AN ABSTRACT OF THE DISSERTATION OF
Amy Elizabeth Schwartz for the degree of Doctor of Education in Learning, Leadership and Community
Presented on December 15, 2014
Title: The Use of On-Site Health Care Services to Reduce Medical Costs and the Expense of Employer-Sponsored Health Benefits

Abstract approved:

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This study evaluated whether providing an on-campus employee medical clinic at the University of New Hampshire Durham campus provided a low cost alternative to the price of health care services when compared to services offered by community providers such as hospitals and outpatient centers. The University of New Hampshire (UNH) Employee Clinic opened February 27th, 2012 as a three-year pilot project, with the goal of providing a cost effective alternative to higher-priced community-based health care services, as well as to provide a convenient service for employees. The study determined the UNH Employee Clinic did provide a low cost alternative to health care services provided by the community. *Keywords: health care costs, cost containment, employee health, on-site health care services*

The Use of

On-Site Health Care Services to

Reduce Medical Costs and the Expense of Employer-Sponsored Health Benefits

By

Amy Elizabeth Schwartz

A DISSERTATION

Submitted to

Plymouth State University

In partial fulfillment of

the requirements for the

degree of

Doctor of Education in Learning, Leadership and Community

Defended: December 15, 2014

Degree Conferred:

Dissertation of Amy Elizabeth Schwartz
Presented on December 15, 2014.

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I understand that my dissertation will become part of the permanent collection of Plymouth State University, Lamson Library. My signature below authorizes release of my dissertation to any reader upon request.

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Amy Elizabeth Schwartz, Author

ACKNOWLEDGEMENTS

I would like to thank the many people who supported me and my work over the past three years. To my committee chair, Dr. Nancy Puglisi I would like to express my deep appreciation for her encouragement to begin this academic endeavor. I would also like to thank my committee members, Drs. Christie Sweeney and George Tuthill for their thoughtful contributions to my work and the tireless editing, particularly of Dr. Sweeney. Her sharp eye for detail has made this a better document and one of which I am very proud.

Finally, to my cohort, the Tower of Power: Annie, Deb, Delilah, Holly, Kim, Kuo Pin, Lisa, Michelle, Thom, and Wilson. You made learning fun, and created a lifetime of fond memories which overshadow the tough parts of getting this done. I feel like a “Lucky Dog” to have been your colleague. Thank you.

Dedication

I dedicate this dissertation to my family, especially….

To my husband Mike, for his encouragement and unwavering, quiet and steady support.

To my daughter, Macy for her inspiration as she works so very hard at her own academic pursuits.

To Jack, who never gives up and teaches me by example to do the same.

To Sarah, another member of the working mother fellowship and who reminds me we are all in this together—which makes it a little bit easier.

And to Kathy Neils, who looked at me over the table and said “just get that dissertation done” when I needed the push.

Thank you.


EMPLOYEE CLINIC
EMPLOYEE
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CHAPTER 1—INTRODUCTION

Purpose of the Study

The cost of health care has outpaced inflation and the growth in national income for over a decade (Beamesderfer & Ranji, 2012). This escalation in expense has created an economic burden for employers who provide health insurance to their employees, for the government which provides health insurance for the poor (Medicaid), elderly and disabled (Medicare), and for individuals who do not have health insurance coverage.

The University System of New Hampshire (USNH) expends over $60 million per year on medical benefits for its 4 campuses and nearly $50 million of this is attributable to a single institution, the University of New Hampshire (UNH), located in the town of Durham. While USNH human resources staff has aggressively managed the insurance carrier contract for all campuses, medical costs continued to rise nearly 10% a year, compared to a national average of 6% in 2010 and 8.8% in 2011 (Harvard Pilgrim Health Care, 2010 & 2011, unpublished data). A comparably "rich" medical insurance coverage package, with limited out of pockets expense has insulated the University employees from the true cost of medical care. The purpose of this study was to evaluate whether the implementation of on-site health services provided a low-cost alternative for employees using the clinic at the UNH campus compared to receiving the same health care services in the community.

Research Question

Did the UNH Employee Clinic provide a low cost alternative for employee health care services as compared to the price of purchasing these same services in the community?

Problem and Significance

The cost of healthcare has experienced consistent growth, which has outpaced the growth of the overall economy since the 1960s (Center for Medicare and Medicaid Services [CMS], 2011). The amount the United States spends on health care is 52 percent higher than the next highest spending country (Norway) and about 90 percent higher than many other countries considered global competitors (Kaiser Family Foundation, 2009). Just over a third of national health spending, or $809 billion, was expended by private insurance (CMS, 2011), the majority of which is employer sponsored. From 2001-2011, the premiums for employer subsidized health benefits increased 113% (Kaiser Family Foundation, 2012). These cost increases are in turn passed on to workers in the form of premium increases and benefit changes, often requiring that employees absorb a larger amount of the health care expenditures through mechanisms such as increased premium contribution, larger deductibles and co-insurance.

The rising rate of health care spending can be attributed to a number of complex factors. These factors include the wide availability of expensive and sophisticated medical technology, redundancy of testing, an aging population and increased life span, the cost of research and development of pharmaceuticals, administrative expenses associated with health care delivery, medical error as well as variation in provider pricing, service consumption and quality across geographic areas (Goodall & Ginsberg, 2008; Fisher, Bynum & Skinner, 2009).

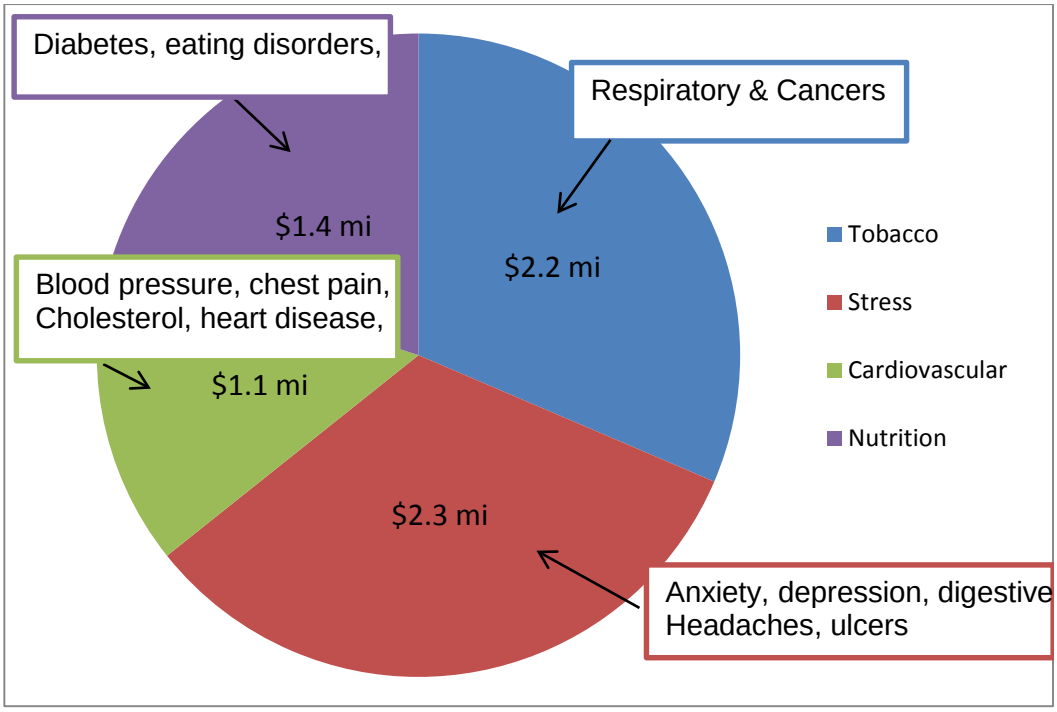
In contrast to much of history, a major proportion of modern disease burden is caused by unhealthy lifestyle, which has led to an epidemic of expensive chronic disease such as diabetes and hypertension. Chronic illnesses progress slowly and require medical treatment, and are a major economic burden in the United States (Institute on Medicine, 2012).

The USNH population is a reflection of this trend of increased chronic disease, with 13 percent of employee medical claims expense (about $7 million) in 2012 attributable to 4 of these "lifestyle" conditions (Harvard Pilgrim Health Care medical claims data, 2012). A lifestyle condition refers to medical issues which may be the result of personal health choices such as exercise level, eating habits and tobacco use:

1. Anxiety and depression;
2. Respiratory disease and cancers;
3. Diabetes and eating disorders, and
4. Blood pressure, cholesterol and chest pain.

While not all illnesses in this category can be directly attributed to unhealthy behaviors, many of these conditions can be better managed through diet modification, smoking cessation and exercise. To mitigate the expense of poor health habits, many employers, including USNH, have implemented employee wellness programs to improve the health of the workforce as a strategy to reduce costs. A more complete overview of employer wellness programs as a cost containment strategy can be found in Chapter 2. Table 1 illustrates the cost impact of these four categories on USNH medical claims costs:

Figure 1. *USNH 2012 Harvard Pilgrim Health Care Employee Claims Expense, Top 4 Lifestyle Categories*



An estimated 75% of all health care spending nationally is attributed to the treatment of chronic disease (Centers for Disease Control, 2009). In addition, according to a 2008 study by the Congressional Budget Office, obesity is a major contributor to the growth in health care spending. A 2009 study found that across all payers, obese people had per capita medical spending that was $1,429 (42%) greater than spending for normal-weight people in 2006 (Finkelstein, Trogdon & Cohen et. al). The multi-factorial reasons for health care cost increases makes slowing health cost escalation far from simple.

The University System of New Hampshire (USNH) expends $60 million per year on medical benefits, accounting for 50% of the overall employee benefits budget. The USNH provides more than 4,300 employees and their dependents medical insurance (approximately 8,900 insured) and is experiencing the same pressure of increased health care benefit costs as is reflected in the national data trends. The University System of New Hampshire health care

benefit expense increased 8.9% between 2009 and 2010 and 7% between 2010 and 2011 (Harvard Pilgrim Health Care, 2009, 2010& 2011 unpublished data). In 2012, the medical claims cost dropped 4% due to a number of changes including an administrative change to self-insured status, a drop in high cost claimants (i.e., medical cases costing in excess of $50,000) and the addition of a number of programs and cost containment measures. This change in trend for USNH—years of increase followed by flat or even decreased trend--is reflective of the national data. An analysis by the Center for Medicare and Medicaid Services, National Health Care Expenditure Projections 2012-2022 indicated that the increase in health spending until 2013 is expected to remain just under 4%, in part due to the sluggish economic recovery and the uncertainty of the Affordable Care Act (ACA). The CMS study predicts a rebounding increase of over 6% in 2014 when millions of Americans gain access to health insurance coverage (Center for Medicare and Medicaid Services, 2012).

One factor which played into the decision to open the UNH Employee Clinic is that the New Hampshire market is one of the most expensive states in which to provide employer-sponsored health insurance in the United States and a higher than average annual growth in health care expenditures (Kaiser Family Foundation, 2013). Using information from the Kaiser Family Foundation analyzing data from the Center for Medicare and Medicaid Services (CMS), Table 1 shows the comparative cost of the New England states against the national average for employer sponsored health costs and average health care expenditure growth. Compared to other states for cost (with higher being more expensive), New Hampshire is ranked 48th in the country for insurance costs and 42nd in the country for expenditure growth.

Table 1. *Average Cost of Providing Employer-Sponsored Health Coverage, 2011 in the New England States, Compared to United States Average*.

State	National Rank	Employee Contribution	Employer Contribution	Total
New Hampshire	48	$1,237	$4,581	$5,818
Massachusetts	49	$1,438	$4,385	$5,823
Maine	39	$1,113	$4,364	$5,477
Vermont	40	$1,221	$4,361	$5,582
Rhode Island	50	$1,388	$4,536	$5,924
United States		**$1,090**	**$4,132**	**$5,222**

Additionally, New Hampshire has one of the highest average annual health care expense increases of all the New England States, with a 7.6% average over an 18 year period. This is more than a full percent higher than the United States average over the same period of time. The large annual growth in health care expense in turn increases the benefit cost for the University System of New Hampshire, pressuring administration to develop cost containment measures in order to hold down overall costs. Table 2 summarizes the average percent increase for all New England States:

Table 2. *The Average Percentage of Health Care Expenditure Growth in the New England States, 1991-2009*

State	Rank	Average annual percent increase
New Hampshire	42	7.6%
Maine	40	7.4%
Massachusetts	19	6.4%
Rhode Island	16	6.3%
Vermont	35	7.3%
United States		**6.5%**

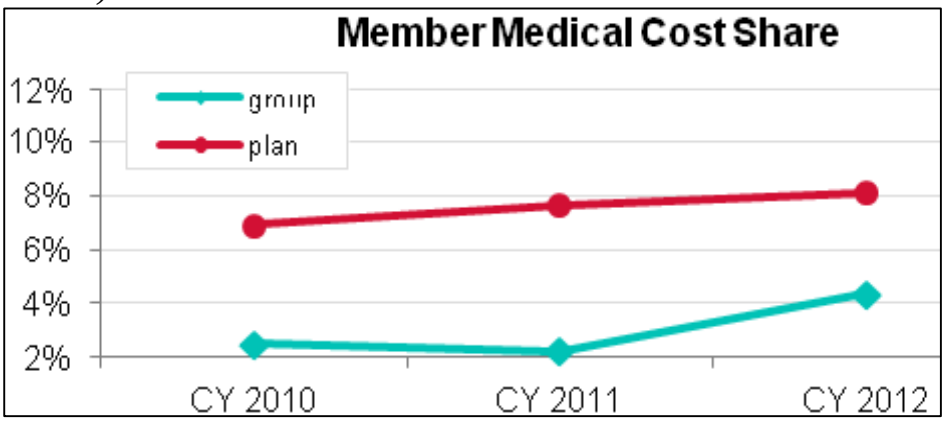
The USNH traditionally has a demographic profile that is slightly older than the comparable New Hampshire groups insured by Harvard Pilgrim Health Care (HPHC), with an average age of 38.5 as opposed to the Harvard Pilgrim New Hampshire benchmark of 34.4 years. These

demographics have implications for health care utilization, and USNH employees have higher than average utilization in every category of health care services including inpatient hospital, outpatient hospital, ancillary services (e.g., laboratory and radiology), pharmacy and physician office visits as compared to similar groups insured by HPHC in New Hampshire. Historically, the University has had higher utilization and per unit cost than comparable employers insured through HPHC. This is thought to be due in part to the generous "first dollar" coverage provided by USNH, which has little employee cost share for medical services. As a result, the employee has limited financial exposure and is insulated from the cost of care.

In 2012, USNH implemented a deductible of $200 for individuals and $400 per family for staff insured through USNH. However, the USNH employee population still has a lower than market "cost share", with employees required to pay less in the form of copays or deductibles (medical cost share) in comparison to other HPHC groups in New Hampshire (Harvard Pilgrim Health Care, unpublished data, 2012).

Figure 2 provides a comparison of employer-employee cost share between USNH and all other HPHC employer groups (the "plan average"). The 2012 benefit changes, which increased cost share for the first time brought USNH employee medical cost share to 4.1%, still well below the 8.1% of all other HPHC groups. Again, a lack of cost share often contributes to high medical cost, as employees have limited incentive to compare prices or limit utilization.

Figure 2. *HPHC Member Medical Cost Share, USNH compared to HPHC Plan Average (2010-2012)*



A careful review of USNH outpatient medical claims data indicates wide discrepancies in average paid amounts for ancillary services (physical therapy, laboratory tests and radiology procedures) performed in free-standing area facilities compared to a hospital outpatient setting. For example, a comprehensive metabolic panel test is reimbursed at an average of $15 at an independent laboratory (e.g., Lab Corp, Quest). The same test averages $146 at Frisbie Memorial Hospital in Rochester, $124 at Wentworth Douglass Hospital in Dover and $92 at Exeter Hospital. There is few non-hospital owned options for laboratory and radiology services in New Hampshire, making it difficult to direct this "ancillary" service volume in order to reduce expenses. The market is dominated by a limited number of integrated hospital-based provider networks, thwarting competitive pricing practices. The high cost of services in areas dominated by hospital practices has been documented in the research, with a 2014 study finding that integrated hospital-provider networks appear to lead to statistically and economically significant increases in hospital prices and spending (Baker, Bundorf & Kessler, 2014).

Improved access to preventive health care may prevent illness, modify risk and effectively manage disease. A recent literature review of studies comparing the resource use of primary care and specialists found that patients of primary care providers have lower levels of use, including

fewer diagnostic tests and procedures and incur equal or lower costs of care (Friedberg, Hussey & Schneider, 2010). In 2010, USNH primary care utilization was down compared to the previous year. In contrast, other medical services increased with the exception of emergency room visits. One strategy to reduce USNH medical expense was to make health care and ancillary services available to employees that are both cost-effective and seamless to the workday. UNH contributes the majority of claims cost across USNH and was a logical site to initiate on-site health care services. While services are available to any USNH employee who may wish to use the clinic, the majority of the UNH Employee Clinic patients are employees of the UNH campus.

It was the proximity of USNH's largest campus (UNH) to the high cost health care provider market of Seacoast New Hampshire which initiated the implementation of two cost containment measures: 1. The implementation of a consumer-driven health care price shopping program in January, 2012 called "Tandem Care" and, 2. The development of the Employee Clinic at UNH, referred to as the "UNH Employee Clinic". Both of these programs sought to mitigate local market health care price dynamics. These dynamics include a market with limited competition, health care which is expensive and prices which vary widely between hospitals with limited price transparency. All of these factors make it virtually impossible for consumers to "shop around" for lower costs for common procedures and make fully informed health care cost decisions.

Development of UNH Employee Clinic: a solution to local market prices

The confluence of market factors and an unsustainable trend of ever increasing health care costs demanded that the University seek innovative solutions for shifting the cost curve. A 2011 survey of UNH employees indicated about 60% of the employees would consider using on-site

health services, which was considered enough of a population to approve construction of the clinic space within UNH Student Health Services.

The clinic was opened approximately one year later, in February 2012. While the UNH Employee clinic has been well received by staff and utilization has improved over time, research is needed to evaluate the employee clinic as a solution to increasing health care expense and New Hampshire market dynamics. Resources in higher education everywhere are limited and investment in new services, even those intended to produce long-term savings such as the employee clinic, must be evaluated for fiscal impact and cost control.

The UNH Employee Clinic is staffed by employees of UNH Health Services. The clinic offers the following services to the employees and their dependents (over the age of 18):

- Laboratory services: comprehensive routine or specialty testing
- Radiology: diagnostic x-ray services using digital equipment
- Urgent care services: generally same day services for infection, illness or injury (including injuries incurred on the job) which are impairing the employee's ability to perform tasks at work;
- Pharmacy: prescription medications, a generic formulary which requires a $5.00 copayment. The pharmacy does not participate in any pharmacy benefit plans (e.g., Caremark, Express Scripts). In addition, there is a large selection of retail products available. A survey by the UNH Marketing Department indicated that these products are on average 40% less expensive than identical products available at local retail stores.

The UNH Employee Clinic is open from 7:00 am to 1:00 pm 5 days per week, which does limit the reach of the clinic to the employee population.

Tandem Care: incentive program to reduce outpatient service costs

Tandem Care is a program which assists USNH employees scheduled for outpatient services in searching for a low cost provider. Outpatient services have experienced very high increases in cost and utilization, and are excellent target markets for cost shopping, as there are multiple "free-standing" and independent outpatient service options available to patients. While Tandem is available to all USNH employees, it is most utilized by employees affiliated with UNH, as there are more care options available in close geographic proximity in the Seacoast New Hampshire market. The Tandem patient call center is staffed by nurses and when the employee calls, the following procedure is implemented:

- The nurse determines what the procedure is and that the procedure is eligible for the program. To be eligible, the procedure must be non-emergent (i.e., scheduled) and must be performed in the outpatient setting.
- If the procedure is eligible, the Tandem nurse determines if a lower cost provider contracted with Harvard Pilgrim Health Care is available to perform the service
- The employee is notified of low cost provider options. If the employee chooses the low cost provider, the nurse cancels the existing appointment, schedules the appointment with the low cost provider, and ensures that the records are transferred to and from the referring provider's office.
- When the claim for the procedure is paid, Tandem verifies through the Harvard Pilgrim claims database that the employee went to the appointment for the lower cost provider and an incentive payment based on the amount paid is sent to the employee. Table 3 shows the Tandem incentive payments for 2014.

Table 3. Tandem Incentive Payments to USNH Employees, 2014

Savings estimate	Resulting incentive payment
Already at low cost provider	$20
$100-$249	$40
$250-$449	$75
$450-$649	$100
$650-$999	$150
$1,000-$1,199	$200
$2,000-$3,999	$300
$4,000 +	20% of savings, capped at $3,000

This program has demonstrated a positive Return on Investment (ROI). As of April, 2014, Tandem Care had an average ROI of 1.3 (for every $1.00 spent on administration and incentive payments, USNH recognizes $1.30 in savings).

Table 4 demonstrates the ROI for Tandem since the program implementation. These savings include savings from all USNH members enrolled in the Harvard Pilgrim Health Plan who used the service:

Table 4. *Return on Investment, Tandem Care Program (2012-Year to Date)*

	2012	2013	Jan. 2014-April 2014	Total
Savings	$121,088	$200,741	$62,268	$384,097
Rewards	$23,360	$30,450	$11,625	$65,435
Administrative fees	$105,095	$106,073	$30,247	$241,415
	2012	2013	Jan. 2014-April 2014	Total
ROI	.9	1.5	1.5	1.3

Definition of Terms

Health insurance: A system of providing health care in exchange for a set annual dollar amount, or premium. The premium is paid per individual, two-person family or family. Health insurance protects against excessive financial loss due to illness or injury.

Benefit design: The suite of health care services and supplies covered by a medical insurance plan, and the structure of the insurance plan—i.e., co-insurance, co-payments and deductibles.

Premium: The total amount paid to the insurance company for health insurance coverage.

Cost index: The cost index, as defined by the New Hampshire Insurance Department is the adjusted average charge, or the average allowed amount (the amount "allowed" for payment by the insurance company) adjusted by case mix severity, which allows hospitals to be compared to each other without concern for case mix intensity. The cost index is the adjusted average amount divided by the paid amount per case at each individual hospital. So a hospital with a cost index of 1.0 is "average" compared to hospitals above and below the index.

Employee wellness program: Employer sponsored programs which seek to improve the health and health status of their employees and covered dependents. Examples of such programs include work-site biometric screenings, employer funded gym memberships and incentive programs to reach certain health goals such as reduced blood pressure or weight loss. Employer sponsored wellness programs are instituted in the hope that improved population health will reduce health care costs.

Medical expense: Any expense related to medical care received due to accident, illness or injury.

Medicaid: A state and federally funded health insurance program for low income or disabled individuals. Eligibility varies by state.

Medicare: A national, federally funded health insurance program for the elderly and certain other individuals.

Employer-sponsored insurance: Health insurance made available in conjunction with an individual's place of employment, generally with some measure of employer subsidy.

Self-insured medical plan: A health insurance plan which is funded directly by the employer, rather than through an insurance company.

Employer contribution: The portion of employer sponsored medical insurance coverage paid by the employer.

Deductible: The amount charged to an employee out-of-pocket before health insurance covers medical services.

Co-pay: The "co-payment" or cost share amount charged to an employee at the time of medical services.

Subscriber: The person who is eligible for health insurance due to employment.

Dependent: The spouse or children (under the age of 26) who are covered under a subscriber's medical insurance plan.

Chronic disease: A disease which is prolonged and persistent.

Incentives: A "bonus", generally in cash or gift certificates, which is given in this case to an employee or dependent to engage in healthy behaviors or programs which may result in lower cost, higher quality care.

Consumer engagement: The philosophy that consumers of health care must care about, and be involved in decisions which relate to the quality or cost of health care, and their own personal state of health.

Occupational health: Health care services which are related to the care of illness or injury at the place of employment.

Workers' compensation: The system of compensation for illness or injury which occurs during the performance of the duties of employment.

Health risk assessment: A questionnaire which assesses the health status of an employee, or the likelihood that an individual is or will become sick or injured.

Chapter Summary

Health care costs are a serious economic issue nationally and affect employers across the country, and this is no different for USNH. The cost to provide medical insurance for employees and dependents is increasing faster than the gross domestic product (GDP). There are many reasons for the increasing cost of medical insurance and health care services, including the costs charged by providers and the lack of transparency regarding price variation. The University of New Hampshire instituted a health care shopping program (Tandem Care) and opened the UNH Employee Clinic as ways to combat the high cost of health care services in the local market.

CHAPTER 2—LITERATURE REVIEW

Health Care Costs: Overview and Interventions

This literature review is divided into five sections: an overview of national health care costs and trends which in turn affect local markets; employer and employee health care and medical benefit costs; employer health cost measures to reduce employee medical expense, specifically wellness programming; and a review of the implementation of on-site health care services for employees as a cost containment intervention. Finally, the University System of New Hampshire data is reviewed, including local and regional health care market factors which affect the cost of medical benefit expense for the university.

National Trends

The relentless health care cost increases, which have exceeded inflation and the growth in national income for more than ten years have created an economic burden for the government which provides health insurance for the poor (Medicaid), elderly and disabled (Medicare), employers who provide health insurance to their employees, and individuals who do not have health insurance coverage (Beamesderfer & Ranji, 2012). The United States spends 52 percent more on health care per capita than the next highest spending country, Norway (Kaiser Family Foundation, 2009). Just over a third of national health spending is employer-sponsored and paid by private insurance (CMS, 2011).

Determining the cause of rising health care spending is complex and affected by many factors. These factors include the wide availability of sophisticated medical technology, an aging population and increased life span, the cost of research and development of pharmaceuticals, administrative expenses associated with health care delivery and medical error,

as well as variation in provider pricing, service consumption and quality across geographic areas (Goodall & Ginsberg, 2008; Fisher, Bynum & Skinner, 2009).

Health care costs also vary across the United States by region. A 2012 study analyzing employer sponsored insurance claims by the Health Care Cost Institute found that the Northeast had the highest per capita spending and the fastest spending growth of any region. The Dartmouth Institute for Health Policy & Clinical Practice has been studying the regional variation in health care pricing, utilization and variation in quality for thirty years, beginning with the small area variation studies by John Wennberg, MD in 1973. An analysis of Medicare spending by the Institute from 1992-2006 revealed distinct regional variation in health care costs, and determined that physicians in higher-spending regions were more likely to recommend discretionary services (Fisher, Bynum & Skinner, 2009). Further, the study found that "reform efforts on current areas of overspending—overuse of hospitals and unnecessary visits, consultations, tests and minor procedures—we may be able to bend the cost curve while continuing to enjoy the benefits of technological advances." (p. 849).

The Center for Medicare and Medicaid Services (CMS), which insures more than 100 million Americans, released billing information in May, 2013 on the 100 most common hospital inpatient procedures. A subsequent analysis by The Washington Post revealed "wide variations in the list prices among hospitals in the same area or city. For example, two New York City-based hospitals 63 blocks apart differed by 321% in the prices they charged to treat complicated cases of asthma or bronchitis, with one hospital charging an average of $34,310 and the other $8,159" (Kliff & Keating, 2013, p. 2). This same pattern is repeated in the Seacoast New Hampshire market, where most USNH employees are located and receive their health care services. Tandem Health Care Services has provided documentation of cost variance including

an example in which the cost of an upper GI Endoscopy was 55 percent more expensive in one New Hampshire hospital versus another, and lab tests were between 60-80 percent more expensive when performed by local hospitals compared to free standing laboratories. Each instance resulted in hundreds, if not thousands of dollars of expense to the University System of New Hampshire (Tandem Health Care, 2013, unpublished raw data). These price variations are further documented and explained in Chapter 4 of this document.

Employer & Employee Health Care Costs

From 2001-2011, the premiums for employer subsidized health benefits increased 113% (Kaiser Family Foundation, 2012). These cost increases are in turn passed on to workers in the form of premium increases and benefit changes, often requiring that employees absorb a larger fraction of the health care expenditures through mechanisms such as increased premium contribution, larger deductibles and co-insurance.

Between 1991 and 2005 the costs of health and retirement benefits increased by 34 percent, compared to a 10 percent increase in wages (Government Accounting Office [GAO], 2007). Premium increases for employers providing health insurance have been between 5 and 14 percent per year since 2000, while inflation and changes in worker's earnings are typically in the 2 to 4 percent range (Kaiser, 2009). In 2010, health cost benefit increases outpaced wages and increased 3 times higher than the Consumer Price Index (Milliman, 2010). When benefit increases are shifted to the employee while the wage trend remains flat, a greater percentage of worker income is spent on maintaining health care coverage. Since 1999, family premiums for employer-sponsored health coverage have increased by 131 percent, placing increasing cost burdens on employers and workers (Kaiser, 2010). Figure 2 compares insurance premium increases with other economic indicators, demonstrating that while insurance premiums rose

each year, wages did not.

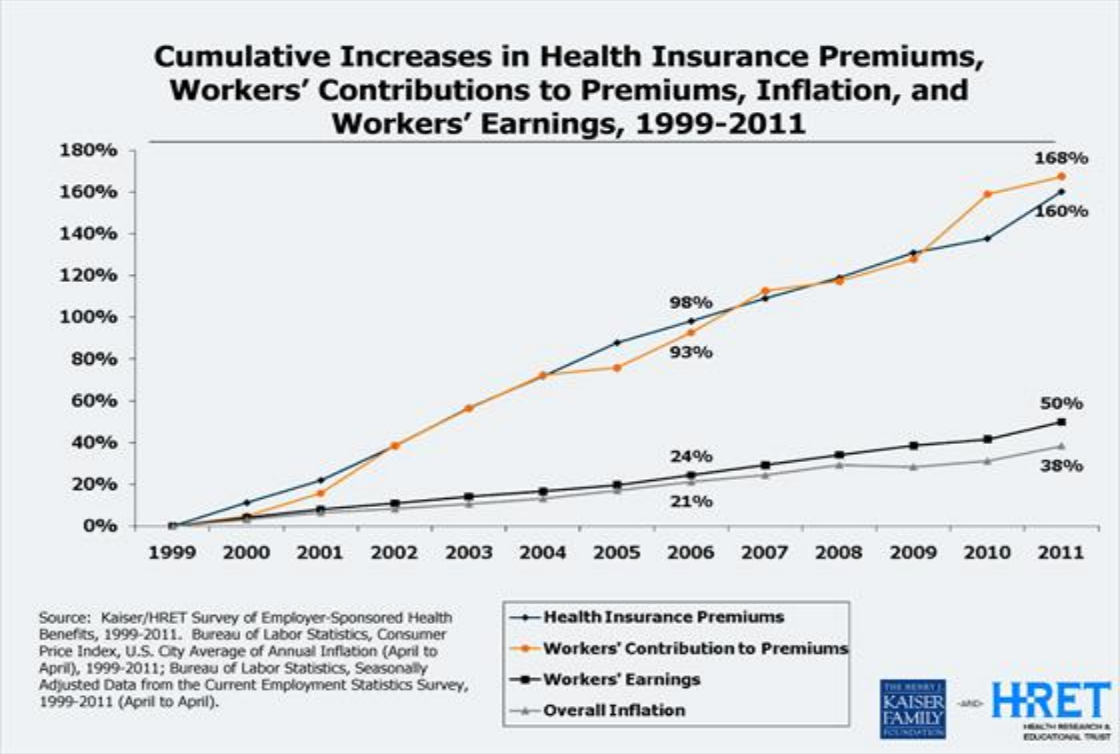


Figure 3. Cumulative Increases in Health Insurance Premiums, 1999-2011. This information was reprinted with permission from the Henry J. Kaiser Family Foundation. The Kaiser Family Foundation, a leader in health policy analysis, health journalism and communication, is dedicated to filling the need for trusted, independent information on the major health issues facing our nation and its people. The Foundation is a non-profit private operating foundation, based in Menlo Park, California.

As the graph demonstrates, from 1999-2011, workers earnings rose 50%, while employee contribution to insurance premiums rose 168%. A Kaiser Family Foundation report (2009) found that between 1999 and 2009, health insurance premiums rose 131%, a much faster rate of increase than general inflation (28%) or workers earnings (38%) (DiJulio, 2009).

Modifying benefit design is one method to reduce employer medical costs. By increasing copayments and deductibles and changing their pharmacy benefits, employers shifted costs to employees who use services. Employers recognize these changes as short-term fixes, but most have not developed strategies for the future (Trude, Christianson, Lesser, et. al., 2002). In

recent years, per-person medical spending increases in most states have followed national trends. A 2009 survey of health care costs for the privately insured (Bundorf, Royalty and Baker, 2009) indicates that hospital outpatient services and pharmaceuticals are two main drivers of health care cost increases for employers. Corresponding revisions of benefit designs targeting specific areas of cost increase is a common approach to reduce overall health cost expenditure, shifting the costs from employer to employee. This approach is somewhat effective. A 2002 study reviewing pharmacy co-payment changes found that adding an additional level of co-payment, increasing existing co-payments or coinsurance rates, and requiring mandatory generic substitution all reduced plan payments and overall drug spending among working-age enrollees with employer-provided drug coverage (Joyce, et. al. 2002).

The USNH introduced a high deductible health plan (HDHP) option in 2014, although it was offered as an election choice only, rather than a replacement of the traditional HMO plan. Nationally, many employers are turning to HDHPs as a solution to the high cost of health care services, shifting the responsibility of the first several thousand dollars (or more) to the employees and therefore creating consumer health care price sensitivity. In the State of New Hampshire, enrollment in HDHPs grew from 1.5% in 2006 to 18% in 2011 (Tu, 2014). However, in spite of a growing awareness of the complex factors which contribute to cost increases, there has been minimal success of impacting overall health care expenditures and health care costs have continued to rise.

A study in 2009 estimated that national per-person spending on health insurance premiums would increase by 94 percent from 2009 to 2020, increasing an average of 5.7 percent annually (Schoen, Nicholson & Rustgi, 2009). Health care trends are still projected to rise between 4.5% and 6.5% nationally in 2014, a slowdown from historic double digit growth which is attributed in

part to the Affordable Care Act, the consolidation of hospital systems, and the rising use of on-site and retail clinics as a cost containment measure (Price Waterhouse Cooper, Health Research Institute 2013). A review of non-health employer offered benefits by the Kaiser Family Foundation (DiJulio, 2008) found that non-health benefits increased as a share of overall compensation from the 1960's to the 1980's but have subsequently decreased; while employer payments for health care benefits have increased as a share of total compensation every decade.

Worksite Wellness Programs as a Cost Containment Strategy

Employee wellness programs are increasingly seen as another strategy to reduce the soaring medical benefit costs for the 60 percent of Americans who receive their health insurance through an employer-sponsored plan (Baicker, K., Cutler, D. & Song, D., 2010). Wellness programs are often implemented as an effort to manage diseases related to lifestyle factors which impact health care expense, for example obesity, diabetes and hypertension. While there is no universal definition of employer sponsored wellness programs, they generally include incentives to encourage employees to exercise, improve eating habits and quit smoking as an effort to improve population health and therefore impact long term health care expenses for the entire workforce (Mattke, Schnyer & Van Busum, 2012).

Employee wellness programs as a strategy to improve the management of chronic disease is a relatively new approach. According to a 2003 review of the literature (DeGroot & Kiker), the first employee wellness programs were workplace safety efforts to prevent injury on the job. Over time, corporations evolved to providing programs addressing wellness to employees to target specific conditions and to reduce absenteeism. The article cited three general historical reasons for the implementation of health and wellness programs in the workplace: to address

issues of drug and alcohol abuse, to begin to address issues of health benefit costs and to improve employee morale (DeGroot & Kiker, 2003).

Most early programs were designed to primarily address issues of improved productivity and reduced employee absenteeism, in particular through the implementation of Employee Assistance Programs (EAP) to treat drug and alcohol abuse (Merrick, Volpe-Vartanian, et. al., 2007). A 2001 review of the literature found that the "second generation" of employee wellness programs has evolved from occupational health in the workplace to cost effectiveness efforts focused on disease management and behavior modification (Pelletier, 2001). This same study found that while the review of published studies indicated strong to moderate evidence of clinical and cost effectiveness, more research was needed to support more robust workplace application.

Over the past 30 years, life expectancy has increased dramatically (Centers for Disease Control, 2001). As public health has improved, death from infectious disease and infant mortality has dropped. However, a major proportion of modern disease is now caused by unhealthy individual lifestyles, causing an epidemic of expensive chronic disease such as diabetes and hypertension; it is estimated that over half of Americans suffer for one or more chronic diseases (DeVol & Bedroussian, 2007). An estimated 75% of all health care spending nationally can be ascribed to the treatment of chronic disease (Centers for Disease Control, 2009). Obesity is one chronic disease which is a major contributor to the growth in health care spending (Centers for Disease Control, 2001). A 2009 study found that across all payers, obese people had per capita medical spending that was $1,429 (42%) greater than spending for normal-weight people in 2006 (Finkelstein, Trogdon & Cohen et. al). A 2010 study of health risk factors and medical costs in a working population determined that nearly 23% of employer costs are related to 10 common, modifiable conditions (Goetzel, Pei & Tabrizi et.al). These factors

included high blood pressure, high glucose, physical inactivity, high alcohol consumption, high cholesterol, poor eating habits, tobacco use and obesity, with depression remaining most strongly associated with increased per capital annual medical spending (48% higher than those not at risk for depression).

A literature review evaluating cost research studies found that employers can realize cost savings by implementing comprehensive workplace wellness programs (Baicker, Cutler, Song, 2010). The authors concluded that medical costs fall by about $3.27 for every dollar spent on wellness programs and that absenteeism costs fall by about $2.73 for every dollar spent. Quad/Graphics, a large privately-held employer with 9,000 employees created workplace clinics to offer comprehensive primary care and wellness programs. These clinics have lowered costs and improved health outcomes for employees (McCarthy & Klein, 2010).

However, in order for wellness programs to reduce medical costs, employees must engage and maintain participation in programming offered by employers. A 2010 study (Berry, Mirabito & Baun) reviewed successful corporate wellness programs and found that multilevel leadership involvement, strategic implementation which including incentives rather than penalties; quality, accessibility and continuous communication as essential elements of a successful wellness program.

The National Survey of Employer-Sponsored Health Plans (2010) by the international consulting company Mercer questioned large and very large ("jumbo" or more than 5,000 employees) employers to determine the structure, prevalence and success of employee wellness programs. The study found that a significant number, more than 56 percent, had one or more programs in place. Mercer also partnered with the non-profit Health Enhancement Research

Organization to conduct an ongoing survey of employer health management (EHM) programs called “The HERO Employee Health Management Best Practice Scorecard”. This scorecard evaluated the employer’s use of Employee Health Management best practices including strategic planning, leadership support, engagement strategies, available programs and evaluation measures. Program success is defined as “able or likely to improve total medical spend” (HERO Scorecard, 2010, p.1). The employers most likely to report a return on investment were larger, had more resources budgeted to the programs, and implemented employee incentives to participate in the programs. Of the employers participating in the HERO scorecard, 29% of the high-scoring group report that they have been able to measure a “substantial positive impact on medical cost trend, greater than the cost of the EHM program,” and another 37% have been able to measure a “small positive impact”, less than the cost of the EHM program. Only 9% of the average scoring group reporting impact on the medical benefits cost.

Analysts with Pitney-Bowes, a company with 24,000 US-based employees, studied medical and disability claims and focused efforts on employees with the highest medical costs: those who initially filed no claims and those with chronic disease. The company decreased co-payments to primary health care services and co-payments on drugs targeted at managing hypertension, asthma and diabetes. Although pharmacy costs initially rose, the firm’s health care costs were eventually 20% below those of its comparable employers (Okie, 2007).

A three year study of the impact of a worksite health promotion program in a large (8,400 workers) telecommunications company (Serxner, Gold, Anderson et. al., 2001) found a significant difference in short term disability between health promotion reimbursement program participants and non-participants, with participants having significantly fewer net lost days. The program studied offered occupational health services, physical therapy, a fitness center, self-care

materials and a nurse triage line. The average net day loss difference between the groups accounted for a 20% program impact or $1.7 million over two years.

A comprehensive, six month study applying an on-site cardiac rehabilitation and exercise training model for employees and their dependents found significant improvements compared to baseline in participant scores of quality of life, depression, anxiety as well as body fat, diastolic blood pressure and general health habits (Milani & Lavie, 2009). In addition, for the 12 months after the intervention, medical claims costs decreased 48% for participating employees, leading to a return on investment of $6.00 for every $1.00 spent on the program.

Wellness programs seem to work best in companies which seek to create a culture supportive of employee health. For example, in his executive leadership briefing, Dr. David Chenoweth indicates that research on effective wellness programs require support for employee wellness at all levels of leadership (Chenoweth, 2011, p.3). A review of the benefits and costs of worksite health programs found that programs embedded in a "healthy company culture"—allowing the use of company equipment, facilities, and other forms of infrastructure were more likely to succeed (Goetzel & Ozminkowski, 2008). A 2014 study of wellness programs concluded that, among other factors, wellness programs must fit into the corporate culture in order to work (Goetzel, Henke & Tabrizi, et.al.)

On-Site Health Services as Cost Containment Strategy

According to a briefing report released by the Center for Studying Health System Change (2010), workplace clinics have been commonplace and operated by employers for decades. Until the 1980s, large employers operated onsite company clinics to treat work-related injuries. The study indicates that many clinics closed "because of declining heavy industry and manufacturing sectors and workplace hazards becoming less common in these sectors" (Tu, Boukas & Cohen,

2010). Early workplace clinics generally provided care for minor acute conditions, providing clinics as a perk for high-wage employees and to minimize employees' time away from work (Tu, Boukas & Cohen, 2010). Recent renewed interest in workplace clinics has been due to recognition that improving the wellness of the employee population will result in health care cost savings (Tu, Boukas & Cohen, 2010). A 2008 Towers-Watson survey on workplace clinics indicated more than one-third of large employers offer on-site or near-site employee health services and do so to improve employee wellness, increase productivity, reduce workers compensation injuries as well as improve access to and quality of care (HSC, 2010).

The 2012 Towers Watson Employer Survey of employers who have established or plan to establish onsite health centers found that the majority (62%) do so to improve employee productivity. A Fuld & Company white paper (2009) found that on-site clinics offer savings of 10-30% in their total health care costs resulting from minimizing time away from the workplace, increased productivity, reducing emergency room utilization and streamlining referrals. A 2010 research brief on workplace health clinics by the Center for Studying Health System Change (Tu, Boukas & Cohen) indicated an increased interest in workplace clinics to reduce health care costs. The study found this to be particularly true for public sector employers due to low staff turnover and generous benefits, as compared to the private sector. Chenoweth and Garrett (2009) conducted a cost-effectiveness analysis of a worksite clinic and determined that the combined off-site cost of health care and lost productivity were twice as high as actual onsite costs. The study concluded that the onsite clinic provided employee health care services that were 2-3 times more cost effective as those offsite in the community. A study of local government-operated worksite health clinics (Yehl & Sizemore, et. al., 2013) found that these clinics were generally

opened to reduce medical costs for the employer or employee, and to enhance employee productivity.

Providing on-site care may be less expensive on a per-unit basis, but may also eliminate incentives to "over treat" patients who are covered under private insurance plans. For example, a four-year assessment of physical therapy services at two Eli Lilly plants found cost savings both compared to purchasing the same care in the community, and as a reduction in overall average units of service (Scruby, Denham & Larkin, 2001).

On-site programs may improve chronic disease management as well. A study of workplace health and pharmacy care as related to medication protocol adherence found a 9.72% higher compliance rate for workplace versus community treated patients (Sherman, Frazee, Fabius, et. al., 2009). The study concluded that such programs could both reduce healthcare costs and improve the lives of chronically ill patients. A study which compared traditional telephonic disease management protocols with integrated, on-site programs led by trusted clinicians and included pharmacy delivery found that on-site programs had higher initial contact and enrollment rates (Frazee, Kirkpatrick, Fabius, et. al, 2007). A 2012 study by Towers Watson found that onsite clinics were established by employers for a number of reasons including to enhance productivity, improve medical costs, integrate medical and wellness program offerings and meet occupational and safety health needs of employees.

On-Site Services at Academic Institutions

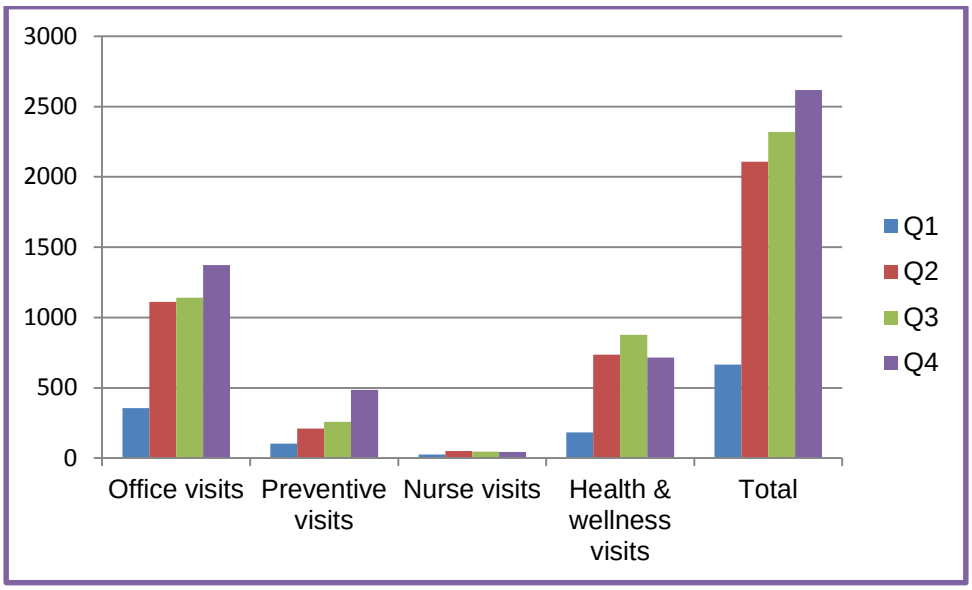
According to a survey conducted in 2011 by the College and University Association of Human Resource Professionals for the University of New Hampshire, one-quarter of the 415 respondents offers on-site health services for employees (CUPA, 2011). Research by this author revealed that most academic institutions implemented on-site clinics as a convenience to

employees rather than to mitigate health costs. However two academic institutions did invest in on-site clinics with the specific goal of reducing employee health expenses: Purdue University in Lafayette Indiana and Dartmouth Hitchcock Medical Center affiliated with Dartmouth College in Hanover New Hampshire. The author contacted these two institutions in order to learn more about what on-site services were provided to employees in order to reduce medical cost. In addition, these interviews were conducted to reference best practices for implementing on-site services as the UNH Employee Clinic was being developed.

Purdue University has 17,000 employees at its' main campus. Similar to New Hampshire, the price of health care in West Lafayette Indiana is very high and dominated by integrated hospital systems. As an initial experiment the human resources offices placed a free-standing laboratory service for employees to offer a measure of price relief from local provider laboratory cost structures. This effort was successful, with the laboratory operation receiving a high volume of employee visits showing that site of service could be shifted. After an employee survey Purdue decided to expand the operation to include comprehensive health care for employees and all dependents over the age of 2 (personal communication, M. Paulette, August 2012). In May, 2012, the Purdue University Board of Trustees approved a contract with Comprehensive Health Services Onsite (CHS), an outside vendor, to operate a health center for faculty and staff on the main campus. The University invested $14.7 million to build and operate the new clinic. The "Purdue Center for Healthy Living" opened in late winter 2013. The clinic offers acute care services as well as primary care for employees and their dependents of all ages, including children. Employees who use the onsite health clinic are not charged copays and receive a Health Reimbursement Account (HRA) incentive payment. An HRA is a tax advantaged health plan, sanctioned by the Internal Revenue Service (IRS) that reimburses the employee for health-

related expenses. The second and third follow-up interviews with Ms. Paulette indicated that the clinic was a success, with employee's utilization of the center well above target measures. The staff includes two full time physicians and two nurse practitioners, who were operating at capacity and an additional physician was added in July 2014. While there is not a pharmacy, there is a pharmacist on staff who consults with the physicians and patients. The clinic, Ms. Paulet reported, has been full since it was opened. The visit count by service and by quarter for a full year is indicated below. The graph in Table 5 indicates a steady increase in clinic utilization in the first year of clinic operation:

Table 5. *Number of Visits By Service, Purdue University Employee Clinic (2/13-2/14)*



The second institution studied, Dartmouth Hitchcock Medical Center (DHMC) was quite different in that it did not initially use cost as a driver for creation of the on-site medical services program, but modified programming over time to address the need for containment of employee medical costs. The medical center has 6,000 employees at the main site in Hanover, New Hampshire. At Dartmouth, the employee clinic was developed as a natural progression from an

occupational health clinic, staffed and maintained on-site to enhance and improve employee productivity. Historically, DHMC had separate occupational medicine and wellness programs. However, there is an acknowledgement that occupational risk and chronic disease risk "travel together" and this has necessitated the development of new collaborative initiatives around employee health and wellness (McLellan, personal communication, July 2012). Dartmouth used an existing employee health program to create a more comprehensive approach to reducing employee health care costs.

Chapter Summary

The cost of providing health benefits to employees is increasing each year and is a concern for employers both locally and nationally. The reasons for continuous health care cost increase are complex and include provider pricing, employee demographic shifts (an aging workforce population), increasing rates of chronic disease and advances in expensive and readily available medical technology. Employers have tried cost shifting benefit expense to employees, implementing benefit design changes (e.g., increased co-pays, higher deductibles and co-insurance) and implementing programs to improve employee wellness as a long-term cost reduction strategy. Many employers opt to replace rich benefit plans (so-called "first dollar coverage") with a high deductible health plan, forcing consumerism and price shopping to guide patient decision making and drive down medical expense. Recognizing there is a limit to the amount of cost shift employees can absorb, some employers have developed on-site medical services as a way to contain medical benefit costs. The on-site clinic model has the potential to reduce costs, improve participation in employer-sponsored health programs and improve productivity. In addition, there has also been an effort to provide comprehensive employee wellness programs in order to improve worker health and reduce employer medical expenses.

CHAPTER 3—METHODOLOGY

Overview

This research evaluated whether the UNH Employee Clinic provided a low cost alternative for the services the clinic offers, specifically laboratory, radiology and urgent care. As a self-insured entity, USNH directly pays all medical claims received by Harvard Pilgrim for enrollees and therefore benefits when medical costs decrease. Quantitative analysis of HPHC claims data, medical cost data and clinic utilization data was completed. Qualitative data was collected, including in-depth interviews with key informants with expertise in on-site employee clinic design and implemented.

Limitations of the researcher

No study is without limitations, and there is always potential of researcher bias. As an employee of the University of New Hampshire, I collaborated with the Executive Director of UNH Health Services and was involved with the proposal submitted to University leadership to fund the UNH Employee Clinic. I served on the UNH Primary Care Committee, and I am colleagues with many of the employees of the clinic. I consider myself highly invested in a desire to see the Employee Clinic succeed and often focus my cost containment activities on encouraging the UNH employees to use the Employee Clinic. Therefore, while I tried to do so, it was sometimes difficult to separate my professional interest in seeing a project I developed succeed, and objectively analyzing the data to indicate the success or failure of the Employee Clinic. I did my best to remain objective when evaluating the results of the data collected, and to remain cognizant of my biases when coming to conclusions about the data.

Purpose of the study

The purpose of the study was to evaluate the UNH Employee Clinic as a measure to address health care cost containment for the USNH by providing a lower cost alternative to community

health care prices for specific services at the System's largest campus. The financial outcomes were analyzed using quantitative measures including medical claims data. A review of related outcomes which might impact utilization of the clinic (and therefore potentially mitigating the amount of cost savings achieved) including customer satisfaction, obstacles, challenges and opportunities was collected through interviews and customer surveys to create final recommendations.

The mixed method approach allowed for detailed analysis of cost data as well as contextual information to augment quantitative findings. Patton (2002) indicates that qualitative methods are often used in evaluations because they "capture and communicate the story", important because the purpose of these studies are to "illuminate the processes and outcomes of the program for those who must make the decision about the program" (Patton, p. 10). Creswell (2014) outlines the "convergent parallel mixed method" of research, in which the researcher collects both qualitative and quantitative data concurrently in order to provide a complete picture of the research problem. This study uses both types of data in order to provide a comprehensive analysis of all factors affecting the UNH Employee Clinic cost savings, both realized and potential. This includes customer satisfaction and utilization of programs such as Tandem, which direct the employees to use the clinic.

An Internal Review Board application to conduct interviews with key informants was filed and approved on April 19th, 2013. A copy of the approval letter is included as Appendix A.

Study Population

This study focused on the three main services provided by the Employee Clinic: laboratory, radiology and urgent care, and whether offering these specific services onsite at the UNH Employee Clinic provided a lower cost alternative to purchasing the same services in the

community. The population studied is all employees who receive medical benefits through the University System of New Hampshire, although in practice is the benefitted staff of the University of New Hampshire campus, where the clinic is located. Table 6 breaks out the age bands of the UNH employees, spouses and dependents enrolled in the Harvard Pilgrim Health Plan. It is the population 18 and over which is the target market for the UNH Employee Clinic:

Table 6. *UNH Health Plan Enrollment, by Age and Demographic Group*

University of New Hampshire	**Employee**	**Spouse**	**Child**	**Total**
<18	0	0	1,217	1,217
>18	2,661	1,541	632	4,834
Total	2,661	1,541	1,849	6,051

It is important to note that any USNH employee may use the Employee Clinic, including those who do not have insurance or who are insured by other health plans meaning the utilization and cost data generated by the UNH Employee Clinic is not always limited to USNH Harvard Pilgrim enrollees. However, this study focuses on employees with USNH benefits who directly affect the costs incurred by the USNH medical benefit budget, which is currently $51million per year (employer contribution only).

The average subscriber age for the USNH population is 38.6 years and the percentage of insured over the age of 40 is more than half (54.6%, almost 10% higher than the Harvard Pilgrim Health Plan average). The USNH insured population also has slightly more females than males (53.3%, also higher than the Harvard Pilgrim average). Average age and male-female enrollment statistics are important as demographics have implications for health care utilization, with men using less health care services than women (Pinkhasov, Wong & Kashanian et. al., 2010).

The majority of USNH insured are enrolled in the Harvard Pilgrim Health Plan Health Maintenance Organization (HMO) product. The USNH is self-funded, meaning the University System assumes all financial responsibility for medical claims expense directly, rather than pay Harvard Pilgrim a pre-negotiated administrative fee to pay claims and to absorb the risk of medical claims cost.

The current benefit design (as of January 2013) is as follows:

- Network-based with preventative care benefits;
- Co-pay for office visits/prescriptions as applicable;
- Annual deductible ($200 Individual; $400 Family).

The deductible was added in 2013 as a cost saving measure, intending to focus and begin to inform employees on overall medical costs and the impact of service utilization and health care service price on the University System medical benefit budget.

Study Location

The UNH campus is located in Durham, New Hampshire. UNH is the largest of the four University System of New Hampshire campuses and is located on New Hampshire's Seacoast. Before opening the UNH Employee Clinic, the University of New Hampshire Health Services and Finance department staff first conducted background research to develop the employee clinic service delivery model, reviewing the clinic structures common in institutes of higher education. Through the Office of the Vice President for Finance and Administration, the University of New Hampshire commissioned a custom research project, conducted by the Education Advisory Board. The Education Advisory Board, based in Washington DC, provides research and best practice information to member academic institutions across the country. The Board surveyed comparator Universities who provided clinic service to employees on behalf of UNH. The study

found that most do so as a benefit and convenience to their employee population, rather than a cost containment measure. In spite of the Educational Advisory Board study results, the University of New Hampshire leadership felt that due to the escalating costs of care in the local community, the UNH Employee Clinic was an important project which had potential for cost containment, and they approved its implementation. The University of New Hampshire Employee Clinic was opened with the hope that it could address in part the high cost of purchasing certain health care services in the non-competitive provider environment of Seacoast New Hampshire by making a low cost, convenient alternative readily available to UNH Employees.

Study Setting

The Employee Clinic is located in a separate space within the UNH Student Health Services building (http://www.unh.edu/health-services/employee-clinic/). Opened in a renovated section of the Student Health Services which was an old file storage room, the clinic was built with staff privacy in mind. The Employee Clinic has a separate entrance located in the back of the building, and the waiting room serves the Employee Clinic patients only. The Clinic was designed to initially offer urgent care services only. Patients also have access to on-site laboratory, radiology and pharmacy facilities. Hours are limited.

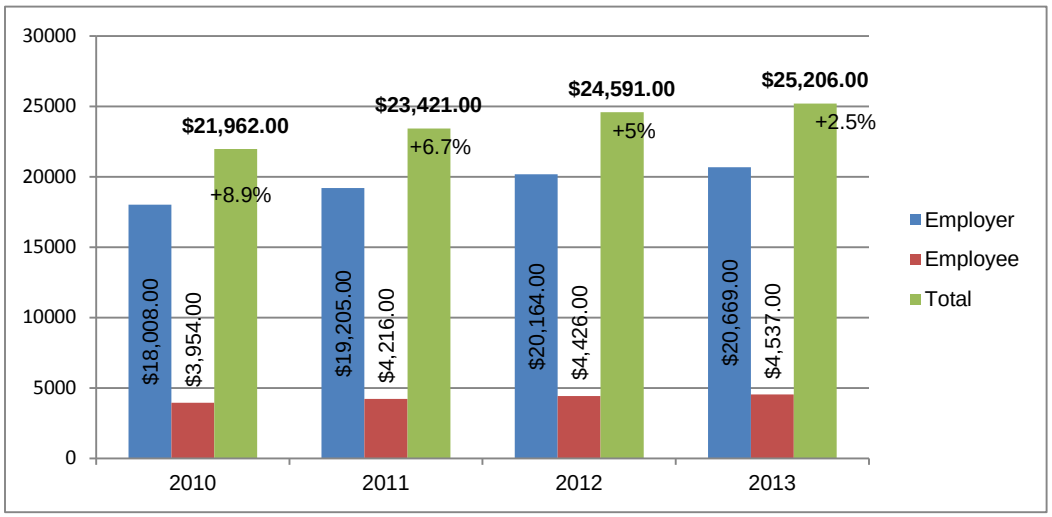
The Clinic is 600 square feet, located within the larger Health Services building but created as a separate space, with its own entrance and single large waiting room. There are three exam rooms and a room for drawing lab specimens. While any USNH employee may use the Employee Clinic, the majority of employees using the clinic are employed at the University of New Hampshire.

The University System of New Hampshire Medical Expense Overview

The University System of New Hampshire (USNH) expends $63 million per year (including employee contribution) to provide medical benefits to the more than 4,300 employees and their families, a total of around 8,900 covered lives. Medical benefits accounts for 50% of the overall benefits expense, and USNH is experiencing the same pressure of increased cost as reflected in the national health care benefits employer data (USNH Annual Benefit Report, 2011).

The total cost of coverage for USNH employees, and the year to year increase is often unappreciated by employees. Table 7 demonstrates what the UNSH employee-employer each pay as a total of premium expense and the per year medical claims expense increase between 2010 and 2013, calculated using Harvard Pilgrim paid medical claims data. For example, in 2010 the employee paid $3,954 toward their medical coverage, the employer (USNH) paid $18,008 and the combined total was $21,962 which represented an 8.9% increase from 2009. The year to year medical claim cost and employer-employee cost share rates are not identical, since the insurer (in this case the employer since USNH is self-insured as of 2012) accumulates premium above projected medical cost to place in reserve and accommodate unexpected medical expense. The data shown in Table 7 uses the family plan rate, broken down by employee and employer contribution:

Table 7. *USNH annual benefit rate comparison, Harvard Pilgrim Health Care family HMO plan*



Typical of the higher education sector, the USNH has a demographic profile that is slightly older than the comparable New Hampshire groups insured by Harvard Pilgrim Health Care (HPHC), with an average age of 38.6 as opposed to the Harvard Pilgrim New Hampshire benchmark of 34.9 years (HPHC, unpublished data, 2012). These demographics have implications for health care utilization as the older employee use more health services, increasing total medical spend. The USNH employees have higher than average utilization in every category of health care services including inpatient hospital, outpatient hospital, ancillary services (e.g., laboratory and radiology), pharmacy and physician office visits as compared to similar groups insured by HPHC in New Hampshire (HPHC, 2012).

In 2012, a deductible of $200 for individuals and $400 per family was implemented for staff insured through USNH. However, even with this benefit change, the USNH employee population still has a lower than market “cost share”, with employees required to pay less in the form of copays or deductibles in comparison to other HPHC groups in New Hampshire. Table 8 demonstrates the per-employee per year medical claims expense increase between 2009 and 2011, calculated using Harvard Pilgrim paid claims data:

Table 8. *Per Employee Per Year (PEPY) Medical Claims Expense Increase, 2009-2011*

	2009	2010	2009-2010 Percent Change	2011	2010-2011 Percent Change
Per Enrollee Per Year Total	$11,677	$12,625	>8.1	$15,970	>10.7

The health care market in Seacoast New Hampshire, where the majority of USNH employees and their dependents receive medical care, is particularly expensive. Each of the three major area hospitals reported operating margins of over 4% in 2009, with the hospital in Portsmouth reporting an after-tax operating margin of 9.3% (NH Center for Public Policy Studies, 2011). Two of the three are ranked above-average in the inpatient and outpatient cost index compared to all other New Hampshire Hospitals; the most expensive hospital in New Hampshire, Exeter Hospital has a cost index of 1.52 at last calculation (NH Insurance Department, 2006 and 2011). Utilizing institutions which have high baseline cost indices impact overall USNH medical benefit expense by creating an overall high per unit service cost. Other market factors affect the overall costs paid by USNH for medical services, which includes the competition for insured patients in order to offset losses incurred by treating patients with government insurance (e.g., Medicaid). In her 2012 report, "Understanding Hospital Costs in New Hampshire" for the NH Insurance Department, Susan Palmer Terry states:

> During the interviews with the hospital CFOs the author was told repeatedly that there are essentially three services; ambulatory surgery, radiology and laboratory that are profitable because they are routine and bring patients covered by commercial insurance. These services, while used by all patients, are frequently used by younger patients covered by commercial insurance. The favorable payer mix for ambulatory surgery,

> laboratory and diagnostic radiology enable the hospital to offset losses from other services and other payers. (p.30)

The study by Palmer identifies the fundamental issue faced by New Hampshire employers when attempting to address escalating employee health care costs: the patient or "consumer" does not choose which services are ordered. The University System of New Hampshire employees are almost entirely insulated from the cost of medical services, since the health plan deductibles are very low, covering most services in full. Indeed, as the New Hampshire Insurance Department report points out, the "role of the consumer is at best vague" (Terry, 2012, p. 14).

A 2009 health care brief on the cost of health care in New Hampshire by the Center for Study Health System Change indicated,

> The Seacoast area in the eastern part of the state has four hospitals within a 30-mile radius—a situation that should facilitate a reasonable degree of hospital competition. Yet, Seacoast hospitals are among those that have historically negotiated the highest payment rates in the state, according to several observers. Respondents attributed this high-cost pattern to a complex interaction of factors, including the more aggressive negotiating style of Seacoast hospitals; the for-profit status of one of the hospitals; and the affluent, loyal patient base in some parts of the Seacoast. (Tu & Lauer, 2009, p. 3)

Therefore, the benefit of a competitive marketplace which would normally drive down cost, in this case does not affect the cost of medical services in the Seacoast New Hampshire market, where the majority of USNH employees reside.

Table 9 illustrates the variation in billed charged amount ("retail price") for common procedures at Seacoast New Hampshire area hospitals, institutions most frequented by USNH employees. While this study is focused specifically on laboratory, radiology and urgent care services, reviewing charge differences for other ancillary outpatient services demonstrates the wide variation in prices between providers, and illustrates the price pressure which forced the University to consider adding on-site services for employees.

Based on historical USNH claims data, this includes the following hospitals:

- Portsmouth Regional Hospital, Portsmouth, New Hampshire (12.7 miles from UNH Durham campus)
- Wentworth-Douglass Hospital, Dover, New Hampshire (7.1 miles from UNH Durham campus)
- Frisbie Memorial Hospital, Rochester, New Hampshire (14.1 miles from UNH Durham campus)
- Exeter Hospital, Exeter, New Hampshire (12.1 miles from UNH Durham campus)

The data is derived from the All Payor Claims Database maintained by the New Hampshire Insurance Department and uses data collected from July, 2012 to September 2013. It is this wide variation in price among institutions, insulated from the patient experience which in part leads to the inability to "price shop" as a consumer to reduce medical costs. The consumer does not understand where the best price may be found, and whether quality is consistent across institutions.

Table 9. *Billed charge variation for common procedures at Seacoast New Hampshire Hospitals*

Service	Provider Price A	Provider Price B	Provider Price C
Colonoscopy	Exeter Hospital: $3,717	Portsmouth Regional Hospital: $4,530	Wentworth Douglass Hospital: $4,968
Ankle x-ray	Exeter Hospital: $311	Frisbie Memorial Hospital: $433	Portsmouth Regional Hospital: $463
Emergency room visit, minor	Wentworth-Douglass Hospital: $235	Frisbie Memorial Hospital: $406	Portsmouth Regional Hospital: $553
Arthroscopic Knee Repair, outpatient	Portsmouth Regional Hospital: $14,915	Wentworth-Douglass Hospital: $14,985	Frisbie Memorial Hospital: $15,101
Hernia repair, outpatient	Exeter Hospital: $11,374	Frisbie Memorial Hospital: $15,385	Portsmouth Regional Hospital: $16,056
Magnetic Resonance Imagining (MRI), outpatient, knee	Exeter Hospital: $2,114	Portsmouth Regional Hospital: $4,195	Wentworth-Douglass Hospital: $4,609

Insurance company contracts with hospitals do not protect employers from price variation. The data below, taken from 2011 paid claims data, shows the wide variation in health care contract rates for Harvard Pilgrim Health Care with the same local Seacoast New Hampshire institutions for common outpatient procedures, where most University of New Hampshire employees receive health services. Table 10 uses pricing information from northern Massachusetts as a point of comparison, demonstrating the high cost of health care in Seacoast New Hampshire compared to Massachusetts. Northern Massachusetts is used as a comparison since many New Hampshire residents are close enough to travel over the boarder to use less expensive services. The price difference can be striking. For example, the Exeter and Danvers, Massachusetts facilities are less than 40 miles apart yet the Danvers site is significantly lower for

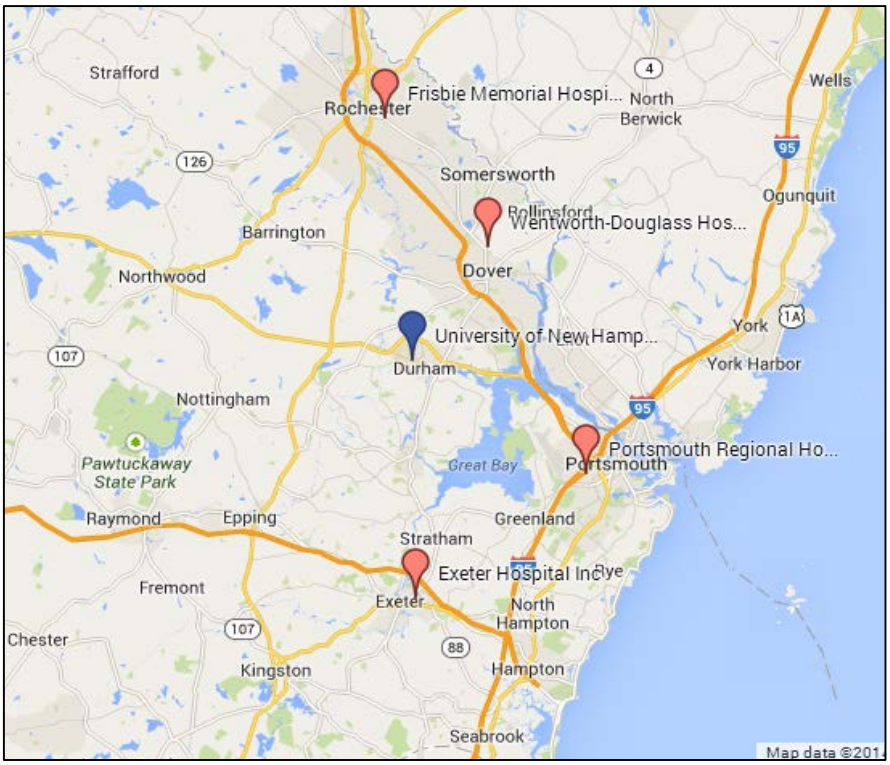
the exact same procedure, in every case. The comparison to this specific Massachusetts provider is included due to the geographic proximity.

Table 10. *Seacoast New Hampshire and Northern Massachusetts Average Pricing for Common Outpatient Procedures (2011)*

Service	Dover	Portsmouth	Exeter	Danvers, MA
Magnetic Resonance Imagining (MRI), lower extremity	$2,543	$2,225	$1,322	$705
MRI, lumbar spine	$2,871	Not available	$1,975	$723
MRI: breast bilateral	$2,422	$4,122	$1,204	$853
Upper GI endoscopy	$2,745	$1,813	$2,010	$1,275
Colonoscopy	$2,730	$2,400	$2,300	$1,560
Knee arthroscopy	$8,015	$7,503	$9,781	$6,352

It was the combination of steady provider price increases and wide variation in local provider pricing, both among and within institutions, which initiated the development of the UNH Employee Clinic as one solution to mitigate local market dynamics. While this study focused on the cost savings of laboratory, radiology and urgent care services, a broader scope of services is offered for comparison to allow a more complete picture of price differences and market dynamics to which the University is subjected. A 2011 survey of UNH employees indicated 60% of the employees would consider using on-site services which was considered enough of a population to dedicate resources and construct the clinic within UNH Health Services. The clinic was opened approximately one year later.

In Seacoast New Hampshire, the physician practices are generally owned by the hospitals. A 2014 study by Baker, et al. found that hospital ownership of physician practices led to higher



prices and higher levels of hospital spending (Baker, Bundorf & Kessler, 2014). This Google map details the locations of the University of New Hampshire Durham campus and the proximity of its four largest hospital service providers (Figure 4. *UNH Durham campus and hospital provider locations*). The close proximity of hospitals to UNH makes the utilization of these high cost providers convenient for employees.

There are 700 employees at the UNH campus who are benefits eligible and as such able to enroll in the medical plan, administered by Harvard Pilgrim Health Care. The USNH average contract size is 2.2, for a total membership of 1,450 enrollees affiliated with the UNH campus on the USNH medical benefits plan. The total USNH medical plan enrollment is 8,848 members, meaning nearly 50% of the plan enrollment is affiliated with the UNH campus. Any USNH employee is eligible to use the clinic. However, most patients are affiliated with UNH due to proximity. All UNH employees and their adult dependents (ages 18 and older) are eligible to use the clinic.

Data collected

The following data was collected, reviewed and analyzed to determine if the Employee Clinic provided a low cost alternative for employee health care services as compared to the price of purchasing these same services in the community. In addition, overall satisfaction with the Employee Clinic, as measured by customer surveys was analyzed. The following are sources of data that were collected, analyzed and reviewed:

- An evaluation of the UNH employee clinic as measured by clinic service utilization and corresponding medical claims cost reduction for laboratory, radiology and urgent care services. Data were collected though review of Employee Clinic utilization reports and Harvard Pilgrim claims reports.
- USNH medical claims utilization and cost reports
    - Trends (2009-2012), Per member per month (PMPM)
    - Utilization by employees of acute care, ancillary services (including laboratory and radiology excluding high technology services)
    - Cost of acute and urgent care, outpatient services, ancillary services
    - Overall cost, delineating average unit cost and utilization trend
- USNH Tandem Program (the employee incentive program for cost shopping) utilization and savings reports of the market and specific to the Employee Clinic. The Employee Clinic is a preferred site of service for Tandem, which refers employees to the clinic as a first choice offering if the service is available.
    - Evaluation of employee willingness to “switch” to UNH Employee Clinic when the clinic is offered as the low cost provider

    - Utilization of the Employee Clinic for ancillary services
- UNH Employee Clinic customer service satisfaction surveys and demographic profile of clinic users, as dissatisfied consumers could reduce the utilization of the clinic
    - Compared overall USNH demographic profile to Employee Clinic users
- UNH Employee Clinic financial reports to conduct a cost benefit analysis and/or return on investment (capital investment is recouped and profit or break-even financial status is attained)
- UNH Employee Clinic Trends in utilization by category of service for laboratory, radiology and urgent care
- External community market analyses of provider pricing and utilization patterns
    - Review UNH provider utilization trends for services available at UNH Employee Clinic (e.g., acute care, lab services, x-ray, pharmacy)

Table 11 summarizes the specific data sources and collection.

Table 11. *Summary: Data Collection & Source*

Measure	Instrument	Data source
Expert and key informant testimony	Interview(s) and transcription summaries	Michael LaPenna (employee clinic operations) David Chenowith (cost effectiveness and workplace clinics)
Employee Clinic utilization statistics	University Health Services staff reports	Collected and reported monthly
USNH utilization statistics	Harvard Pilgrim claims reports	Regular quarterly claims reports; overall population and USNH specific data
Cost data for specific services offered at Employee Clinic	Harvard Pilgrim claims reports	Regular quarterly claims reports; USNH specific data
Cost data for specific services offered at Employee Clinic	Tandem program cost avoidance reports	Collected and reported monthly by specific provider
Employee Clinic customer satisfaction	CampusLabs customer service survey	Survey emailed to all USNH Employee Clinic users after service completed
External Community Market Analysis	Harvard Pilgrim claims reports, by provider	Harvard Pilgrim provider network reports as requested
External Community Market Analysis	Analysis of community provider pricing	Web-based review of pricing available online from area hospitals and affiliated providers, NH Insurance Department provider health cost site

The data came from a number of widely varied sources, and provided reports which when compiled created a comprehensive review and analysis of the UNH Employee Clinic and its potential to save money for the University System.

Chapter Summary

This study focused on the utilization and costs of the UNH Employee Clinic. The demographic profile for USNH employees is older and more female than the average employee insured through other Harvard Pilgrim accounts in New Hampshire. The USNH employee demographics may indicate the study population may use more health care on average than

younger, more male dominated industries. This is a mixed methods study, collecting both qualitative and quantitative data. The qualitative data consists of interviews with subject matter experts and case studies of two other academic institutions offering on-site health care services to employees. The quantitative data consists of Harvard Pilgrim medical claims reports and reports from the Tandem Care program and the UNH Employee Clinic. This mixed method approach allowed for detailed cost analysis on the services offered by the UNH Employee Clinic, while providing context to the findings.

CHAPTER 4—RESULTS

This study evaluated whether the implementation of on-site health services provided a low cost alternative for employees using the clinic at the UNH campus compared to receiving the same health care services in the community. While medical plan premium cost increases have currently stalled, double digit increases in medical plan rate trends were not unusual over the past decade. Two forms of data were used to determine the financial impact of implementing the UNH Employee Clinic on site:

1. Qualitative: This data included expert interviews to provide background and compare the approaches of other employers related to on-site employee health. Customer service results from the UNH Employee Clinic survey were amalgamated and included to determine if the Employee Clinic customer service was competitive and that employees would recommend the clinic to coworkers. The Tandem Care health service "shopping" incentive program implemented in January, 2012 customer service results were also accessed. Qualitative data helped determined why the Employee Clinic was or was not utilized; the clinic could very well be less expensive than community alternatives but would not contain costs if it were not used.
2. Quantitative: analysis of medical and pharmacy claims. In addition, cost and savings reports from the Tandem Care program were reviewed to compare community pricing to services received at the UNH Employee Clinic.

Qualitative Results

Three sources of qualitative data were collected:

1. Interviews with two industry experts with experience in development and operation of on-site employee health centers. The interview questions are included in Appendix B:

a. David Chenoweth, Ph.D., FAWHP, and principal, Chenoweth Associates
b. Michael LaPenna, MBA and principal, The LaPenna Group

2. Customer service survey results from the first complete year (2013) of the UNH Employee Clinic operation

University On-Site Employee Health Centers

According to a study by Mercer (Hochstadt, Kaplan & Keyt, 2014), worksite clinics are being increasingly viewed by many employers as a solution to improve access, control costs and increase participation in wellness and health management programs. A comprehensive review of the literature by Sherman and Fabius (2012) cited no articles which studied workplace clinics in academic institutions. One reason for this could be that medical benefits in academic institutions, as previously cited, have been offered as "first dollar" coverage with limited financial exposure to the employee, doing very little to force employees to accept a narrow network or choose employer-based health services. According to a survey conducted in 2011 by the College and University Association of Human Resource Professionals, one-quarter of the 415 institutional respondents offered on-site health services for employees. A query of the national college health listserv yielded over a dozen institutions similar to UNH responding that they offer, or intend to offer significant health services to faculty and staff.

Industry expert interviews

In order to better understand the employee clinic model as it has evolved in other industries, ascertain best practices which could be applied to the UNH Employee Clinic, as well as to determine what makes employee clinics successful overall, two industry experts were identified and interviewed. The experts were identified through review of the current literature and

available studies which analyze on-site employee health care. The questions used to interview the subjects are included in Appendix B. Questions were asked about comparable models of on-site employee health clinics familiar to the experts, the challenges and opportunities of employee clinics and employee demographics. The interview findings were compared and contrasted to the UNH Employee Clinic model, and were used to both create solutions to on-going challenges at the Employee Clinic as well as inform the recommendations and conclusions in Chapter 5.

Industry expert interview #1: David Chenoweth

Dr. Chenoweth has worked in the field of employee health center development for over 30 years. He has written numerous books on worksite wellness and has graduate degrees from Ball State and Ohio State University. He is one of the only researchers who has published work in this field in peer reviewed journals, making him one of few academic experts on employee health clinics.

Dr. Chenoweth stressed that the field of onsite wellness has evolved from occupational health and compliance programs (i.e., drug and alcohol testing) to a strategy of implementing comprehensive, on-site health centers.

Cost, according to Dr. Chenoweth is always "at the top of all employer's lists" as the reason to provide on-site health services. In order to manage cost, employers have needed to shift from paying on a fee-for-service basis to managing employee population health. Population health management requires identifying employees with chronic disease or at high risk of becoming ill.

Three factors are required to create successful on-site employee health programs:

1. Cost effective services

2. Employee access
3. Review of claims to review top risk factors, chronic illnesses and conditions causes the most expense.

In addition, the following techniques can help ensure the on-site clinic is successful by encouraging employees to use the clinic:

1. A provider who is identified with the clinic, so that the employees develop a relationship and there is medical service continuity;
2. Benefit design changes, including low or no co-pays and deductible;
3. An active marketing campaign, and
4. Creating a culture of health.

These four methods to encourage employees to use on-site clinics are helpful in creating successful and focused approaches to improving utilization of the UNH Employee Clinic. Dr. Chenoweth underscores the continuous, multi-faceted and comprehensive approaches that must be taken to engage employees about using on-site services.

Industry expert interview #2: Michael LaPenna

Michael LaPenna graduated with a master's degree in business administration from the University of Chicago and has a background in hospital administration. In 1986, he founded the LaPenna group, which has provided health care consulting services to employers opening worksite clinics for over 20 years. He has published a book on workplace health clinics and employer managed healthcare in 2010 and is asked to speak nationally as an expert on the subject of onsite wellness programs. We began our discussion with a brief history of occupational and workplace health.

According to LaPenna, many large employers have had on-site health services for decades including Kaiser, Gillette, John Deere and QuadGraphics. Clinics were developed to provide medical services and support for the local workforce and were often the only medical services available in small towns. The clinics focused on caring for work-related injuries and occupational hazards. The presence of on-site clinics began to wane as many of the doctors who staffed them were drafted for military service. The "re-interest" in worksite clinics began again several years ago as a way to address the premise of "cost shifting", the practice of health care providers charging higher prices for insured patients to absorb the cost of caring for uninsured (or underinsured) patients. Large employers tailored benefit design and created strong financial incentives to encourage employees to utilize the on-site clinic services. The Affordable Care Act of 2010 is another factor which impacts the cost of health care and is fostering the development of onsite clinics although the long term outcome of the legislation is largely unknown.

LaPenna outlined the factors which challenge the implementation of successful on-site employee clinics, particularly in academic settings:

1. Academic institutions are not decisive, and the decision making process of these organizations is often cumbersome;
2. Locating an employee clinic can be difficult to find as facility space is often at a premium; and
3. Determining how the services will be provided is often complex, with options that include contracting with a vendor, using local resources or staffing the clinic with employed staff

LaPenna also outlined the factors which create a successful on-site service in an academic setting or otherwise. Employee engagement is essential, and the clinic must create and improve many ways to follow-up to facilitate a high quality standard of care. LaPenna does not consider anything other than a fully integrated primary care model to be a true "employee clinic"; he would argue that UNH is only offering health care services to employees. A patient-centered medical home model with on-site health records is required to enhance population health and wellness management. LaPenna asserts that the health center must have a physician who is identified with the clinic and accountable to the employees. In order to control costs, the clinician must be able to make outside referrals. One notable difference between the model LaPenna promotes and the UNH Employee Clinic is that benefit changes were not implemented to require employees to use the Employee Clinic. For example, deductibles and copayments are still in place for the UNH Employee Clinic, and there is no differential benefit level for employees who use the clinic.

Most employers are intent on calculating a Return on Investment (ROI) and the overall cost must be reviewed. According to LaPenna, an evaluation of the employee clinic should be thorough and measure the following:

1. The percentage of eligible employees who use the clinic
2. Healthcare Effectiveness and Information Data Set (HEDIS) a set of measures developed by the National Committee for Quality Assurance (NCQA), should be collected to determine the health status (and any changes) in the employee population if comprehensive primary care services are provided;
3. Claims and cost of the clinic on a per visit basis
4. Claims review to determine a reduction in emergency room encounters

5. Claims review to determine that the average length of stay (ALOS, or days in the hospital) for employees for all hospital admissions has shortened

While the UNH Employee Clinic did evaluate the clinic using some of the variables listed by LaPenna, some of these data elements could not be collected for a number of reasons which are detailed as follows. The Employee Clinic only offers laboratory, radiology and urgent care services and is not a comprehensive primary care clinic at this time. Therefore, compliance with HEDIS measures and associated reporting could not be analyzed. In addition, the subset of UNH employees who were subsequently hospitalized would be too small to evaluate with regard to average length of stay and emergency room encounters as such a small sample size could compromise health care privacy and confidentiality laws. However, clinic costs, cost savings and utilization could be and were collected for analysis. The other metrics listed, including HEDIS variables and hospitalization data should be considered if and when the UNH Employee Clinic expands to a more full-service model.

LaPenna also emphasized the need for patient confidentiality, which has been raised to a very high standard. This is particularly important for health services located at the work place. The privacy and confidentiality of health care is protected by law through the Health Insurance Portability and Accountability Act (HIPAA) of 1996. HIPAA protects health insurance for workers who have lost or changed jobs, and also establishes a national standard for health care privacy. The provisions of the HIPAA must be carefully followed, as worksite clinics must meet the same standards as outside provider organizations. In addition to keeping medical information confidential, the perception of privacy in an employee clinic is important. For example, the clinic might be designed to have several smaller waiting rooms, rather than one large waiting

room as currently designed. Large waiting rooms require employees to sit together and therefore potentially breeching confidentiality.

Customer Service Survey Results, UNH Employee Clinic

The UNH Employee Clinic offers the option of completing an online patient satisfaction survey during the post-service check out process. Questions were asked to determine satisfaction with general clinic administration, facilities, staff and satisfaction with specific services. Customer satisfaction results could be important, as low satisfaction might affect the utilization of the clinic and mitigate potential cost savings. The survey was sent to employees as a follow-up to the appointment, and as such some of the respondents may be duplicated. The survey was administered three times to any employee who used the clinic (so the employee may receive it more than one time). Table 12 indicates the timeframes the survey was administered and the response rate. This response rate, according to Dr. Andrew Smith, Director of the UNH Survey Center, is quite good. Dr. Smith, who is also faculty at UNH has expertise in all aspects of survey design and public opinion research. Dr. Smith went on to say, “In customer satisfaction research, you want to have 90% or more saying they are satisfied with a service” (A. Smith, personal communication, October 2014).

Table 12. *Customer Service Survey Implementation, Received and Response Total*

Administration Date Range	**Employees Who Received**	**Number of Responses**	**Response Rate**
5/13-8/13	86	25	29%
9/13-2/14	271	89	33%
Administration Date Range	Employees Who Received	Number of Responses	Response Rate
2/14-5/14	92	33	36%

As stated by Dr. Smith, the customer service survey results meet the target of at least 90% for any particular service. The survey results are summarized below in Table 13.

Table 13. *UNH Employee Clinic Customer Service Survey Results, May 2012-May 2014*

Measure/service	**Patients reporting satisfaction with service**
Facility location	100%
Hours	93%
Ease of making appointment	100%
Medical services	99%
Laboratory	96%
Radiology	100%
Overall satisfaction	99%

The data demonstrates that the employees who use the health center are overall satisfied with health care received at the clinic. The facility location, ease of making an appointment and radiology services all received 100% satisfaction. Laboratory services received a 96% and medical services a 99% satisfaction result, and hours received the lowest percent of satisfied

consumers at 93% satisfaction. The survey found that 99% of survey respondents were satisfied overall. A copy of the UNH Employee Clinic Customer Service Survey is included in Appendix C.

Quantitative Results

Quantitative results consisted of the following analyses:

1. Harvard Pilgrim Health Care medical claims analyses for employees using the UNH Employee Clinic for service provided by the clinic (urgent care, laboratory, radiology) services
2. Harvard Pilgrim Health Care per unit cost analysis for urgent care, laboratory and radiology services
3. UNH Employee Clinic utilization statistics
4. Workers' compensation visits at UNH Employee Clinic
5. Savings reports from the Tandem Care program for employees seen at the UNH Employee Clinic

Table 14 lists the overall employee and dependent utilization of the UNH Employee Clinic for employees insured through Harvard Pilgrim Health Care. The data is a report of all Harvard Pilgrim medical claims incurred (received and paid) between January 2012 and February 2014 (24 months of claims). HPHC data indicates from the date the clinic opened until August, 2013, 920 University employees received services at the UNH Employee Clinic and 2,665 claims were received and paid (i.e., some employees went more than once). Employees who do not have Harvard Pilgrim insurance are eligible to use the clinic and may be included in overall utilization data, but are not reflected in the data in Table 15. In order to assess potential savings to USNH,

the data is limited to employees who are insured by Harvard Pilgrim through USNH. Table 15 shows the medical insurance claims filed with Harvard Pilgrim by service type, as well as the amount billed, the amount "allowed" (meaning the amount the insurance company reimburses as opposed to the bill), the member liability (copays) and what the "plan", or in this case USNH paid by service category. This table provides an overview of the number of claims by service and which services were most often provided to employees. These services (in order) were: laboratory services, office visits, and radiation. This data is useful when assessing which services were most often utilized and how the Employee Clinic might consider communicating and marketing popular services to UNH employees to improve clinic utilization.

Table 14. *Employee and Dependent Claims at the UNH Employee Clinic, Harvard Pilgrim, Incurred 1/27/12-2/28/14, paid through 2/28/14*

Service Category	Number of Claims	Amount Billed	Allowed Amount	Member Liability	Total Paid by Plan
Lab	1,001	$138,967	$46,892	$19,487	$27,406
Professional Visits - Office / Other	875	$52,780	$52,047	$8,014	$44,033
Immunizations	762	$21,819	$21,641	$0	$21,641
Radiology Standard	144	$15,384	$10,749	$2,987	$7,762
Professional Procedures - Office / Other	69	$8,930	$8,146	$310	$7,836
Other Diagnostics	54	$1,918	$1,609	$44	$1,565
Well Visit	25	$2,045	$1,926	$230	$1,696
DME/Prosthetics/Medical Supplies	13	$409	$409	$0	$409
Cardio Diagnostics	3	$120	$55	$12	$43
Grand Total	**2,665**	**$242,372**	**$143,474**	**$31,084**	**$112,391**

Table 15 shows all visits to the employee clinic for two fiscal years. This data is reflective of all employees who used the clinic, not just employees who are enrolled in the Harvard Pilgrim medical plan through USNH. While it seems as though visit rates have improved from FY 12-13

to FY 13-14, FY 13-14 had not quite concluded when this data was collected. This chart shows that visit rate for most services improved over time, but given the incomplete fiscal year it is probably more accurate when reviewing the available data to conclude that the number of visits remained stable with minimal growth; these results may change when comparing two complete fiscal years. The use of the clinic has implications for cost savings; the lower cost of the clinic services means that each time an employee uses the clinic rather than a community provider, savings are recognized. The most utilized services are office visit, lab services and nursing visits. In Fiscal Year 2013-014, there were a total of 218 visits to the UNH Employee Clinic. Laboratory services were the most common reason to visit the Employee Clinic.

Table 15. *UNH Employee Clinic visits by service, FY 12-13 and FY 13-14*

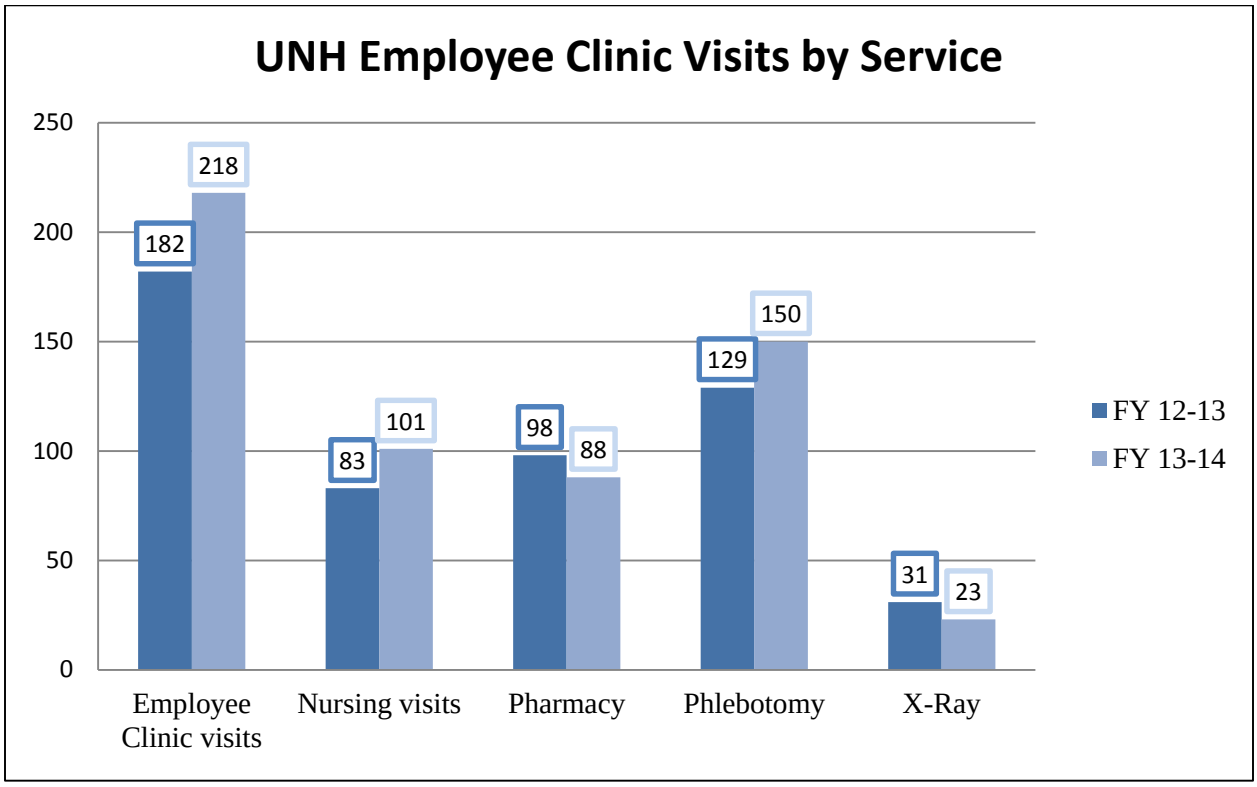


Table 17 shows the savings accrued for employees who are referred to the Employee Clinic by the Tandem Program. By agreement, Tandem refers employees who call to the Employee

Clinic as a preferred provider; in other words, if the service is offered and it is convenient for the employee the Employee Clinic is offered as a first choice. The employee is then rebooked from the provider where they were scheduled to the Employee Clinic. In the 19 month period indicated below, the University saved over $35,000 when compared to the cost of the employee receiving the same service at a community provider location. Tandem calculates gross savings based on the Harvard Pilgrim contracted fee schedule rate, which they can access by logging into the Harvard Pilgrim claims system. Table 16 shows the savings the USNH realized when Tandem Care was able to refer employees to the UNH Employee Clinic. Tandem is an optional program and employees are not required to use it. Therefore, Tandem reports employees who call but do not use the service. Declined savings are the total savings which were lost when the employee called Tandem, but refused to rebook at the Employee Clinic or with another low cost provider and instead chose to remain at the higher cost provider.

Table 16. *Savings Accrued for Employees Referred to Employee Clinic by Tandem (1/1/12-9/17/13)*

Tandem Incentive Savings, UNH Employee Clinic	
Confirmed Savings	$34,087
Savings Not Eligible for Reward	$1,343
Pending Savings	$287
Declined Savings	-$2,753
Total Savings	$35,717

Table 17 accounts for the incentives paid to employees who reschedule appointments to the Employee Clinic through Tandem. Confirmed rewards are those for which a check was issued to the employee and pending rewards is the amount waiting for the confirmation of a paid claim before a check is issued to the employee. Therefore, the Tandem incentives paid to employees offset the above savings by between $9,585 and $9,885, which must be deducted from the total

savings of $35,717. Still, even with administrative costs and incentive payments the Tandem program overall saves USNH money and encourages consumer engagement by informing the employee of health care service cost options.

Table 17. *Incentive Payments Paid by Tandem to UNH Employees Switching to Employee Clinic (1/1/12-9/17/13)*

Tandem Reward Payments to Employees	
Confirmed Rewards	$9,585
Pending Rewards	$300

Table 18 shows the number of employees who called Tandem and could potentially be referred to the UNH Employee Clinic (i.e., the clinic met the employee requirement for distance). The data shows a number of employees were already going to the Employee Clinic, and of those who were not scheduled to go to the Employee Clinic, 200 agreed to switch and receive on campus services. Each time an employee uses Tandem Care and switches their site of service to the Employee Clinic, savings are recognized.

Table 18. *Tandem Referrals to Employee Clinic and Employee Preferences (1/1/12-2/12/13)*

Employee Preference Statistics	
Already going to UNH Health Services	375
Switching to UNH Health Services	200
Declining to switch to UNH Health Services	16
Other*	24
*Little or no price variation between services, member planning to schedule in the future, test cancelled, no follow-up from member	

Table 19 shows a selection of radiology procedures by price, and the corresponding price at the UNH Employee Clinic. The difference is also indicated, with an average cost difference of

$251 for radiology procedures in the community as compared to the UNH Employee Clinic. For the purposes of confidentiality and contractual obligation, providers in the community cannot be specifically named so only a location is noted. This is because unlike other data sources, Tandem has direct access to Harvard Pilgrim negotiated rates for all contracted providers, which are considered proprietary. Tandem must be able to access the exact contracted rates so that cost savings and eligibility for the program can be calculated. Therefore, unlike other data sources cited in this paper, for data cited from Tandem reports specific providers cannot be named. Table 19 uses Tandem data to illustrate the difference between the costs at local providers contracted with Harvard Pilgrim Health Care and the UNH Employee Clinic. These prices are taken from the monthly Tandem reports to USNH administration. For the radiology procedures listed, the table shows the price of the radiology (x-ray) procedure at the local provider and how much USNH saved by having the employee use the Tandem program and rebook the procedure at the UNH Employee Clinic. Table 20 shows the community price for radiology services as compared to the same service at the Employee Clinic. The average price for radiology procedures in the community is $313.00 as compared to $63.00 at the UNH Employee Clinic. This means that each time an employee receives an x-ray at the UNH Employee Clinic, an average of $251.00 is saved.

Table 19. *Sample Radiology Procedure Pricing Differences, Local Providers Compared to UNH Employee Clinic, using Tandem Reports (1/1/12-3/31/14)*

Provider Location	Radiology Procedure Price	Tandem Referral	Employee Radiology Test Price	Difference
Portsmouth	$331	UNH Employee Clinic	$54	$277
Dover	$291	UNH Employee Clinic	$100	$191
Dover	$264	UNH Employee Clinic	$100	$164
Dover	$333	UNH Employee Clinic	$41	$292
Dover	$330	UNH Employee Clinic	$35	$295
Dover	$330	UNH Employee Clinic	$48	$285
Provider Location	**Radiology Procedure Price**	**Tandem Referral**	**Employee Radiology Test Price**	**Difference**
Average cost for cited procedures	$313		$63	$251

Table 20 shows the same data fields as Table 19, but for laboratory testing price structure. The table displays a selection of laboratory procedures by price and the corresponding price at the UNH Employee Clinic.

When conducting employee education sessions on the Tandem Care program, the author often receives questions on the quality of care at the UNH Employee Clinic compared to community providers. The wide price variation often leads employees to believe there must be a difference in the quality of the service provided. However, it is important to remember that the UNH Employee Clinic uses state of the art equipment and quality assurance procedures, and the lab and x-ray machines used by the Employee Clinic are often identical to that used by hospitals and other community providers. X-rays are done using modern digital equipment, the same as is used by outpatient hospital departments. The UNH Employee Clinic laboratory is up to date and

Clinical Laboratory Improvement Amendments (CLIA) certified. CLIA certification is a national certification process which was developed to insure quality laboratory services. All laboratories which receive Medicare and Medicaid reimbursement, which the Employee Clinic does--must be CLIA certified. The only difference between the services received at the Employee Clinic and at the hospital are price and location.

Table 20 shows the price of the laboratory procedure at the local provider and how much USNH saved by having the employee use the Tandem program and rebook the procedure at the UNH Employee Clinic. It is important to note that the UNH Employee Clinic laboratory is the service with the greatest utilization, and the below table illustrates the savings potential by having an employee use the UNH Employee Clinic instead of a community provider. In other words, employees are willing to switch site of service for this type of medical care and there are savings to be realized when they do so.

Table 20. *Sample Lab Test Pricing Differences, Local Providers and UNH Employee Clinic, using Tandem data reports (1/1/12-3/31/14)*

Provider Location	Lab Test Price	Tandem Referral	Employee Clinic Lab Test Price	Difference
Rochester	$577	UNH Employee Clinic	$96	$481
Rochester	$513	UNH Employee Clinic	$87	$426
Rochester	$589	UNH Employee Clinic	$105	$484
Rochester	$1,157	UNH Employee Clinic	$147	$1,010
Dover	$511	UNH Employee Clinic	$127	$384
Dover	$613	UNH Employee Clinic	$107	$506
Dover	$682	UNH Employee Clinic	$151	$531
Dover	$337	UNH Employee Clinic	$69	$268

Dover	$419	UNH Employee Clinic	$71	$348
Portsmouth	$483	UNH Employee Clinic	$131	$352
Portsmouth	$574	UNH Employee Clinic	$128	$446
Portsmouth	$366	UNH Employee Clinic	$65	$301
Portsmouth	$398	UNH Employee Clinic	$155	$243
Portsmouth	$486	UNH Employee Clinic	$101	$385
Average cost for cited procedures	Average Hospital Cost: $550		Average cost Employee Clinic: $110	Average Difference: $440

Table 21 displays the costs avoided by using the UNH Employee Clinic. The savings were estimated by comparing the average paid amount at the UNH Employee Clinic to the average paid to all other providers for the same procedure. The Harvard Pilgrim claims costs for services and the number of times those services were provided at the Clinic are listed first. The services were then "re-priced" at the community provider cost. The amount that would have been paid if the service had been received at a community based provider was then calculated, and the difference between the Clinic and the community based average was calculated. Finally, by subtracting the community based provider total from the UNH Employee total, a savings amount was reached. The community based provider per unit costs were higher than the same service received at the UNH Employee Clinic for every procedure listed; in some cases services received at the UNH Employee Clinic were **more than 80% less expensive**. In summary, this analysis estimates that over $48,000 in costs were avoided by having employees obtain services at the UNH Employee Clinic rather than in a community provider setting. Table 21 details this finding.

Table 21. *Estimated Cost Avoidance for select procedures, UNH Employee Clinic and Community Providers, 2013*

	UNH Clinic			Community Provider		Difference
	Number of services at Employee Clinic	Total Paid	Paid per Service	Amount paid for per same service	Amount which would have been paid if employee used community provider	Costs avoided
Vaccine administration	567	$7,207	$13	$32	$18,144	$10,937
Flu vaccine	339	$4,394	$13	$14	$4,746	$352
Lipid panel lab test	211	$2,383	$11	$31	$6,541	$4,158
Office outpatient visit (20 minutes)	180	$10,905	$61	$91	$16,380	$5,475
Office outpatient visit (15 minutes)	153	$7,996	$52	$95	$14,535	$6,539
Comprehensive metabolic panel lab test	112	$749	$7	$48	$5,376	$4,627
Complete blood count lab test	100	$621	$6	$35	$3,500	$2,879
Thyroid stimulating hormone lab test	91	$1,077	$12	$47	$4,277	$3,200
Allergy shots	86	$1,303	$15	$20	$1,720	$417
General health panel lab test	76	$1,677	$22	$101	$7,676	$5,999
Diabetes lab test	47	$359	$8	$22	$1,034	$675
Prostate lab test	46	$537	$12	$26	$1,196	$659
Mammography	35	$525	$15	$19	$665	$140
Liver function lab test	24	$213	$9	$34	$816	$603
Office outpatient visit 10 minutes	23	$805	$35	$40	$920	$115
Office outpatient visit new patient 30	20	$1,940	$97	$132	$2,640	$700
Chest x-ray	12	$172	$14	$104	$1,248	$1,076
Total	**2,122**	**$42,863**			**$91,414**	**$48,551**

For example: The UNH Employee Clinic conducted 112 comprehensive metabolic panel tests. The total charge to Harvard Pilgrim was $749, or an average of $7 per test. If the employee had the same test in the community, the cost would have been $48 for each test. If all 112 tests were done at the community provider ($48) instead of the Employee Clinic ($7), a total of $5,376 would have been spent. This means that a total savings on the 112 tests accounts for $4,627. For each procedure listed in Table 21, the cost of obtaining the service at the UNH Employee Clinic is less than the cost of receiving the same service in the community, meaning that each time an employee uses the Employee Clinic money is saved.

Chapter Summary

For this study, both qualitative and quantitative results were reported. Subject matter experts outlined the elements needed to create a successful on-site clinic. Sample price data allowing a comparison of the cost of services in Seacoast New Hampshire was reported, using data from the State of New Hampshire Insurance Department all-payer claims database. Finally, claims reports detailed the medical services delivered by the Employee Clinic and the patient survey results were listed. This study provides a comprehensive overview of relevant qualitative and quantitative data collected to analyze the cost saving impact of the UNH Employee Clinic.

For a variety of reasons, New Hampshire has higher medical insurance premiums than other states in New England and prices for health care services are very expensive. Employers need to seek innovative solutions to address the cost of providing health care to their employees. Medical providers are most often employed by hospitals, impacting market forces by reducing local competition and allowing hospitals to charge increasingly high rates for services, particularly outpatient services where a lack of health plan utilization management has meant ever increasing prices for lucrative ancillary procedures including laboratory tests and high

technology imaging (MRI). A lack of price transparency has isolated the consumer from the real price of health care, one key reason the University introduced the price shopping program Tandem Care. These factors all impact the University's ability to purchase high quality care at a low price. The data collected demonstrates that health care costs, including insurance premiums and the amounts charged for health care services are high in New Hampshire compared to national and regional data. The UNH Employee Clinic provides health care services at a lower cost than prices charged by community providers. Each time a University employee receives services at the UNH Employee Clinic the cost is lower than if the same service had been purchased in the community. The UNH Employee Clinic has lower costs for urgent care, laboratory and radiology services when compared to community providers.

CHAPTER 5—DISCUSSION

This study evaluated whether the UNH Employee Clinic provided a low cost alternative for employee health care services as compared to the price of purchasing these same services in the community. The data shows that health care services at the Employee Clinic do cost less than identical services in the community and that medical care received in the community is more expensive than the "in-house" services received at UNH. The cost of providing health benefits to employees is a major financial expense for the University; the cost of health insurance consumes half of the employee benefit budget. The Employee Clinic was developed as a response to local, regional and national trends in health care spending, putting pressure on the University with consistently increasing benefit costs. The cost of medical care is particularly high in Seacoast New Hampshire, where there is limited market competition and the majority of USNH employees are located. While the health care cost trend has flattened some over the past several years, many believe that this is temporary relief due to the 2010 Affordable Care Act while providers and insurers wait to see the "fallout" from the business practice changes demanded by the provisions of the new, vast law.

The University struggles with an aging workforce, and mirrors national trends in relation to high rates of expensive chronic disease. Most employer efforts to thwart medical cost increases have included benefit redesign, investment in employee wellness programs and working with insurers to develop chronic disease management. The University also faces the same reality as other large employers: how to remain competitive in the current business environment while attracting and maintaining a skilled workforce. However, the University has unique constraints which do not occur in some sectors of the economy.

The ability to make sweeping changes to medical costs to meet business needs brings into focus the juxtaposition of most institutes of higher education. Colleges and universities are required to both meet ambitious cost targets in order to hold tuition flat, and to attract and retain a strong employee talent base. The competition for students is fierce, and the cost of attendance and the quality of faculty are both factors which attract students. Universities have traditionally offered generous benefit packages, including comprehensive medical coverage with limited employee cost share. Over time, these components of the total compensation package become a sort of "entitlement". The benefits of University System of New Hampshire employment are well-known and human resources staff often receives dozens of applicants for every open position. The legacy of enhanced benefits compared to the broader market makes it difficult to revise the benefit structure in order to save costs, which is the standard approach of many large employers in other economic sectors. In addition, many Universities, including most campuses of the USNH have an active union presence and all benefit changes must be negotiated and approved with the union, making the process that much more complex. Therefore, Universities have to be innovative and work within the constraints of the current environment to reduce health care costs and still be a well-run business.

The Employee Clinic at UNH was one such innovation to work within existing structural and cultural constraints to entice employees to utilize cost-effective care. The analysis of claims and price data from the service area indicates that employees who receive care at the Employee Clinic do so at a lower cost when compared to the surrounding community. Cost differences vary and the Employee Clinic can be as much as 80% less expensive than the same service received in a local outpatient setting. For example, in some cases the lab test costs were over $1,000 less at the Employee Clinic than the same test performed in a community setting.

The cost, then is lowered if the employee chooses to use the UNH Employee Clinic for services which have become so expensive in the external market.

When reviewing the USNH paid claims data results and analysis, it is clear that the Employee Clinic is less expensive for the services provided than comparable community providers for the same services. The service by service comparison outlined in Table 21 indicates that the System saves money—sometimes substantial amounts of money each time an employee insured through the University uses the Employee Clinic for care. The analysis in Table 21 estimates a total cost savings of nearly $50,000 for the employees who used the clinic in 2013.

There are two reasons more cost savings were not realized, which represent an opportunity for the University. The capital development costs for the Employee Clinic were $250,000 and these costs were not absorbed into the fringe budget (which funds benefits). These costs seriously mitigate the "savings", and when calculated into the clinic's operating budget, the clinic operates as a loss when the start-up costs are included. This means that the clinic will not achieve a positive ROI for a long period of time, maybe years. The second reason is the employee utilization of the clinic is lower than necessary to support the costs of operating it. A 2010 study on work place clinics (Tu, Boukus, et. al.) found that predicting utilization when a clinic first opens can be challenging. Reasons for low visit rates cited by the study include lack of employee awareness and the need to have corporate leaders visibly use the clinic.

The Employee Clinic has seen flat to limited growth in utilization so the real savings impact has been minimal when compared to the start- up costs, and the benefit budget of $60 million per year. In order for the Employee Clinic to be a financial success, the clinic utilization data would indicate that implementing a robust business plan focused on improved employee visit rates and

initiating enhanced service offerings could attract more employees and dependents. For example, including physical therapy in the clinic services could reduce time away from work since it requires frequent visits over potentially long spans of time. Offering on-site coaching for chronic disease to mitigate the high cost of complex medical conditions could be another excellent way to improve the health of the UNH employee population and reduce health care expenses. As stated in Chapter 1, millions of dollars a year are spent by USNH on four chronic condition categories: respiratory and cancers; diabetes and eating disorders; anxiety, depression and headaches, and blood pressure, chest pain, cholesterol and heart disease. Many employers who implement on-site clinics include chronic disease management services because of a "growing recognition that face to face wellness activities—in particular, health coaching and lifestyle management programs are general more effective than alternatives" (Tu, Boukus, et. al., 2010). These are just some of the ways the Employee Clinic could draw additional employees to use the services and impact the overall benefits cost.

While well-received and rated high for patient satisfaction, the utilization of the Clinic has been low and that impacts overall cost savings, which have been little on a cumulative basis. In other words, the Employee Clinic saves money by offering low cost services, but does not reach the full savings potential since so few employees use it. Table 15 shows that the Employee Clinic visit counts increased little between FY 12-13 and FY 13-14, with flat to no growth across all service types. For example, Employee Clinic office visit counts went from 182 (year 1) to 218 (year 2), an increase of less than 20%. While 60% of UNH employees surveyed indicated they would consider utilizing the Employee Clinic, the number of visits has remained consistent and has not increased enough to support the operational costs. In order to reach the full cost

saving potential of the Employee Clinic, the operations model, including a review of the scope of services offered must be analyzed, and a number of recommendations potentially implemented:

- Improved leadership commitment: To date, executive leadership of the University has not strongly supported the Employee Clinic. While the clinic was started with University funds, financial support was for the initial capital development costs only. For example, there is no marketing budget. In addition, there has been no operational support for unsubsidized costs, such as labor and utilities. This makes the Employee Clinic operate using the limited revenue from the employees who do use the Clinic. A business model which envisions an expanded scope of services is difficult to put forward if there is no seed capital for new project development and implementation.
- Analyzing a business model shift: Should the Employee Clinic be owned and operated by the University? The model implemented by Purdue University outlined earlier in this study used a contracted vendor to operate the employee clinic. While the employee base is small at UNH, it may still be possible to attract an outside organization willing to take the financial risk for operating the Employee Clinic. This would eliminate the need for UNH to subsidize the Employee Clinic with operating capital while the revenue "catches up" when employee utilization improves. This model should be approached with caution. If a vendor is solicited, there must be a thorough understanding of that vendor's community relationships. The Employee Clinic will no longer be a cost effective option if it is serving as an additional "feeder" clinic to area hospitals with their higher price structures. As outlined earlier, the prices at area hospitals can be quite variable and UNH would want to be certain that the vendor places the University fiscal restraints front and center to the operational model.

- The Employee Clinic must analyze whether offering additional services would attract more staff and faculty to use the clinic, therefore contributing health care cost savings for the University. This analysis must include the cost of offering the service with the expected time when that service achieves a return on investment or at least breaks even. Reviewing other employer on-site clinic models, such as the model operated by Purdue University indicate that some of the expanded services could include:
    - Telemedicine consultations with experts in the field who could offer patient decision support, expert consultation and second opinion services
    - On-site Employee Assistance Programs, wellness coaching and insurance carrier disease management coaching to offer employees a single site for their comprehensive, integrated healthcare needs at convenient times before, during and after the work day
    - Physical therapy, the duration of which is often weeks and can have a significant impact on employee productivity
    - Sports medicine physicals for children of University employees (a convenience service which could introduce dependents to the clinic)
    - Ready to work physicals (pre-employment physicals) for jobs which require these exams to be employed by the University (e.g., facilities positions)
    - Workers' compensation back to work exams
    - Expanded occupational health and wellness services. The Clinic should be seen as a resource to keep employees well and on the job. Clinic staff could work with faculty and staff to assess and monitor workplace and occupational injuries and hazards, preventing costly workers' compensation incidents.

- Prescription medications: could the Employee Clinic offer online refills and concierge delivery to all the USNH campuses? There is already an existing in-campus mail delivery structure that could be utilized to deliver to all 4,500 employees across the University System of New Hampshire.
- Free services to entice employees to visit the clinic and see the facilities first-hand. For example, free blood pressure checks which could be uploaded to a mobile phone application and stored for future reference. Flu shots were offered at the Employee Clinic for the first time last fall (2013) to great success. These types of opportunities allow the employees to see the clinic when they are not sick or injured, and can reinforce the idea that there is an excellent health care resource right on campus.
- While the Clinic was initially envisioned as a cost saving measure for USNH, it also offers staff with no benefits or other source of health care a resource onsite. Could the Employee Clinic offer services to area employers who share the same mission, vision and values? For example, the Employee Clinic has been offered to the Community College System of New Hampshire (CCSNH) employees. This resource needs to be marketed to the CCSNH, and potentially expanded to other compatible area businesses while still considering University mission. Urgent care and ancillary services at competitive prices for the Town of Durham and local school systems could bring revenue to the Employee Clinic while still serving the University employees in Durham.

In conclusion, the UNH Employee Clinic is a low cost health care option for University employees in the Durham area when compared to community-based providers. The Clinic saves

the USNH money by offering services at a far lower price than area providers. The data clearly shows that over $48,000 was saved over a 12-month period by having employees receive services at the UNH Employee Clinic. This is a direct savings to the medical benefits budget as represented in lower medical claims cost. However, Employee Clinic utilization has remained flat, which means that while it is a cost effective alternative, it must be used regularly by employees and their dependents to recognize full cost containment potential. The UNH Employee Clinic must conduct a thorough examination of the business model and best practices from other Universities, such as Purdue University as detailed in Chapter 1. Integrating best practices from other onsite clinics and then applying these practices to the UNH Employee Clinic operation would be helpful if the Clinic is going to continue to be offer a low cost alternative to community based health care services.

Anecdotal Notes: Productivity & Workers' Compensation

While not as quantifiable and beyond the scope of this study, employee productivity has the potential to be improved as employees did not need to leave campus to receive medical services. Whether confirmed by research or not, this potential improved employee productivity is articulated as a benefit of the clinic by UNH management. Hours of lost work time could be recouped when an employee seeks same day care for an illness or injury on the job at the UNH Employee Clinic. A 2009 study by Tao, Chenoweth, et. al. indicated that "employees receive prompt medical attention, **lose less time from work** (*emphasis added*) and experience lower out of pockets costs because the on-site medical care is usually provided at no or low cost to the employee" p. 1151.

Workers' compensation is another area of benefit expense which the UNH Human Resources department targeted for cost containment; while claims are separate from medical insurance

costs, they contribute to the employee benefit budget overall. The UNH Clinic is one service which could improve worker's compensation claims experience as an alternative to seeking care in the community; the law requires that providers treating workers' compensation cases receive full billed charge. In addition, using the UNH Employee Clinic appeals to University supervisors as it may reduce the time away from work for employees, improving employee productivity. Rather than leave campus to receive services in the community the employees can save time by using the on-site services. Although productivity is harder to calculate than cost differences and has a softer Return on Investment, reducing time away from work improves workforce productivity. An estimate using the MIT Sloan Management Review calculation (Sloan Management Review 2011, 53(2), two hours of productivity is lost per one hour of medical appointment. Using the UNH Employee Clinic utilization statistics and applying the Sloan Management Review calculation, over 1,000 hours of productivity may have been saved the first year of the UNH Employee Clinic's operation. Informal communication with the Associate Vice President of UNH Business Affairs, who manages the area with the most occupational injuries (dining services) indicates that he strongly believes the Employee Clinics saves him time and money, providing a close and convenient on-campus medical option for workplace injuries which would otherwise require transportation and extended time away from work (D. May, informal communication, June 2014). Table 22 indicates the percentage of UNH employees are seen at the UNH Employee Clinic for workers' compensation cases and how the percentage has improved over time with active marketing to employees, including placing Employee Clinic flyers in break rooms and listing the clinic in workers' compensation materials.

Table 22. *Percent of workers' compensation cases treated at the UNH Employee Clinic, by year*

Year	Percent of workers' compensation cases treated at clinic
2011	25%
2012	41%
2013	56%

The Associate Vice President of Human Resources, Kathy Neils was previously employed in a large manufacturing company which had onsite employee health clinics around the world. "The Employee Clinic at UNH has huge potential, particularly as a way to improve workforce productivity. The clinic offers a close, convenient service allowing employees to get to appointments quickly and return to work sooner. Physical therapy on site would be a great addition to the service mix" (Kathy Neils, informal communication, May 2014).

The UNH Employee Clinic is poised to be a key resource for employees and a cost-saving operation for the University. This study determined that the UNH Employee Clinic saved the University medical costs as compared to paying for the same services purchased in the community and as such was a successful pilot on the UNH campus. Many of the recommendations listed here have the potential to improve the utilization of the clinic, thereby enhancing the cost savings and mitigating the overall expense of providing benefits to the faculty and staff of the University System of New Hampshire.

REFERENCES

Baker, L., Bundorf, K. & Kessler, D. (2014). Vertical Integration: Hospital Ownership Of Physician Practices Is Associated With Higher Prices And Spending. *Health Affairs*. 33(5). P. 756-763.

Baicker, K., Cutler, D. & Song, Z. (2010). Workplace Wellness Programs Can Generate Savings. *Health Affairs*. 29(2). p. 304-311

Beamesderfer, A., & Ranji, U., Kaiser Family Foundation (2012). *U.S. Health Care Spending Background Brief*. Retrieved from the Kaiser Family Foundation website: http://www.kaiseredu.org/Issue-Modules/US-Health-Care-Costs/Background-Brief.aspx

Berry, L., Adcock, G. & Mirabito, A. (December 2011). "Do-It-Yourself" Employee Health Care. *MIT Sloan Management Review*. Massachusetts Institute of Technology.

Berry, L., Mirabito, A., & Baun, W. (December, 2010). What's the Hard Return on Employee Wellness Programs? *Harvard Business Review*. Harvard Business School Publishing Corporation.

Blumenthal, D. (2006). Employer-Sponsored Health Insurance in the United States—Origins and Implications. *New England Journal of Medicine*. 355. p. 82-88.

Budorf, K., Royalty, A. & Baker, L. (2009). Health Care Cost Growth Among the Privately Insured. *Health Affairs*. 28(14). p.1294-1304.

Centers for Disease Control and Prevention (2001). *The Surgeon General's Call To Action To Prevent and Decrease Overweight and Obesity*. Retrieved from the Centers for Disease Control and Prevention website: http://www.cdc.gov/nccdphp/dnpa/pdf/CalltoAction.pdf

Centers for Disease Control and Prevention (2009), *Chronic diseases: the power to prevent, the call to control, at-a-glance 2009.* Retrieved from the Centers for Disease Control and Prevention website: http://www.cdc.gov/workplacehealthpromotion/businesscase/reasons/rising.html

Centers for Medicare and Medicaid Services (2011). *National Health Expenditures Fact Sheet*. Retrieved from the CMS Website: www.cms.gov/NationalHealthExpendData/25_NHE_Fact_Sheet.asp#TopOfPage

Centers for Medicare and Medicaid Services (2011). *Health Expenditures by State of Residence.* Retrieved (2013) at http://www.cms.gov/NationalHealthExpendData/downloads/resident-state-estimates.zip

Centers for Medicare and Medicaid Services (2012). *National Health Expenditure Projections, 2012-2022, Forecast Summary*. Retrieved (2014) at http://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/NationalHealthExpendData/NationalHealthAccountsProjected.html

Chenoweth, D. & Garrett, J. (2006). Cost Effectiveness Analysis of a Worksite Clinic. *American Journal of Occupational Health Nursing*. 54(2). p. 84-91.

Chenoweth, D. (2011). *SHRM Foundation Executive Briefing: Wellness Strategies to Improve Employee Health, Performance and the Bottom Line*. Society for Human Resource Management, Alexandria, Virginia. Retrieved October 2014 at:

http://www.shrm.org/about/foundation/products/Documents/Wellness%20Exec%20Briefing-FINAL.pdf

College and University Professional Association for Human Resources (2011). *2011 Comprehensive Survey of College and University Benefit Programs Survey Fact Sheet.* Retrieved 2014 at http://www.cupahr.org/surveys/files/benefits2011/Benefits11_Survey_Fact_Sheet.pdf.

Congressional Budget Office (2008). *Technological Change and the Growth of Health Care Spending* (No. 2764). Retrieved from the CBO website: http://www.cbo.gov/publication/24748

Creswell, J.W. (2014). *Research design: Qualitative, Quantitative and Mixed Method Approaches* (4th ed.). Thousand Oaks, CA; SAGE Publications.

DeGroot, T., & Kiker, D. (2003). A Meta-Analysis of the non-monetary effects of employee health management programs. *Human Resource Management*, 42(1), 53-69. Retrieved from EBSCO*host*.

DeVol, R., Bedroussian, A. & Charuworn, A. et. al. (2007). *An Unhealthy America: The Economic Burden of Chronic Disease: Charting a New Course to Save Lives and Increase Productivity and Economic Growth: Executive Summary and Research Findings.* Milken Institute, Santa Monica, CA.

DiJulio, B. (2009). *Snapshot: Wages and Benefits: A Long-Term View*. Henry J. Kaiser Family Foundation, Menlo Park, CA.

Finkelstein, E., DiBonaventura, M. & Burgess, S. et. al. (2010). The Costs of Obesity in the Workplace. *Journal of Occupational and Environmental Medicine.* 52(10), p. 971-976.

Fisher, E., Bynum, J. & Skinner, J. (2009). Slowing the Growth of Health Care Costs: Lessons from Regional Variation. *The New England Journal of Medicine*. 360, p. 849-852.

Frazee, S., Kirkpatrick, P. & Fabius, R., et. al. (2007) Leveraging the Trusted Clinician: Documenting Disease Management Program Enrollment. *Disease Management*, 10(1). p. 16-29.

Fuld & Company (2009). *The Growth of On-Site Health Clinics*. Cambridge, Massachusetts.

Goetzel, R., Henke, R. & Tabrizi. M., et. al. (2014). Do Workplace Health Promotion (Wellness) Programs Work? *Journal of Occupational and Environmental Management.* 56(9), p. 927-934.

Goetzel, R., Pei, X. & Tabrizi, M., et. al. (2012). Ten Modifiable Health Risk Factors are Linked to More than One-Fifth of Employer-Employee Health Care Spending. *Health Affairs*. 31(11), p. 2474-2484.

Goetzel, R. & Ozminkowski, R. (2008). The Health and Cost Benefits of Work Site Health-Promotion Programs. *Annual Review of Public Health 2008*. 29. p. 303-323.

Government Accounting Office (2007). *Employer-Sponsored Health and Retirement Benefits: Efforts to Control Employer Costs and the Implications for Workers*. Retrieved from the GAO website: http://www.gao.gov/new.items/d07355.pdf

Harvard Pilgrim Health Care: Annual Review of Experience for the University System of New Hampshire. CY 2010, CY 2011, CY 2012, CY 2013. Unpublished raw data.

Health Care Cost Institute, Inc. (2012). *Health Care Cost and Utilization Report: 2011*. Retrieved from Health Care Cost Institute website: http://www.healthcostinstitute.org/2011report

Henke, R., Goetzel, R. & McHugh, J. et. al. Recent Experience In Health Promotion At Johnson & Johnson: Lower Health Spending, Strong Return On Investment. *Health Affairs*, 30, no.3 (2011):490-499. doi: 10.1377/hlthaff.2010.0806

Health Enhancement Research Organization HERO Scorecard (2011). *The HERO Employee Health Management Best Practice Scorecard in Collaboration with Mercer Annual Report, 2010*. Edina, Minnesota. HERO & Mercer, LLC. http://www.the-hero.org/scorecard_folder/2010_annual%20report.pdf

Hochstadt, B., Kaplan, D. & Keyt, D. (2014). *Employer-Sponsored Workplace Health: Offering Solutions Across the Globe (*Mercer, Health and Benefits Perspective). Retrieved April 12, 2014: http://www.mercer.com/articles/employer-sponsored-worksite-health-1432910

Institute on Medicine of the National Academies (2012). *Living Well With Chronic Illness: A Call for Public Health Action.* Retrieved from the Institute on Medicine website: http://iom.edu/~/media/Files/Report%20Files/2012/Living-Well-with-Chronic-Illness/livingwell_chronicillness_reportbrief.pdf

Joyce, G., Escarce, J., Solomon, M. & Goldman, D. (2002). Employer Drug Benefit Plans and Spending on Prescription Drugs. *Journal of the American Medical Association*, 288(14). p.1733- 1739. doi: 10.1001/jama.288.14.1733.

Kaiser Family Foundation (2010). *Focus on Health Reform: Summary of the New Health Reform Law*. Retrieved from the Kaiser Family Foundation website: http://www.kff.org/healthreform/upload/8061.pdf

Kaiser Family Foundation (2011). *Snapshots: Health Care Spending in the United States & Selected OECD Countries*. Retrieved from the Kaiser Family Foundation website: http://kff.org/health-costs/issue-brief/snapshots-health-care-spending-in-the-united-states-selected-oecd-countries/.

LaPenna, M. (2010). *Workplace Clinics and Employer Managed Healthcare: A Catalyst for Cost Savings and Improved Productivity*. New York, NY: Taylor & Francis Group.

Mattke, S., Schnyer, C. & Van Busum, K. (2012). A Review of the U.S. Workplace Wellness Market. Retrieved October 2014 from: http://www.dol.gov/ebsa/pdf/workplacewellnessmarketreview2012.pdf

McCarthy, D. & Klein, S. (2010). *QuadMed: Transforming Employer-Sponsored Health Care Through Primary Care and Workplace Wellness Programs*. Issues Research, Inc. The Commonwealth Fund, New York, New York. Retrieved October

DiJulio, B. (2009). *Snapshot: Wages and Benefits: A Long-Term View*. Henry J. Kaiser Family Foundation, Menlo Park, CA.

Merrick, E., Volpe-Vartanian, J. & Horgan, C., et. al. (2007). Revisiting Employee Assistance Programs and Substance Use Problems in the Workplace: Key Issues and a Research Agenda. *Psychiatric Services,* 58(10). doi: 10.1176/appi.ps.58.10.1262.

Milani, R. & Lavie, C. (2009). Impact of Worksite Wellness Intervention on Cardiac Risk Factors and One-Year Health Costs. *American Journal of Cardiology*, 104. p. 1389-1392.

Milliman Research, Inc. (2010). *2010 Milliman Medical Index*. Retrieved from Milliman Research website: http://publications.milliman.com/periodicals/mmi/pdfs/milliman-medical-index-2010.pdf

National Center for Health Statistics. Health, United States, 2009, with chartbook on trends in the health of Americans (2010). Hyattsville, MD.

NH Insurance Department (2012). *Understanding Hospital Costs in New Hampshire* (Rate Review Grant RRG02). Concord, NH: Terry, Susan Palmer.

Okie, S. (2007). Employer as Health Coach. *New England Journal of Medicine*, 357. p. 1465-1469.

Patton, M. (2002). *Qualitative Research & Evaluation Methods* (3rd edition). Thousand Oaks, CA: Sage Publications.

Pinkhasov, R. M., Wong, J., Kashanian, J., Lee, M., Samadi, D. B., Pinkhasov, M. M. & Shabsigh, R. (2010), Are men shortchanged on health? Perspective on health care utilization and health risk behavior in men and women in the United States. *International Journal of Clinical Practice*, 64: 475–487. doi: 10.1111/j.1742-1241.2009.02290

Pelletier, K. (2001). A Review and Analysis of Clinical and Cost-Effectiveness Studies of Comprehensive Health Promotion and Disease Management Programs at the Worksite: 1998-2000 Update. *American Journal of Health Promotion*, 16(2). p. 107-116.

Price Waterhouse Cooper Health Care Institute (2013). *Medical Cost Trend: Behind the Numbers 2014*. Retrieved 3/21/14 (http://pwchealth.com/cgi-local/hregister.cgi/reg/medical-cost-trend-behind-the-numbers-2014.pdf).

Reuter, C. (2011). Onsite Health Centers: A Strategic Perspective. *Compensation and Benefits Review*. 43(2). 123-131.

Scruby, D., Denham, S. & Larkin, G. (2001). Economic Impact of On-site Physical Therapy. *Journal of Occupational and Environmental Medicine*, 43(8). p. 670-671.

Serxner, S., Gold, D. & Anderson, D., et.al. (2001). The Impact of a Worksite Health Promotion Program on Short Term Disability Usage. *Journal of Occupational and Environmental Medicine*, 43(1), p. 25-29.

Sherman, B. & Fabius, R. (2012). Quantifying the Value of Worksite Clinic Non-Occupational Health Care Services: A Critical Analysis and Review of the Literature. *Journal of Occupational and Environmental Medicine.* 54(4). p. 394-401.

Tao, X., Chenoweth, D., Alfriend, A. et. al. (2009). Monitoring Worksite Clinic Performance Using a Cost-Benefit Tool. *Journal of Occupational and Environmental Medicine*. 51 (10). p. 1151-1157.

Towers Watson (2012). *2012 Onsite Health Center Survey Report.* Retrieved 2/17/13, http://towerswatson.com/assets/pdf/7705/Realizing-the-Potential-of-Onsite-Health-Centers.pdf

Trude, S., Christianson, J., Lesser, C., Watts, C. & Benoit, A. (2002). Employer-Sponsored Health Insurance: Pressing Problems, Incremental Changes. *Health Affairs*, 21(1). p.66-75. doi: 10.1377/hlthaff.21.1.66.

Tu, H. (2014). *Moving Markets: Lessons from New Hampshire's Health Care Transparency Experiment*. (California HealthCare Foundation & Robert Wood Johnson Foundation). Washington, DC.

Tu, H., Boukas, E. & Cohen, G. (2010). *Workplace Clinics: A Sign of Growing Employer Interest in Wellness*. (Center for Studying Health System Change, No. 17). Washington, DC.

University System Of New Hampshire (2012). *Annual Benefit Report, 2011*. Lee, New Hampshire. Retrieved from: www.usnh.edu/hr/pdf/FINAL_2012_Annual_Benefits_Report.pdf

Wennberg, J. & Gittelsohn, A. (1973). Small Area Variations in Health Care Delivery. A population-based health information system can guide planning and regulatory decision-making. *Science* 14, 182 (4117). p. 1102-1108.

Yehl, S., Sizemore, V. & Wickersham, M. (2013). *An early analysis of the growing phenomenon of local government-operated worksite health clinics*. Unpublished manuscript, Valdosta State University, Valdosta, Georgia.

Appendix A: Internal Review Board (IRB) Approval Letter

Amy,

IRB #: 5742

Study: Developing and Implementing Strategies to Reduce Employer health Care Costs: A Case Study of On-Site Health Services as Cost Containment

The Institutional Review Board for the Protection of Human Subjects in Research (IRB) reviewed and approved your request for the use of human subjects in your study.

You are all set to start your study from the IRB's perspective. Your formal IRB approval letter will be emailed shortly.

For the IRB,

Julie F. Simpson, Ph.D.

Director, Research Integrity Services

University of New Hampshire

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Appendix B: Industry Expert Interview Questions

Questions for field experts:

1. Basic demographics: name, title, field of specialization/study
2. What types of organizations do you work with who have started employee health clinics? Private firms versus municipal or academic agencies
3. What are the factors that help make a clinic financially viable? E.g., number of employees, market factors, access to care, geographic location, etc.
4. What is necessary to set up a clinic—start up versus operating staff, physical plant requirements
5. Do you have clients who require employees to use the clinic?
6. How long on average does a clinic have to operate to "break even"?
7. What are some challenges that clinics need to overcome to be successful?
8. Is there a single best practice business model?
9. What is a typical suite of services offered?
10. Does the clinic offer any programs in addition to traditional medical programs (e.g., wellness programs, health coaching, case management, chronic disease management, second opinion service)
11. How do you evaluate a clinic—financially, customer service, utilization?
12. Why do most clients/employers start employee clinics?

Appendix C: UNH Employee Clinic Customer Satisfaction Survey

Page - Employee Clinic/Employee Services Patient Satisfaction Survey

Thank you for visiting the Health Services Center. In effort to improve the services we offer, please take a moment to provide us feedback about your visit.

Required answers: 0 *Allowed answers: 0*

Q1 How did you make your appointment? (select one)

Phone *[Code = 1]*

Online *[Code = 2]*

Walk-In *[Code = 3]*

Previous Appointments*[Code = 4]*

Required answers: 1 *Allowed answers: 1*

Please indicate your level of satisfaction with the following:

Q2 Ease of making your appointment

Very satisfied*[Code = 4] [Numeric Value = 4]*

Moderately satisfied*[Code = 3] [Numeric Value = 3]*

Moderately dissatisfied*[Code = 2] [Numeric Value = 2]*

Very dissatisfied*[Code = 1] [Numeric Value = 1]*

Not applicable*[Code = 0] [N/A]*

Required answers: 1 *Allowed answers: 1*

Q3 Availability of appointments.

Very satisfied*[Code = 4] [Numeric Value = 4]*

Moderately satisfied*[Code = 3] [Numeric Value = 3]*

Moderately dissatisfied*[Code = 2] [Numeric Value = 2]*

Very dissatisfied*[Code = 1] [Numeric Value = 1]*

Not applicable*[Code = 0] [N/A]*

Required answers: 1 *Allowed answers: 1*

Q4 If you received a health consultation over the phone, how satisfied were you with the nurse's ability to address your health concerns?

Very satisfied*[Code = 4] [Numeric Value = 4]*

Moderately satisfied *[Code = 3] [Numeric Value = 3]*

Moderately dissatisfied*[Code = 2] [Numeric Value = 2]*

Very dissatisfied*[Code = 1] [Numeric Value = 1]*

Not applicable*[Code = 0] [N/A]*

Required answers: 1 *Allowed answers: 1*

Q5 Were you seen in . . .

Employee Clinic (Open from 7:00 a.m. - 1:00 p.m., M-F for employees and dependents over the age of 18)*[Code = 1]*

Health Services Center (integrated into appointments with students and other employees) *[Code = 2]*

Don't know/remember*[Code = 3]*

Required answers: 1 *Allowed answers: 1*

Please indicate your level of agreement with the following statements:

Q6 The provider clearly explained my diagnosis.

Strongly agree*[Code = 4] [Numeric Value = 4]*

Moderately agree*[Code = 3] [Numeric Value = 3]*

Moderately disagree*[Code = 2] [Numeric Value = 2]*

Strongly disagree*[Code = 1] [Numeric Value = 1]*

Not applicable*[Code = 0] [N/A]*
Required answers: 1 *Allowed answers: 1*

Q7 The provider clearly explained treatment options and/or tests.
Strongly agree*[Code = 4] [Numeric Value = 4]*
Moderately agree*[Code = 3] [Numeric Value = 3]*
Moderately disagree*[Code = 2] [Numeric Value = 2]*
Strongly disagree*[Code = 1] [Numeric Value = 1]*
Not applicable*[Code = 0] [N/A]*
Required answers: 1 *Allowed answers: 1*

Q8 Did you utilize the services provided in our Pharmacy, Laboratory or Radiology department?
Yes*[Code = 1]*
No*[Code = 2]*
Required answers: 1 *Allowed answers: 1*