a national compulsory insurance plan would mean that current commercial insurance companies could no longer offer burial insurance, which was a large component of their business.

Instead of following the European model, by 1929 the United States faced the start of their health insurance model. In 1929, Dallas teachers contracted with Baylor University Hospital to provide 21 days of hospitalization for a fixed dollar amount of \$6.00 (Thomasson, 2003). This was the beginning of pre-payment for services and would set the stage for Blue Cross in the future. The start of the Great Depression brought health insurance back into the national agenda because of the rising medical costs affecting the middle class as well as the poor and destitute (Ross, 2002). Hospitals whole heartedly embraced pre-pay plans during this time (Gorman, 2006). These pre-paid plans created competition between hospitals, which led to community hospitals organizing to offer a network of hospitals to people. This network lessened the inter-

hospital competition. These plans involving networked hospitals eventually morphed into the American Hospital Association which changed its name to Blue Cross in 1939.

According to Thomasson (2003), physicians were slower to follow the same path of pre-paid services that hospitals adopted. Physicians were worried that their incomes would be lower because a third party would interfere with their ability to price discriminate. Physicians ultimately followed suit with the hospitals because Blue Cross was becoming very popular and they were afraid that hospitals would start to provide insurance for physician services and they were even more afraid of compulsory health insurance which had gained advocacy at that time. In 1939, the first pre-paid physician services plan also came into being in the state of California (Gorman, 2006). This initial plan was implemented through the California Physicians' Service (CPS) and provided services to employee groups who earned less than \$3,000 annually for only \$1.70 per month (Thomasson, 2003). Around the country, state and local medical societies were encouraged to adopt this type of plan. The societies became affiliated and known as Blue Shield in 1946. Blue Shield physicians retained their ability to discriminate charge different rates to different patients because they would charge their patients the difference between the actual service cost and the amount they were reimbursed from Blue Shield.

Blue Cross and Blue Shield were given special legislation which exempted them from normal insurance company requirements and allowed them to have non-profit status (Gorman, 2006). Because Blue Cross had created a hospital network that prevented competition it was next to impossible for any other insurance company to offer benefits that differed greatly from the Blue Cross Standard. This resulted in a lack of product innovation for a period of time. Because of the special legislation, Blue Cross' plans

were underwritten by hospitals (Thomasson, 2003). "Hospitals contracted with the plans to provide subscriber services, and agreed to provide service benefits even during periods when the plans lacked funds to provide reimbursement" (4). According to Gorman (2006), incentives for patients to maintain control over their healthcare spending was next to nothing since a third party paid for all services. In 1939, only 6% of the U.S. population had any type of private health insurance covering hospitalization, this grew to 23% by 1945. Blue Cross and Blue Shield insured 59% of these insurance consumers. After 1950, Blue Cross and Blue Shield started to slowly lose their market dominance due to the increasing numbers of private insurers. By 1951, commercial insurance companies had 41.5 million enrollees, which was 1 million more people than were enrolled in Blue Cross and Blue Shield.

According to Thomasson (2003), as more commercial insurance companies became successful they also became more competitive. Blue Cross and Blue Shield were required to community rate their policies (charge the same premium to sick and healthy people) because they were a non-profit. Commercial companies were not required to do this, instead they engaged in experience rating (meaning sicker people paid higher premiums). This meant that commercial companies were able to offer lower health group premiums and therefore grew their business at a faster rate than Blue Cross and Blue Shield. The interest in health insurance grew quickly at this point because employers were starting to offer health insurance as a form of compensation to their employees. During World War II, wage and price controls were instituted which made it harder for employers to compete for laborers by paying higher wages, instead employers offered health insurance to attract workers. Unions also gained a lot of negotiating power when

the National Labor Relations Board ruled in favor of the United Steelworkers Union and said that “wages” included pension and insurance benefits. This was the start of unions having the power to negotiate benefit packages on behalf of their employees.

Blue Cross and Blue Shield set the stage for a number of problems insurance plans would have to overcome in the future markets. According to Gorman (2006), Blue Cross and Blue Shield wanted to make sure their members got paid for their services above anything else. People using these plans did not have co-payments or deductibles and the plan covered all costs associated with services. Doctors and patients commanded whatever services they wished due to the lack of responsibility they had to pay for services. Hospitals were being reimbursed on a cost-plus basis as late as 1976 by Blue Cross plans. The reimbursement systems that Blue Cross and Blue Shield used would pay all hospital costs regardless of if they were generated by an efficient organization. Because of this U.S Hospitals had no incentives to “minimize their costs, figure out what hospital care really cost, control capacity expansions, specialize in services in which they were the low cost producer, or minimize patient stays” (9).

Managed care emerged to slow the fast-paced rise in costs and provide new systems and ways of delivering healthcare services (Scofea, 1994). Managed care components are most often found in two common types of plans-Health Maintenance Organizations (HMO) and Preferred Provider Organizations (PPO). Managed care integrates the financing and delivery of appropriate health services with selected providers while providing financial incentives for members to use the providers and procedures covered in the plan. Managed care also has explicit standards used to select

participating healthcare providers and has formal program for quality assurance and utilization reviews.

Kaiser Permanente, the most widely known Health Maintenance Organizations (HMO), was started in 1930 by the Kaiser Company (Scofea, 1994). The Kaiser Company was building dams and due to the construction worker's insurance plan had to send injured workers to medical facilities that were 200 miles away. The construction site physician, Sidney Garfield, set up an arrangement with the insurance company for them to pay him directly and in advance for each employee in exchange for Dr. Garfield's services for all necessary on the job medical care. Henry Kaiser, who owned the insurance company, was impressed by Garfield's plan, so he asked Garfield to establish this same plan at other construction sites. The medical facilities Garfield established opened under the name of Kaiser Foundation Health Plan. In order to encourage the use of managed care, employers were required to offer an HMO plan if they had more than 25 employees residing within an HMO service area, after congress passed the 1973 HMO Act. This legislation created an artificial market for services that few people wanted at the time (Gorman, 2006). In 1962, HMO's accounted for just 2% of all health insurance premiums, this grew to 46% by 1996.

In an HMO plan, the insurer and provider are combined into a single organization (Gorman, 2006). A flat fee (also known as a capitated fee) is paid by patients for their health care. One major difference between this plan and others is that the physician works for the insurer, not the patient. Because capitated payments were an incentive to keep patients healthy and utilization controls were in place to reduce unnecessary medical care, HMO's were said to be preferable over the traditional indemnity insurance plans.

Preferred Provider Organizations were an alternate plan which emerged in the 1980's (Scofea, 1994). PPO plans offers a choice of providers and coverage on a fee-for-service basis. If a subscriber uses the designated hospitals and physicians they will have lower out-of-pocket expenses associated with the care. If the subscriber does not use the preferred provider they are penalized with higher deductibles, higher coinsurance amounts, and other limits. The majority of PPOs have established cost containment features such as requiring pre-certification for hospital admissions, and mandatory second surgical opinions.

Over the course of time and with the continued rising costs, plans add features to attract members (Scofea, 1994). This continued copying of characteristics from one type of plan to another will eventually make it difficult to distinguish between individual plans. Currently, 98 percent of large firms (200+ employees) and 60 percent of small firms (5-199 employees) offer health benefits to their employees (Kaiser Family Foundation (KFF), 2006). According to the Kaiser Family Foundation, today 60 percent of workers are covered by a PPO plan, 20 percent by an HMO plan, 13 percent by a POS (Point of Service) plan and 4 percent by an HDHP/SO (High deductible health plan with a savings option).

Health Insurance: Employer and Employee Costs

According to the National Center for Health Statistics (2006), people use health care services for a variety of reasons including “treating illnesses, injuries and health conditions; to prevent or delay future health care problems; to reduce pain and increase quality of life; and to obtain information about health status and prognosis” (p. 4). The

amount spent on health care per capita is greater in the U.S. than any other country, and health spending continues to increase rapidly. National health care expenditures equaled \$1.9 trillion in 2004, this was a 7.9% increase from 2003. Of the total health care expenditures in 2004, private health insurance paid 36%, federal, state and local government paid 45% and 15% was paid by out-of-pocket payments. Currently almost 70% of the U.S. population under age 65 has private health insurance provided most commonly by an employer.

According to PricewaterHouseCoopers' (2006), medical costs increase due to numerous societal, economic, behavioral and demographic issues which are intertwined. Major inflators of medical costs include new treatments, increased use of new diagnostic technologies, increased demand and declining health status of patients. The rise of obesity and a general aging of the population is leading to more expensive medical conditions. Increased demand is an important inflator because workers have generally been shielded from the costs of medical care, which results in overutilization or inappropriate utilization of medical services. Price transparency (when consumers see the cost for service) is a tool which can help employers, because patients may shop around for better values for their healthcare. New medical technology, managed care policies and new drugs allow an increasing amount of health problems to be handled with outpatient services and medications (Shepherd, 2006). A recent poll showed that 32% of respondents said the biggest obstacle to health care cost containment is employee resistance and entitlement, while 29% said insurer/provider pricing is the biggest cost driver.

Historically, healthcare spending has increased faster than the rest of the economy (gross domestic product) (PricewaterHouseCoopers, 2006). Premiums grew at double digit rates from 2001-2004. The 2006 average premium increase was 7.7 percent. This increase was twice the rate of overall inflation and wage gains in 2006. According to Shepherd, 30% of premium increases are due to price hikes in excess of inflation, employers switching to broader-access health plans, provider consolidation, increased labor costs and expensive medical technologies. Interestingly, only 10% of medical cost increases are due to medical liability and defensive medicine.

In 1960, employers spent \$23.6 billion on all of their benefit programs including health insurance (Employee Benefit Research Institute (EBRI), 2005). Employers spent \$1.18 trillion on voluntary and mandatory employee benefit programs in 2003, including \$501.4 billion for health benefit programs. The increases in employer spending on benefits has grown relative to wages and salaries as a share of total compensation over the years. The slower growth of wages and salaries in the 1980s and 1990s is said to be due in part to the increased in employer spending on health care benefits during this time. Employer spending on group health insurance rose by an average annual rate of 11.2 percent during the 1980s (ERBI, 2004). In private industry, employee benefits accounted for 26.8% of the total compensation costs in 1987 compared to 28.9% in 1994 and 27% in 2001 (ERBI, 2005). In 2004 employee benefits had increased to 28.6% of the total compensation costs.

The cost of employer health insurance premiums does differ across the United States (U.S. Department of Labor, 2006). The East South Central region has the lowest single and family premiums while the Middle Atlantic region has the highest single

coverage premiums and the East North Central region has the highest family premiums. In the Pacific region one third of all employees still have fully employer-paid single medical coverage and 18 percent have fully employer-paid family coverage.

In 2006, 71 percent of workers in private industry had access to medical care plan (US Department of Labor, 2006). Of that 71 percent, 52 percent of the workers actually participated in a plan. Most employers in 2006 require employee contribution for single and family coverage. 75 percent of medical care plan participants are required to pay for single coverage and 87 percent of participants are required to pay for family coverage. Today, non-union employees pay twice as much for their employee contributions towards health care premiums compared to union employees (U.S. Department of Labor, 2006). On average, a non-union employee in private industry will pay 20 percent of the premium for single coverage and 33 percent of the premium for family coverage. This compares to a union employee paying 9 percent of the health care premium for single coverage and only 14 percent of the health care premium for family coverage.

The Bureau of Labor Statistics (BLS) reports that in 1991 the average employee paid contribution to health insurance was \$26.60 per month for single coverage and \$96.97 per month for family coverage (Scofea, 1994). This is 2.5 times higher than the contributions paid in 1983, which were \$10.13 per month for single coverage and \$32.51 per month for family coverage. In 2006, the average monthly employee contribution for single coverage was \$76.05 per month and \$296.88 per month for family coverage (U.S. Department of Labor, 2006). Interestingly, the average percentage of premiums paid by employees has remained statistically unchanged over the past eight years (KFF, 2006). Employees have paid 16 percent of the premium for single coverage and 28 percent of

the premium for family coverage from 1999-2006. In 2006 health premiums rose by 7.7% (Shepherd, 2006). Family health coverage costs averaged \$11,80 per year and single coverage costs averaged \$4,202 per year. The inflation in these costs is in part due to patients demanding the latest treatments for their medical needs.

In addition to paying a portion of the premium for their health care, employees have additional payment such as deductibles, co-payments and other charges when they receive services (KFF, 2006). Eighty percent of employees are in a plan that does limit the amount of out-of-pocket costs which can be incurred in one year. However, what needs to be considered is that the share of medical costs paid for by consumers has declined over the past thirty years (Havlin & Slavney, 2004). In 1970, out-of-pocket costs were 35% of total health care expenditures. In 2003, out-of-pocket costs were only 12%. Consumers have been insulated from the true cost of their health care because of plans which use co-payments instead of co-insurance. The current payment systems doesn't allow for employees to know the total cost of their treatment until they receive the Explanation of Benefits from their insurance company several weeks after receiving the treatment.

According to PricewaterHouseCoopers (2006), employers who incorporate cost sharing and other strategies to reduce spending will have a lower premium increase in 2007 than those who do not incorporate these things. Greater consumerism, patient education, transparency tools and wellness program could have a strong impact on future medical costs. The 2006 EBN-Forrester Benefit Decisions' Impact Survey of 800 benefits executives provided interesting insight into employer's cost containment strategies (Holmes, 2006). Sixty percent of employers have built health promotion and

preventive care into their benefit. One third of employers cite health promotion and preventive care as their primary cost containment strategy. The three strategies that respondents indicated will result in the most substantial savings are promoting preventive health benefits and behaviors (67 %), increasing employee cost sharing (48%) and disease and care management for chronically ill (44%). Twenty seven percent of the survey respondent said that they will begin health promotion programs in the next two years.

Disease management

Disease management programs are developed and implemented because chronic diseases result in high service utilization rates and costs (Garrett, 2006). These programs typically focus on Diabetes, Asthma, Heart Failure, Coronary Artery Disease, and Chronic Obstructive Pulmonary Disease (COPD). The goal of a disease management program is to support the physician/patient relationship and their plan of care, emphasize preventing complications, and to evaluate clinical, humanistic and economic outcomes. Between 2000 and 2010 the number of people with chronic conditions is projected to increase to over 150 million with the cost to manage these diseases increasing to \$1.07 trillion. The results of a disease management program include savings from decreased health care service utilization, reduction in absenteeism, and improvement in employee productivity. Disease management programs were started by Managed Care health plans (Center on an Aging Society, 2004). Most health plans have some type of disease management program associated with them. Employers are also sponsoring their own disease management programs for their employees. In fact, use of disease management

programs increased from 31% to 43% between 1996 and 1998. The reason for some employers to sponsor their own program is that the health plan's program may not be appropriate for their employee population. An example of this would be if the average employee age is relatively young, there may be a greater need for their program to include high-risk pregnancies than COPD in their program.

According to Oubre (2006), effective disease management can improve employee's health while reducing overall costs to the business. American Healthway did a study which found that by implementing a comprehensive disease management program for diabetics, not only was patient's health improved but the total annual medical costs decreased by 17 percent. Disease management programs are effective at improving self-care practices which results in a decrease of healthcare services such as hospital admission and Emergency Room visits (Center on and Aging Society, 2004). Because the use of these services are decreased, health care related expenditures also decrease. For example, 7,000 individuals were enrolled in a Diabetes disease management program. These people were more likely to receive tests which monitor their blood sugar, foot and eye exams, and cholesterol screenings. Accordingly, hospital admissions and length of stays decreased by an average of 20%, which resulted in a \$44.00 per month per enrollee savings. A second example involves a pediatric asthma program sponsored by the North Carolina Medicaid program. This program saw a decrease in asthma-related hospital admission by 35% and Emergency Room visits decreased 8% compared to asthmatic children not enrolled in this program. According to Garrett (2006), a disease management program can save an average of \$1.20 to \$6.40 per dollar spent on medical care.

Besides offering a method of cost savings, disease management programs can also impact a patient's quality of life. Quality of life relates to motility, presence of symptoms, and overall energy level (Center on an Aging Society, 2004). Quality of life also relates to a person's confidence in their health and their ability to control their health conditions. Results in this area of research have been mixed. An example of success is a group of people with COPD over the age of 50. These patients had no improvement in respect to their lung capacity but their social, emotional and psychological well-being did improve. However, another study of adults with asthma did not result in any significant decrease in symptoms or quality of life improvement.

When employer is considering implementing a disease management program there are many factors to consider. The external factors include managing disease, fragmentation and evaluation and the internal factors are employee demographics, risk stratification and return on investment (Hummel, 2006). Managing disease can be very expensive for plan sponsors because information technology is needed to track the clinical indicators for patients with chronic disease in order to respond with timely educational and health care interventions. Ideally this should be the physician's responsibility but due to things such as the lack of computerized clinical information systems and antiquated practice work flows, this information technology has become the responsibility of the plan sponsor, whether that be the employer or the out-sourced agency. Fragmentation means that the information supplied from the disease management program is often unused by the treating physician. A disease management program will typically send the treating physician letters regarding the select patient they are working with however there is no obvious way to use this information by the

physician. The challenge of evaluating a disease management program is that it is difficult to establish a valid control group which to compare costs. Many disease management programs will estimate their control costs or use patients who didn't sign up for the program. This can lead to significant overestimation of program savings. Employee demographics is an internal consideration because the prevalence of certain conditions increase or decrease based on the age of the working population. Older populations have a greater rate of diabetes and heart disease while younger populations have rates of depression, allergies/asthma, and obesity. Risk stratification relates to how employees are ranked for more intensive interventions. This ranking should be done based on established risk factors not by simply analyzing previous health utilization. And finally, when measuring the return on investment there needs to be defined measurements for cost savings. An external independent auditor should be used (versus the disease management program itself) by a company to establish the return on investment to negate any conflict of interest. According to the Center on an Aging Society (2004), another challenge for plan sponsors is encouraging participants to enroll in the program. It may be helpful to offer financial incentives to increase enrollment. Once a person is enrolled, they do need to commit time to this program and give effort to improving their health care practices. Compliance with a program can be low if there isn't encouragement and/or incentives offered to the patients.

However, there are studies which do not prove a return on investment for disease management programs (Hummel, 2006). There are three primary reasons why ROI is difficult to prove. First, most commercial disease management programs use only selective parts of the proven chronic care model. This limits the costs which are used in

calculations. Second, many studies have methodology errors which result in positive outcomes. These outcomes are not matched in more rigorous studies. Third, disease management programs are still in their infancy and there has not been enough time to fully realize the extent of their cost savings reality. Garrett (2006) has also found that a true measure of ROI is difficult to obtain. To determine the true ROI, the employer or plan administrator needs to evaluate what the disease management services cost as well as if other health services have been reduced due to the efforts of the disease management program. Another challenge is addressing the “regression to the mean” phenomenon. This means that the person who is a high-cost user one year will, on average, incur lower costs next year even without medical attention. ROI can also vary from year to year as the disease offerings of the plan change, enrollment changes, and different methodologies of measurement as used.

Garrett (2006) also conducted a review of literature and found that there is only a moderate level of evidence showing clinical health improvement following implementing a disease management program. However, there is evidence that a disease management program can reduce the rate of hospitalizations and Emergency room visits. These programs take time to show results because of the amount of outreach and education which is done with the patient. Because of this time factor, organizations with a high level of employee turnover will most likely not realize significant cost savings.

Wellness Programs

Many employers have incorporated wellness programs into the culture and benefits of their company. According to the Centers for Disease Control and Prevention,

lifestyle choices are directly related to a person's health status and their associated health care costs (Noeldner, 2006). An effective health wellness program will be based upon the concept of individual choices, so that an employee can select what is best suited for them. These types of programs are geared toward creating long-term behavior change. Wellness programs work towards sustaining health improvements within the workforce which can result in reduced benefit costs for the employer (Shepherd, 2006). The most effective programs are customized to each unique employee population (Berhart, 2006). The National Business Group on Health now recognizes the Best Employers for Health Lifestyles each year. The top companies embrace these programs and create a culture of wellness which is supported by all levels of management. These programs are aggressive, cost effective and focus on screening, prevention, and measurable results. The types of programs contained within a wellness program can vary but can include a variety of offerings including onsite fitness facilities and/or health club membership reimbursements, onsite clinics, nonsmoking workshops, and health food options in the cafeteria and vending machines.

A problem that affects all employers is presenteeism. This is the type of problem which a wellness program can help to address. Presenteeism is when an employee comes to work and is physically fit for the job but not mentally fit (Acton, 2006). Diseases and ailments including but not limited to hypertension, migraine headaches and hay fever can affect performance because the person is sick and stressed out. The costs of presenteeism can outweigh employer's medical costs according to the director of Cornell University's Institute for Health & Productivity Studies. On average an employer will spend \$136 for

stress, \$70 for weight issues, \$44 for tobacco use and \$29 for glucose problems on a per employee basis per year.

Incentives can greatly impact the participation rate in these programs. Home Federal Bank has a 95% participation rate and in return offers employees a \$40 per month reduction on their payroll deduction for health insurance (Hirschman, 2006). One example of how a company uses incentives is evidenced by Westell, a company which offers a voluntary health screening program to their employees (Wojcik, 2005).

Participants have their employee contribution amount for health insurance frozen for one year if they participate. Anyone who doesn't participate has a \$10 increase per paycheck to their health insurance contribution. Their program establishes the person's baseline by having them complete a health questionnaire and taking a biometric test. The expectation is that an employee's score will improve each year by 5% in order to qualify for additional financial incentives. There are always issues surrounding privacy with the administration of these programs. Westell has to know who is participating in order to facilitate the payroll contributions, but they are very clear with all of their employees that they do not see individual results, only aggregate results.

In order for a wellness program to be successful, employers need to invest time and money during the research, design and implementation of the program (Acton, 2006). Johnson & Johnson started their health wellness program in 1979 and have invested more than \$30 million into the program. Since 1995 this program has had an annual medical costs savings of \$225 per employee. This program saves Johnson & Johnson approximately \$8.55 million on an annual basis. This program has proven to be successful financially and health wise. The program has led to significant decreases in

the number of employees with high cholesterol, poor exercise habits and cigarette smoking for the 94% of the workforce population who participates in the program. As an incentive to the participant, each employee receives a \$500 discount on their annual health insurance premium.

A starting point for wellness programs is a health risk assessment. A health risk assessment will determine an employee's baseline health and will then identify areas for improvement (Fletcher, 2004). These assessments will identify areas of concern such as hypertension, obesity, or smoking cessation. These assessments can also be used to gauge an employee's willingness to participate in a health program. The individual baseline's collected during health risk assessments can be used as a benchmarking tool by the employer. After investing in a health risk assessment program for three years the return on investment is approximately \$3.00 in savings for every \$1.00 invested. Health risk assessments can be administered in several ways including online, in person or on paper. During an assessment the employee will answer a variety of health and lifestyle questions. The assessments can be as broad or narrow in scope as the employer wishes them to be. Generally they are designed to identify people with health risks pertaining to obesity, asthma, diabetes, depression and smoking. Once the questionnaire is completed the employee receives a report on their risk factors. If there is an area of concern the employee can be provided with information and resources, such as a company sponsored program, on that risk concern. There is always a risk in an assessment of this nature that there are untruthful responses being provided, such as an inaccurate weight. However, it is believed that these untruthful responses are small in nature.

A wellness program is different from a disease management program. Wellness programs strive to prevent at-risk people from developing chronic diseases while disease management programs assist people in managing the chronic disease they already have (Hirschman, 2006). In 2004, 13% of employers with 1-499 employees offered a health risk assessment and 31% offered a disease management program. In 2004 these numbers rose to 18% and 41% respectively. Besides health risk assessments, a wellness program can be comprised of educational seminars, free literature and resources, on-site clinical screenings for blood pressure and cholesterol, and consultations with health care professions on topics like weight loss and healthy lifestyles. A wellness program isn't made up of just one of these options by a combination of them.

Healthcare Consumerism/Transparency

In 2007, one of the trends is growing consumerism in healthcare and educating employees on how to take advantage of this new information. PricewaterhouseCoopers Health Research Institute (2006) conducted a survey of 1,000 people to determine the perceptions on the driving forces of increased health care costs. 90% of respondents ranked greed ahead of other factors such as administrative paperwork, medical malpractice and underinsured patients as the leading cause of increased health care costs. This perception is why in 2007, patient consumerism is one of the leading trends in the industry. Consumerism is meant to provide information to employees and corporations intended to empower the employee to make better health care decisions and control rising costs. There are new types of health plans being offered with higher deductibles and a health savings account or health reimbursement arrangement. Many of these plans also

offer preventive care at a lower or no deductible level. Three million Americans are currently in a consumer directed health plan. However, industry watchers have questions regarding the long-term impact of these types of plans. Will these plans lead consumers to make better healthcare decisions and lead healthier lifestyles to reduce costs or will people forego treatment and then end up contributing to increased costs in the long run? Consumerism deals with cost-sharing (higher deductibles or higher out-of-pocket costs), educating consumers and providing tools which will enable them to be savvy regarding their medical care (Havlin & Slavney, 2004). Consumerism will address the root causes of the increasing medical costs and productivity by offering more choice, market pricing and self-direction regarding health plans and services. Consumerism is a fundamentally different approach to the increasing costs of health care. This approach allows employees to effectively use their health care benefit dollars by choosing services and selecting cost-effective and high-quality providers. Consumers will take charge of their health care by seeking information regarding their health and participating in programs which will help them manage their health. They will make informed decisions about their care which allows them to be an active partner in their health care decision.

Consumerism means that there will need to be changes made. This may be in the form of different plan designs being offered by employers, personalized health management, transparent information about providers and consumer education. (Havlin & Slavney, 2004). Under consumerism a motivated person will identify the best quality physician who renders services at the most cost-efficient price by utilizing tool provided to them by their employer, health insurance company and the provider themselves. Increased focus on consumerism by employers will most likely lead to changes in health

plans and increased use of health savings accounts. There may be varying co-insurance amounts or an employer-paid base plan with buy-up options for increased level of benefits paid for by the employee. These changes will require employers to educate their employees and motivate them to change their health behaviors.

Transparency works to allow consumerism to occur. With transparency consumers make informed health care decision and health organizations disclose more information about the costs and quality of their services (PricewaterhouseCoopers, 2006). HealthMarkets questioned 1,028 adults and found that over 70% of them knew little or nothing about what their doctors charged for medical services compared to other doctors (Benefit News Connect, 2006). This is due to a lack of price transparency in the industry. 73% of survey participants said that a CT Scan of the abdomen cost \$2,000. The actual cost can range from \$298 to \$2,858. This shows that people are not aware of how much price variance there is between providers and facilities. However, the reverse side of this is that the same treatment can vary in price from one patient to the next based on their age, medical history, and what their insurance will cover (Scalise, 2006).

Transparency in healthcare has become a national issue due to an executive order signed by President George W. Bush on August 22, 2006. In a radio address, George Bush said:

“American workers also need affordable, high quality health care, and more transparency in our health care system can help...when patients know the facts about price and quality of their health care options, they can make decision that are right for them” (PricewaterhouseCoopers, n.d, p. 4).

This Executive Order mandates that four federal agencies (Medicare, Veteran's health programs, military healthcare and the Federal Employees Health Benefits Program) compile information on the quality and price of their health care services. This information is then to be shared with consumers and each other. One of the end-results of transparency is that someday there will be standardization in hospital pricing. This means that there would be price competition between providers and constraints would exist with how providers negotiate prices with payers. This would then end the annual contract negotiations between payers and providers, which would be welcomed by all parties involved. Standardized pricing will lead to commoditization of contract negotiations, this will mean that provider organizations will be competing for patients as well as physicians on valued-added factors like service and quality rather than price and reimbursement rates.

Once this executive order is fully implemented, Americans whose health care is paid for by the affected federal programs will be able to review price and quality information for the providers in their area (PricewaterhouseCoopers, n.d.). This will lead consumers to make better informed decisions. Initially this information will be available via the internet, but possible independent guides will emerge which will assist consumers in understanding this data. Several models for these which have been suggested are based off of Consumer Reports, the Zagat Survey or the Institute for Highway Safety vehicle crash test data. Each of these models has already been proven effective in changing how consumers evaluate and buy products and/or services in these industries. It is hoped that this executive order will drive the expansion of price and quality

transparency to other federal agencies and privately-held health care service organizations.

Besides the executive order for the federal agencies, state legislators are also leading the push towards transparency. Currently 32 states have either passed or proposed legislation to require hospitals to report their health charges (Scalise, 2006). Wisconsin is one of the states that asks hospitals to voluntarily report charges and/or payment rates. What is unknown is how extensively consumers will seek out and use this information. A survey of 1,000 adults conducted by Destiny Health (a high deductible health plan provider) showed results of less than 40% of respondents were likely to shop around for their health care. Consumers spend an average of 20 days researching their household purchases but only 9.7 days researching doctors.

An example of the future of price transparency has been provided by the Patient Friendly Billing Project (n.d.). This group says that in the future a patient will have an estimate of their portion of the payment for medical service before the service is rendered. The patient will be provided with meaningful and relevant quality information on the provider and service so that that can determine if the value of the service is equivalent to the cost. The purpose of the Patient Friendly Billing Project is to achieve a consumer-oriented revenue cycle, with the goal of implementing price transparency, point-of-service payment and simplified charge structures.

According to Collins & Davis (2006), transparency will bring equality and end the practice of charging different patients different prices. However, they also caution that due to the nature of health care, the insurance industry, emergency situations and emotion, health care will never be a perfectly competitive market. For instance, knowing

the price of a service has little value without also having information on the total cost for caring for a certain condition and the quality or outcomes of that condition. Also, many times due to a sickness (cancer, heart attack, etc) shopping around for services is not practical. Making a change towards consumerism and transparency will also require physicians to have comparative information on their own quality and the quality of the physicians they refer patients to see. Collins & Davis also caution about relying too heavily on high-deductible health plans because these put a greater financial burden on the sickest patients. These plans require people to allocate substantial income towards their health care and Americans are already paying more out of their own pockets than people in other industrialized nations.

Many health industry leaders say that transparency is still a work in progress. What consumers want is consumer report type of information so it is important that the hospitals and providers provide information that is understandable to the patient (Scalise, 2006). Many physicians do not want their physician-specific data published so most hospitals publish aggregate data results at this time, yet the physician-specific data is what the patient wants to see. Another issue that hospitals and providers need to come to agreement on is how the data is collected and organized. Some organizations base their reports on their billing system whereas others use a physiologically oriented data set, which should in theory, provide a more reliable guide.

In summary, health insurance has undergone a series of changes from various influences to become what it is today in the United States. It has changed from being thought of as insurance for when you are sick to insurance to help people afford to stay healthy. The people with the most influence on how insurance works has changed from

being the physicians and hospitals to the consumers. The cost of insurance has increased over the years. As employers took on the responsibility of providing group insurance to their employees, employees have had to pay an increasing share in this cost. To combat the rising cost of insurance, employers are providing proactive preventive health programs to their employees. These programs aim to educate employees on their health status through wellness programs and disease management programs. These programs work to prevent and lower health risks which can lead to chronic conditions and then to control those chronic conditions. Chronic conditions are targeted by these programs because this is an area where a high amount of claims dollars are spent each year. Lastly, with consumer driven health care fast becoming the largest trend in health care today, employers are educating their employees on transparency issues. Transparency is allowing the employee to see the actual cost of their health care services and use that along with physician and hospital quality information to determine if a particular medical service is appropriate. The era of transparency will do away with patients easy acceptance of receiving any and every medical service, especially non-medically necessary ones, just because their insurance will pay for it.

III: Methodology

This study on Company Q's employees is being conducted to analyze the medical claims data for a select population. The claims analysis will be used to identify health trends during the October 2004 to September 2006 time period. Company Q has a goal to reduce the overall medical expenditures. This goal impacts both the company's annual premium rates and the employee's out of pocket expenses. The researcher will analyze the medical claims data for Company Q by utilizing a new medical claims data warehouse vendor and reporting program Company Q has recently contracted with. The researcher will be looking for trends such as the most frequently occurring primary diagnosis or the diagnosis with the largest amounts of incurred claims over the two year time period. This analysis is important for determining if a preventive health program could have appositve impact on the company. One area of interest pertains to chronic disease management. There is a disease management program currently in place, and certain reports will provide a picture as to how well that program is working.

Subject Selection and Description

This study will analyze medical claims data for several union groups located at the Albany, GA facility of Company Q. This group was selected for this study as they have union negotiations in 2007 and this data will be used during the pre-negotiation process by the Benefits department and the Labor department. These groups will be referred to as Union A during the course of this study. The total population size for this group is approximately 427 people. Since the medical claims data is stored in a data

warehouse program, the entire population of this union group can be easily reported on and analyzed for this study.

Data Collection Procedures

Company Q has a medical data warehouse vendor who collects each employee's medical claims data from the various insurance carriers and pharmacy benefit manager. This data is submitted by electronic feeds to the medical data warehouse on a monthly basis. The vendor updates the claims information ensuring correct claims are grouped with the correct people. This researcher is able to run a variety of reports from this database. The reports are customizable to the individual groups who comprise the population of this study. All reports being used in this study have been created or customized by the researcher and will reflect only data for Union A at the Albany, GA location. Each person in this database is assigned a random unique identifier by the data warehouse vendor which makes Company Q unable to identify individual people. There are no names, social security numbers, employee numbers, birth dates or other identifiable personal characteristics used within this database. This program has a wide array of analysis capabilities and will provide % Change and % Difference analysis in certain reports. The researcher can create very broad reports (i.e. a report which counts the number of emergency room visits) and very specific reports (i.e. a report looking in depth at Diabetes patients who have undergone Lipid testing). A variety of reports will be created and generated by the researcher for this study. The report titles along with a brief description of the report can be found in the table below.

Report Title	Report Description
Albany, GA Dashboard	This general report is produced monthly and provides a snapshot of the overall health pictures and expenditures of the Albany, GA employee population.
Cost per Employee Benchmark Comparison	This report compares each period of time under review to the U.S. Benchmark for that time periods. This report looks at Medical and Prescription allowed amounts on a Per Employee Per Year (PEPY) basis.
Top 100 Diagnosis	This report contains the Top 100 Diagnosis for Union A, including a ranking by prevalence and the Net Pay amount for each diagnosis.
Clinical Conditions for Admission	This report ranks the clinical condition for a hospital admission by the number of patients and the net payment amount.
Preventive Screening Benchmark	This report contains a predetermined listing of preventive screenings, the rate of screenings undergone by Union A members and the U.S. Benchmark for each screening.
Chronic Conditions Benchmark	This report looks at ten chronic conditions and provides the number of patients receiving care for each condition compared to the U.S. Benchmark.
Chronic Conditions Prevalence and Cost Change Analysis	This report looks at 12 chronic conditions and provides the Medical Net Pay amount for each condition and the Medical Net Pay per patient amount. Period 1 is compared to Period 2 for any change in condition prevalence and cost.
Chronic Conditions Utilization Change Analysis	This report compares the number of patients with a chronic conditions and the number of office visits, ER visits and admissions from Period 1 to Period 2.

All reports with the exception of the general dashboard, were run using a subset called Albany Active Union employees. This subset isolated the claims the researcher was interested in and excluded groups such as retirees and salaried non-union employees from the reports.

Data Analysis

The data was analyzed by reviewing reports created using the database capabilities of the medical data warehouse vendor. Each report was created and/or modified by the researcher. The program contains measures which the researcher can select to be used on a report. For example, a measure could be financial in nature, such as Allowed Amount per employee, or Net Pay PMPM (per member per month). Measure can also be benchmarks, where the researcher selects a certain test or medical procedure and then adds a U.S. benchmarking measure to it. This will allow the researcher to compare the specific population utilization rates to the national average. Other types of measures used are ranking (rank by prevalence, or by dollar amounts), length of stays, and utilizations per 1000 (i.e. Visits per 1000 or Patients per 1000). The synthesis of this data includes comparisons between two years of medical data and comparisons to U.S. benchmarks.

Limitations

One limitation of this study is that the medical claims data warehouse program is new to Company Q. There is a limited amount of data which has been put into this system. There is claims data from the insurance vendors as of April 2004. The researcher is limiting the research period to claims incurred from October 2004 to September 2006 because this is a complete two year period of claims history. Comparing two years of data will allow the researcher to evaluate if there are trends emerging and identify areas of concern and areas where further analysis may be needed. This particular population underwent a change in January 2005 which changed their health

insurance plan design, this impacted co-payment amounts, co-insurance amounts, and deductibles. The first four months of the period under review will contain data from the previous insurance plan design. It is unknown if this will have a significant impact on the data results.

Summary

The researcher is using a database of medical claims data to analyze the health of the population of Union A located at the Albany, GA plant of Company Q. This information will range from a very broad overall health picture to a very detailed analysis of specific health conditions. This is the first time an analysis similar to this has been done for Company Q. If this analysis proves to be successful this methodology will be repeated for each union group within Company Q.

Chapter IV: Results

This study is being conducted to analyze medical claims information for the population of Company Q's Union A located at the Albany, GA facility. The analysis of these claims will provide insight into the medical trends for service utilization. It is expected that this analysis may also provide insight into any areas where opportunities exist for improvement. Company Q has over two years of medical claims data stored with a data warehouse vendor. The researcher has the ability to modify standard reports in the database as well as create customized reports specific to the population of Union A. The data analysis consisted of synthesizing the data presented in these reports. For this study the time period being used is claims incurred from October 2004 to September 2006. October 2004-September 2005 will be referred to as Period 1, and October 2005-September 2006 will be referred to as Period 2.

Item Analysis

General Dashboard Report

The general dashboard provided a general overview of the cost drivers, net payments, cost sharing and chronic condition prevalence. See Appendix A to view this entire report. The cost drivers show that the allowed amount per day for acute admissions is up by 67% while the number of days stay per 1000 acute admission is down 18%. This inverse relationship means that there are more admissions for this population but the length of stay is shorter, which could mean that overall employees are being admitted for more serious condition but they are receiving a greater amount of care in an outpatient setting and do not need to remain in an inpatient facility for as long. The

net payment per employee per year (PEPY) rose from \$9,632 to \$10,807 from period 1 to period 2. This compares to the benchmark of \$5,548. This means that this population either receives a higher amount of services than the national benchmark or have more members with serious medical conditions which result in higher dollar amounts per claim. In period 1, there was a total of \$8,141,819 of Claims Allowed compared to \$8,844,198 in period 2. This is approximately a \$700,000 increase in claims from one year to the next. Of the \$8,844,198 of total allowed claims in period 2, 28% was paid for through employee contributions and employee out-of-pocket expenses. While 71% was paid by Company Q, which amounted to \$6,453,098. Finally, this report shows a breakdown of five common chronic conditions, comparing period 1 to period 2 to the national benchmark. This report shows that hypertension, diabetes and osteoarthritis are areas where both period 1 and period 2 are above the benchmark by a significant amount so it can be assumed that these are conditions this population has a history of prevalence with. The other two chronic conditions shown are asthma and depression. Asthma was below the benchmark in period 1 and above it by a slight margin in period 2. Depression was below the benchmark in both periods. These findings indicate that depression is not a highly prevalent condition and while asthma has a slight increase in Period 2, it is not to an excessive amount. Due to these findings these two chronic conditions will not be a significant focus of ongoing research, however, the other three chronic conditions will be looked at closer. Asthma is a condition which should be watched as a potential for an upward trend in the future.

Cost per Employee Benchmark Comparison report

This report provides a comparison of the allowed amount per person for Period 1 and Period 2 and includes a benchmark value for each period. This reports shows that the Allowed Amount per employee per year for Medical and prescription costs was \$14,212.59 in Period 1 and \$15,406.50 in Period 2. Both of these periods are significantly higher than the benchmarks which were \$8,033.01 for both periods. This result begs the question of does the Albany population receive more medical services than the national average or is the employer paying more for their care than the national average? Since the intent of this study is not to analyze the health plan design the researcher is content to say that the Albany population is, at the very least, utilizing their health plan and receiving medical care. Upon further analysis of this report it is found that when the allowed amount is broken down further into medical and prescription separately, both of these are above the national benchmark so it is not just one factor (such as prescriptions) which is driving this increased allowed amount. The reason it is important to have proof of plan utilization is because then the researcher knows that employees do not need to be educated on the basic value of health insurance. Now the researcher can focus on which specific areas of care need further employee education or could benefit from a preventive health program.

Top 100 Diagnoses

This is a report which lists the top 100 diagnoses for the population sorted by both the number of patients per diagnosis and the net payment for the diagnosis. There was no significant change from Period 1 to Period 2 in the top clinical diagnosis when the report is sorted by the number of patients per diagnosis. The top diagnosis include screening for

malignant neoplasms, disease of lipid metabolism, essential hypertension, general examinations, general symptoms and special examinations. These results can be seen in Table 1.

Table 1: Top 100 Diagnosis by Patient Ranking-Period 1 vs Period 2

Period 1			
	Patient {Rank}	Patients	Net Pay Med
Essential Hypertension	1	262	\$114,869.69
Screening-Malig Neoplasm	2	254	\$41,606.50
Dis of Lipoid Metabolism	3	251	\$41,173.63
Special Examinations	4	203	\$51,866.27
General Symptoms	5	126	\$96,198.60
General Medical Exam	6	121	\$23,906.41
Resp Sys/Oth Chest Symp	7	107	\$105,525.32
Joint Disorder NEC & NOS	7	107	\$42,009.78
Encountr Proc/Aftcr NEC	9	104	\$134,242.62
Acute Sinusitis	10	93	\$5,830.99
Period 2			
	Patient {Rank}	Patients	Net Pay Med
Screening-Malig Neoplasm	1	290	\$65,469.18
Dis of Lipoid Metabolism	2	240	\$32,356.93
Essential Hypertension	2	240	\$33,954.11
Special Examinations	4	200	\$26,053.28
General Symptoms	5	134	\$53,952.75
General Medical Exam	6	131	\$24,999.62
Encountr Proc/Aftcr NEC	7	114	\$39,779.55
Resp Sys/Oth Chest Symp	8	107	\$114,033.63
Allergic Rhinitis	9	100	\$25,288.91
Oth Abdomen/Pelvis Symp	10	95	\$52,060.67

When the report is sorted by the net payment ranking a different picture emerges.

In Period 1 the five diseases with the highest net payments in order of ranking were osteoarthritis, other chronic ischemic heart disease, encounter procedures/aftercare not elsewhere classified, back disorders, and essential hypertension. In Period 2 the top five diseases were osteoarthritis, intervertebral disc disorders, back disorders, respiratory

system/other chest symptoms and rehabilitation procedures. These results can be seen in Table 2. A significant amount of patients were listed for each for each of these diagnosis for each period. This shows that osteoarthritis is a diagnosis which affects a great number of people at a great cost to the company and is a consistent diagnosis across the research time period. This reports also shows that hypertension has had a large amount of people with this condition seek treatment in both periods however the cost of the treatment has decreased significantly from Period 1 (\$114,869) to Period 2 (\$33,954). This would indicate that the disease management program currently in place has focused in on this disease during Period 2.

Table 2: Top 100 Diagnosis by Net Payment Ranking-Period 1 vs Period 2

	Period 1		
	Net Pay Rank	Net Pay Med	Net Pay Per Pat Med
Osteoarthrosis et al	1	\$167,527.50	\$2,175.68
Oth Chr Ischemic Hrt Dis	2	\$145,138.54	\$5,805.54
Encountr Proc/Aftcr NEC	3	\$134,242.62	\$1,290.79
Back Disorder NEC & NOS	4	\$131,732.24	\$1,431.87
Essential Hypertension	5	\$114,869.69	\$438.43
Intervertebral Disc Dis	6	\$111,271.77	\$1,854.53
Resp Sys/Oth Chest Symp	7	\$105,525.32	\$986.22
General Symptoms	8	\$96,198.60	\$763.48
Oth Benign Neoplasm GI	9	\$94,829.64	\$2,370.74
Diabetes Mellitus	10	\$80,298.90	\$922.98
	Period 2		
	Net Pay Rank	Net Pay Med	Net Pay Per Pat Med
Osteoarthrosis et al	1	\$347,785.86	\$4,898.39
Intervertebral Disc Dis	2	\$179,218.86	\$3,381.49
Back Disorder NEC & NOS	3	\$126,479.07	\$1,359.99
Resp Sys/Oth Chest Symp	4	\$114,033.63	\$1,065.73
Rehabilitation Procedure	5	\$109,742.43	\$3,919.37
Oth Chr Ischemic Hrt Dis	6	\$81,664.45	\$3,550.63
Screening-Malig Neoplasm	7	\$65,469.18	\$225.76
Periph Enthesopathies	8	\$59,380.34	\$1,349.55
Oth Benign Neoplasm GI	9	\$57,847.39	\$1,563.44
General Symptoms	10	\$53,952.75	\$402.63

Clinical Conditions for Admissions

This report is interesting because it shows what the primary diagnosis is which resulted in a hospital admission. This report can be sorted either by patient ranking (the number of patients admitted by diagnosis) or by the net payment amount. In Period 1 the diagnosis with the highest patient rankings were Mental Health-Depression (8 admits), Coronary Artery Disease (6 admits), and Osteoarthritis (5 admits). Of these three diagnosis, Coronary Artery Disease was also ranked number 1 due to having the highest net payment associated with it at \$213,906.11. Osteoarthritis was ranked fourth with \$121,618.28 and Mental Health-Depression was ranked twelfth at \$39,927.52 in net payments. While it is helpful to look at this report ranked by the number of patients, it is more useful to look at this report when it is ranked by the net payments amounts as this will show what conditions are resulting in the highest expenditures when hospitalized. The top six diagnosis by net payment amount are Coronary Artery Disease, Infections, Spinal/Back disorders, Osteoarthritis, Chemotherapy encounters, and Gastrointestinal tumors. Of these top six diagnosis three of them only had one patient admitted yet each was over \$100,000 in net payments.

In comparing Period 1 to Period 2, the most striking trend is that Osteoarthritis and Coronary Artery Disease are both ranked number one by number of patients admitted (nine each) and are ranked number one and two by net payments, Osteoarthritis had \$353,926.72 and Coronary Artery Disease had \$288,018.21 in net payments. This would seem to indicate that a preventive health program would be very beneficial for these two diseases. Rounding out the top three diagnosis ranked by number of admissions is Bacterial pneumonia which had five admissions. The top six ranked diagnosis by net

payment following osteoarthritis and coronary artery disease are congenital musculoskeletal disorder, leg fracture/dislocation, vascular disorders and spinal/back disorders.

Preventive Screening Benchmark Comparison

This report looks at the number of preventive health screenings compared between Period 1 and Period 2 as well as compared to a health people target (a benchmark). In general this report indicates that the Albany population is below the benchmark in terms of the number of preventive health screenings conducted in both periods. There was also a decline from Period 1 to Period 2 for all the screenings except for well baby visits. Specifically cervical cancer screening 57 percent below the benchmark, cholesterol and colon cancer screenings are 45 percent below the benchmark, and mammograms are 34 percent below the benchmark. The number of screenings conducted for each of the tests indicated decreased from Period 1 yet the number of employees in this population held steady. In regards to screenings used on children, this population is one percent above the benchmark in the number of well baby visits they obtained, and there was increase in the number of visits from Period 1 to Period 2. However there was a decrease in the number of well child visits between the two periods and in Period 2 the population is 54 percent below the benchmark. In period 1 they were only 28 percent below the benchmark. In analyzing these results it is recognized that certain screening tests are not done annually and that a drop in the number of screenings may be normal. However, there are other tests such as a mammogram which should have a fairly steady amount of screening each year. In order to fully evaluate if there is a

pattern here or not, an additional year's worth of data is necessary to establish if the tests are decreasing or if they fluctuate by year. If, with another's year's worth of data, the trend does show a decrease in screenings, then it would be an opportunity for improvement.

Chronic Conditions Benchmark and Chronic Condition Prevalence and Cost Change Analysis Reports

These two reports were analyzed in conjunction with each other because they are both reporting on disease management conditions. There were some interesting findings on these reports. There was no significant change in the number of patients seeking treatment for each of the conditions from Period 1 to Period 2. However the number of patients with Hypertension, Osteoarthritis, Asthma, CHF, and COPD were all above the U.S. benchmark. Hypertension, Diabetes and Osteoarthritis have 99 patients or more, so the researcher is considering these to be high prevalence conditions, while the other conditions have less than 50. When the Medical Net Payment amounts are analyzed it is shown that Osteoarthritis is one of the most prevalent and most costly conditions in Period 2. What is interesting about this is that in Period 1 Osteoarthritis had more patients and less than half the net payment amount. These results show that there is an opportunity to institute a preventive health or educational program regarding osteoarthritis. In reverse of this is the patterns shown by Asthma and Diabetes. Both of these conditions had an increase in the number of patients receiving care from Period 1 to Period 2 however, the Net Payments decreased. Hypertension and Rheumatoid Arthritis also had slight decreases in patient numbers and had decreases in Net Payment amounts.

The results of these two reports have been combined and condensed, as seen in Table 1.

The number of patients and the U.S. Benchmark are compared on a patients per 1000 basis. Since the Albany population is less than 1000 people, the actual number of patients is slightly higher than the patients per 1000 number found in the table. Period 1 is compared to Period 2 in both the Patients per 1000 and the Patients Benchmark columns.

Table 1

Condition	Patients Per 1000 (Per 1/ Per 2)	Patients Benchmark (Per 1/Per 2)	Net Pay Period 1	Net Pay Period 2	Net Pay % Change
Asthma	20.66/33.88	25.56/25.85	\$38,704.61	\$8,139.41	-78.97%
Chronic Obstructive Pulmonary Disease (COPD)	23.14/24.79	12.39/11.70	\$9,695.07	\$8,384.33	-13.52%
Congestive Heart Failure (CHF)	4.96/5.79	4.75/4.47	\$5,010.68	\$2,795.24	-44.21%
Coronary Artery Disease	22.31/23.14	22.31/23.14	\$233,477.08	\$234,406.27	.40%
Diabetes	74.38/81.82	58.30/55.10	\$80,511.22	\$44,133.00	-45.18%
Hypertension	217.36/200.00	129.64/122.24	\$115,719.36	\$34,700.76	-70.01%
Osteoarthritis	95.87/86.78	49.39/46.58	\$187,633.00	\$430,224.62	129.29%
Rheumatoid Arthritis	4.96/4.13	4.91/4.66	\$12,534.90	\$961.51	-92.33%
Depression	28.93/30.58	36.73/35.89	\$36,604.15	\$25,226.85	-31.08%

Overall, this table shows that there has been a general decrease in the net payments for these chronic conditions (with the exception of osteoarthritis) even with an increase in the number of patients in some cases. This result leads to the conclusion that the current

disease management program and/or educational opportunities are effective to some degree in the majority of diseases.

Chronic Conditions Utilization Change Analysis

This report compares the number of patients receiving care for a chronic condition from Period 1 to Period 2 and provides data on the number of office visits per 1000, ER visits per 1000, and Admissions per 1000. The chronic conditions on this report are the same as in the previous two reports. In general the number of patients with a primary diagnosis for a chronic condition increased from Period 1 to Period 2. All conditions except for hypertension, osteoarthritis and rheumatoid arthritis showed an increase in the number of patients. Overall the number of ER visits and Admissions for all conditions is extremely low or even none for both periods. Even though there are more patient in this group, this is seen as a positive trend because it means that people are seeking care in an office setting before condition it is uncontrollable and needs hospitalization of emergency care.

The number of office visits per 1000 varies by condition and there is a mixture of increased and decreased between Period 1 and Period 2. On a positive side, the conditions of asthma, diabetes, and depression all had an increase in the number of office visits. However, hypertension, COPD, CHF, coronary artery disease, osteoarthritis and rheumatoid arthritis all show decreases in the number of office visits from Period 1 to Period 2. What is unknown is if this is due to employees no longer seeking care at all or if they are seeking care through an alternative means such as using the disease management program instead of visiting their doctor for each minor complaint.

However, if this does mean that less people are seeking general care for these diseases that does leave Company Q at risk for an increased amount of Emergency room visits or hospital admissions for these conditions in the future.

The results of the reporting from the medical data warehouse are interesting and do lead the researcher to believe that there are trends present which have potential for further research or follow up especially in consideration of the disease management program that is currently in place.

Chapter V: Discussion

This study was conducted to analyze medical claims information for the population of Company Q's Union A located at the Albany, GA facility over a two year time period. The analysis of these claims provided insight into the medical trends for medical service utilization and the amount of dollars spent on claims. This analysis provided insight into areas where opportunities exist for improvement. These opportunities could have an impact on the net payment amount that is spent on claims if taken advantage of. To conduct this study the researcher used customized reports to pull data from a medical claims data warehouse program. The data analysis consisted of synthesizing the data presented in these reports.

Limitations

The first limitation to this study is that there was a limited amount of data in the medical warehousing program since it is new to Company Q. There is claims data from the insurance vendors as of April 2004. The researcher limited the research period to claims incurred from October 2004 to September 2006 because this is a complete two year period of claims history which could be compared to each other. For more effective analysis of long-term trends three to five years of data will be needed.

A second limitation of this study is that the claims analyzed were limited to only one particular employee group within Company Q. The results found in this report cannot be used to make company-wide generalizations in regards to the company's health trends.

Conclusions

Overall, I do believe that there are several opportunities where a preventive health program and/or employee education can have an impact on employee's health behaviors and reduce claim expenditures for the company. One condition which is extremely prevalent in this population is Osteoarthritis. Company Q should discuss with their current disease management program vendor opportunities to include this condition in the program. Company Q should also look at a health screening program to find out if there is a way to determine who is more susceptible to this condition in order to target educational opportunities.

It does appear that the current disease management program is having an impact on the medical claims of the employees. It does appear that more employees are suffering from a chronic condition but it also appears that they are seeking appropriate health care in an office visit setting versus using the emergency room for non-emergent care.

In general the total allowed amount per member per year is extremely high for this population when compared to the benchmark data. This is due in part to the high utilization rates demonstrated by this population. If this continues over the next year or two, Company Q may want to look at plan options which would further limit their exposure. However, since plan design is not a focus of this study that can be examined in future expanded studies.

Also of note, is that the total amount of claims allowed in period 2 increased by \$700,000 over Period 1 as shown in the general dashboard. This is an area of concern. It does provide proof that the employees in Albany utilize their insurance coverage.

However this is a very large increase, so further investigation will be needed to determine if employees are seeking care which could be received through a wellness program or a disease management program. This particular aspect should be looked at again in one year to determine if this is a true trend. If this is a trend then Company Q will need to be prepared to provide education and wellness programs which could impact some of the claims. Since there is a large segment of the population with a chronic condition of some kind, perhaps further education of these conditions and a health risk assessment program could decrease some of the associated costs.

Overall, Company Q may find it beneficial and cost effective to have a wellness program with health risk assessments in place for this employee population. If there is an incentive tied to program usage and if the program is available to employees and their families, this could result in a reduction of medical costs. These programs can work to reduce cholesterol, blood pressure, diabetes and provide information about a heart healthy lifestyle. This should have a positive impact over time on the claims dollars related to chronic conditions.

Recommendations

The first recommendation for improving this study is that it should be repeated again next year when there will be three years of data for this population. Three years worth or more of data will provide more statistically accurate trends for the employee population. In order to demonstrate a true trend in medical utilization a minimum of three years of data is needed, however if more than that can be obtained and used in the future then the reports and findings will be more statistically accurate.

Secondly, I believe this study should be performed on more employee groups within Company Q. I think it will be important to complete this study on each employee population separately and then also on the entire company population as a whole. As much as analyzing the company as a whole may lead to interesting trends, it will be important to look at each employee group separately because certain trends may be driven by a specific employee group due to social norms or health care available in certain areas of the country. Another point to consider in future studies is the average age of the employees in each location as this will vary as older employees retire and new employees are hired. The general demographic of the company will be changing over the next few years so what may appear as a trend now may not be an issue in 5-7 years but different trends will have emerged.

References

- Acton, R. (2006). Wellness Programs Can Generate Return on Investment. *Business Journal*. 20(41), 9. Retrieved January 9, 2007 from Ebscohost.
- Benefit News Connect. (2006). *Majority Unaware of Medical Costs*. Retrieved December 19, 2006 from <http://www.benefitnews.com/health/detail.cfm?id=9920>
- Bernhart, M. (2006). Wellness Winners Share Their Success Strategies. *Employee Benefit News*. 20(11), 54-55. Retrieved January 9, 2007 from Ebscohost.
- Brzezinski, M.J. (Ed.). (1993). *Employee benefit plans: A glossary of terms*. Brookfield: International Foundation of Employee Benefit Plans, Inc.
- Center on an Aging Society. (2004). Disease Management Programs: Improving Health While Reducing Costs?. Retrieved on January 5, 2007 from <http://hpi.georgetown.edu/agingsociwty/pdfs/management.pdf>
- Clarke, R. (2006). What is price transparency?. *Healthcare Financial Management*. 60(4), 170. Retrieved January 30, 2007 from Ebscohost.
- Collins, S.R., Davis, K. (2006). Transparency in Health Care: The Time Has Come. Retrieved on January 5, 2007 from <http://pwchealth.com/cgi-local/hregister.cgi?link=reg/billing.pdf>
- Employee Benefits Research Institute. (2005). *Finances of Employee Benefits 1960-2003*. Retrieved November 20, 2006 from www.ebri.org/pdf/publications/facts/0205facts.b.pdf
- Employee Benefits Research Institute. (2004). *Employer Spending on Benefits, 2002*. Retrieved on November 20, 2006 from www.ebri.org/pdf/publications/facts/0504fact.pdf

- Employee Benefits Research Institute. (2005). *Compensation Costs in Private and State/Local Public Sector*. Retrieved December 18, 2006 from www.ebri.org/pdf/publications/facts/0305fact.pdf
- Federal Government Interdepartmental Committee on Employment-based Health Insurance Surveys. (2002). *Definitions of Health Insurance Terms*. Retrieved December 14, 2006 from <http://www.bls.gov/ncs/ebs/sp/healthterms.pdf>
- Fletcher, M. (2004). Health Risk Appraisals Address Employee's Individual Problems. *Business Insurance*. 38(45), T3-T9. Retrieved November 28, 2006 from Ebscohost.
- Garrett, M. (2006). Disease Management: How Plan Sponsors Can Evaluate the Promises and Realities. *Benefits and Compensation Digest*. 43(2), 18-20. Retrieved on January 2, 2007 from Ebscohost.
- Garrett, M. (2006). Evaluating and Improving Disease Management Programs. *Compensation and Benefits Review*. 38(5), 52-57. Retrieved November 20, 2006 from Ebscohost.
- Gorman, L. (2006). *The history of Health Care Costs and Health Insurance*. Retrieved November 24, 2006 from www.wpri.org/Reports/Volume19/Vol19no10.pdf
- Havlin, L. and Slavney, D. (2004, November). The Case for Consumerism in Health Care, more control and responsibility should lead to higher productivity. *Mercer Management Journal*, 18, 67-73. Retrieved from http://www.mercermc.com/perspectives/Journal/MMJ_pdfs/MMJ18_healthcareconsumerism.pdf
- Hirschman, C. (2006). Promoting Health. *Employee Benefit News*. 20(6).41-42.

Retrieved January 21, 2007 from Ebscohost.

Holmes, L.C. (2006). Employers Prefer Pre-emptive Strikes Against Health Costs.

Retrieved November 28, 2006 from

<http://www.benefitnews.com/subscriber/Article.cfm?id=37882499>

Hummel, J. (2006) Weighing Disease Management. *Business Insurance*. 40(14). 10.

Retrieved November 28, 2006 from Ebscohost.

International Foundation of Education, *Benefits and Compensation Glossary*. (n.d).

Retrieved November 28, 2006 from <http://www.ifebp.org/Resources/Glossary/>

Kaiser Family Foundation. (2006). *Employee Health Benefits, 2006 Summary of*

Findings. Retrieved November 20, 2006 from www.kff.org/insurance/7527

National Center for Health Statistics. (2006). Health, United States, 2006.

Retrieved November 20, 2006 from <http://www.cdc.gov/nchs/data/hus/hus06.pdf>

Neff, W.S. (1985). *Work & Human Behavior*. New Jersey: AldineTransaction.

Noeldner, S.P. (2006). Rewards for Health Lifestyles. Retrieved on December 19, 2006

from http://www.welcoa.org/freeresources/pdf/mercer_special_reports.pdf

Oubre, Jr., N. (2006). Excellent Health Benefits Help Attract, Retain Top Employees.

San Diego Business Journal. 27(13). A28-A31. Retrieved December 12, 2006

from Ebscohost.

Patient Friendly Billing Project. (n.d.). Consumerism in Health Care. Retrieved

December 18, 2006 from [http://pwchealth.com/cgi-](http://pwchealth.com/cgi-local/hregister.cgi?link=reg/billing.pdf)

[local/hregister.cgi?link=reg/billing.pdf](http://pwchealth.com/cgi-local/hregister.cgi?link=reg/billing.pdf)

PricewaterHouseCoopers. (n.d.) *Behind the numbers: Medical cost trends for 2007*.

Retrieved on November 28, 2006 from <http://pwchealth.com/cgi-local/hregister.cgi?link=reg/numbers.pdf>

PricewaterHouseCoopers. (n.d.) *New Federal Leadership on Healthcare Transparency: What Will It Mean for Patients, Payers and Providers*. Retrieved December 18, 2006 from <http://pwchealth.com/cgi-local/hregister.cgi?link=reg/transparency.pdf>

PricewaterHouseCoopers' Health Research Institute. (2006) *Top Seven Health Industry Trends in '07*. Retrieved on December 18, 2006 from <http://pwchealth.com/cgi-local/hregister.cgi?link=reg/topseven.pdf>

Ross, J. (2002). The Committee on the Costs of Medical Care and the History of Health Insurance in the United States. *Einstein Quarterly Journal of Biology and Medicine*, 19,129-134. Retrieved December 7, 2006 from Ebscohost.

Scalise, D. (2006). The See-Through Hospital. *H&HN: Hospitals & Health Networks*. 80(11), 34-40. Retrieved January 20, 2007 from Ebscohost.

Scofea, L. A. (1994). The development and growth of employer-provided health insurance. *Monthly Labor Review*. 117(3), 3-10. Retrieved December 8, 2006 from Ebscohost.

Shepherd, L.C. (2006). Analyst Drill Down on Health Care Cost Drivers. Retrieved November 28, 2006 from <http://www.benefitnews.com/subscriber/Article.cfm?id=37882542>

Shepherd, L.C. (2006). Employers Increase Wellness Push with New Programs, Incentives. Retrieved on November 28, 2006 from <http://www.benefitnews.com/subscriber/Article.cfm?id=37882469>

Shepherd, L.C. (2006). Health Inflation Lower, but Worries Grow Over "Fraying

Benefits". Retrieved December 19, 2006 from

<http://www.benefitnews.com/health/detail.cfm?id=9817>

Thomasson, M. (2003). Health Insurance in the United States. Retrieved November 24,

2006 from <http://eh.net/encyclopedia/article/thomasson.insurance.health.us>

Towers Perrin HR Services. (n.d.) *Making Health Care Consumerism Work-Aligning*

Employer and Employee Interests. Retrieved December 19, 2006 from

http://www.towersperrin.com/tp/getwebcachedoc?webc=HRS/USA/2004/200408/consumerism_0804.pdf

U.S. Department of Labor and U.S. Bureau of Labor Statistics. (2006). *National*

Compensation Survey: Employee Benefits in Private Industry in the United

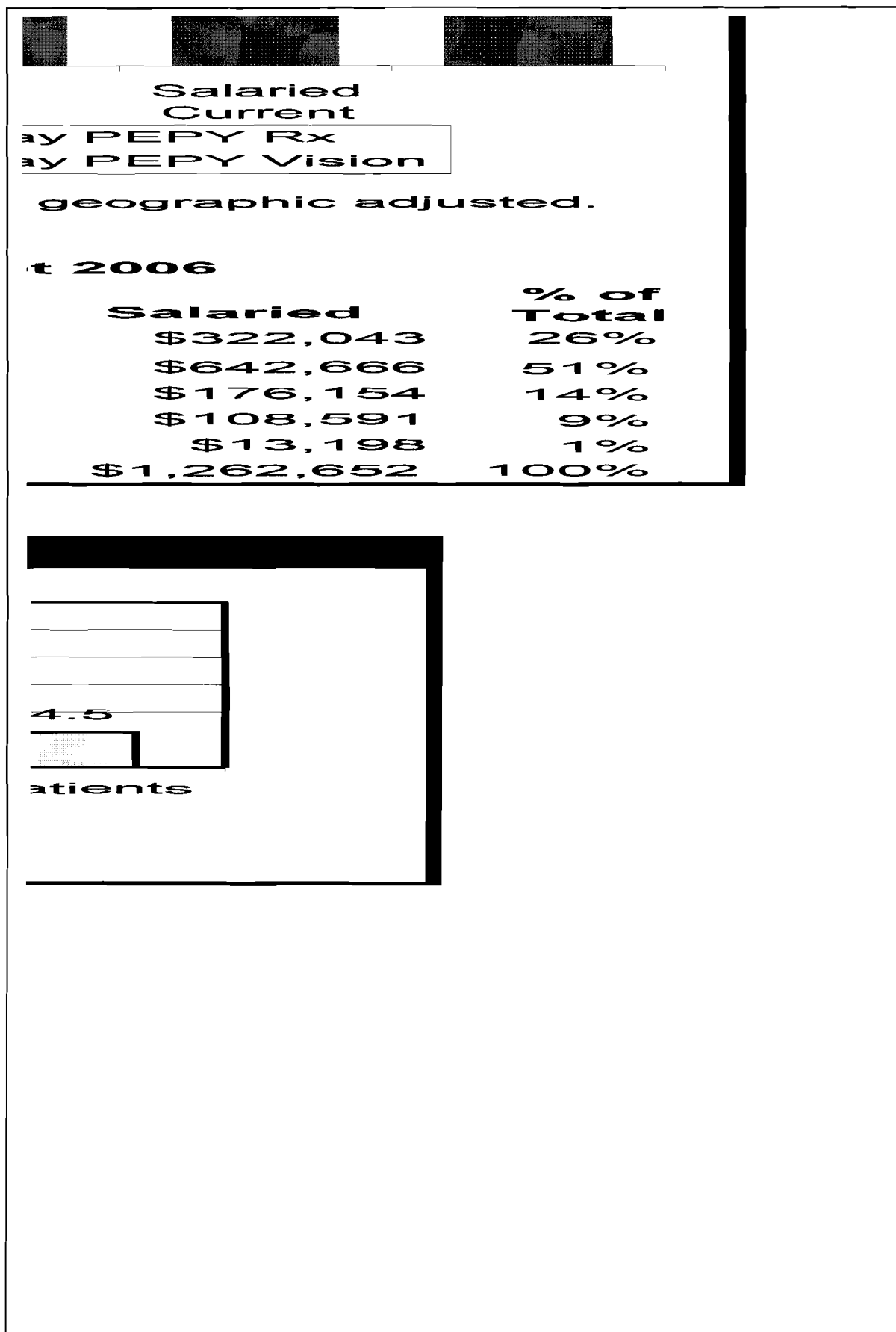
States. March 2006. Retrieved on November 20, 2006 from

<http://www.bls.gov/ncs/ebs/splebsm0004.pdf>

Wojcki, J. (2005). Some Employers Linking Employee Premiums to Health Programs.

Business Insurance. 39(30),1-18. Retrieved November 28, 2006 from Ebscohost.

Appendix A: Company Q Dashboard



Employee/Employer Cost Sharing (Medical/Rx/Dental/Vision)



	Oct 2004 - Sept 2005	Oct 2005 - Sept 2006
Total Claims Allowed Amount	\$8,118,198	\$8,844,198
Administrative Fees	\$258,709	\$271,295
Total Cost	\$8,400,529	\$9,115,493
Coordination of Benefits (COB)	\$61,787	\$88,928
Employee Out of Pocket	\$1,257,243	\$1,462,938
Employee Premium Contributions	\$628,701	\$1,110,529
Company Net Cost	\$6,352,798	\$6,453,098
EE Out of Pocket as % of Total Cost	15%	16%
EE OOP & Premiums as % of Total Cost	22%	28%
Company Net Cost as % of Total Cost	76%	71%