Assessing the Evidence for Penn State University's "Take Care of Your Health" Benefits Program

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Background:

On July 11, 2013, Penn State University announced planned changes for its employee health benefits program under the name of the "Take Care of Your Health" initiative (hereafter referred to as the "Take Care" initiative – see http://news.psu.edu/story/281346/2013/07/11/administration/%E2%80%98take-care-your-health%E2%80%99-initiative-announced-ahead-open) While this announcement occurred during the summer months, a period when many faculty and staff are not on campus, the proposed changes have received significant local and national media attention, with many news articles or stories in major outlets such as *National Public Radio* (NPR), the *Wall Street Journal, Philadelphia Inquirer*, and the *Harvard Business Review* having written stories on the topic. While Penn State is not the first employer to implement a wellness program, the significant national interest in its program is due to the fact that it has taken a stick rather than carrot approach, by using penalties, more than double the national employer average [Mattke et al, (2013)]. The strong negative internal and external reaction to these changes has focused on a number of issues. These include the lack of transparency in shared decision making and little engagement of faculty and staff around these changes. Many Penn State employees are particularly troubled by these changes in light of the university's recent public commitment to a culture of transparency. Some Penn State Faculty, including the past head of the faculty senate, have suggested that the planning for the "Take Care" initiative was conducted without appropriate input from Penn State faculty and staff members, and that the strategic announcement of the program, occurring in early July when most faculty are not officially working for the university and many staff are on vacation, was timed specifically to avoid strong reaction on the part of employees (see http://www.insidehighered.com/news/2013/07/22/penn-state-faculty-object-details-new-preventive-health-care-plan).
The university's faculty Senate, scheduled to meet for the first time during the fall semester on September 10, 2013, has added this topic to the meeting agenda and requested the presence of key Penn State administrators. Employees have also raised strong concerns about the ethical and privacy issues associated with requiring employees to complete online 'wellness profiles' that ask about sensitive health information such as alcohol, tobacco and drug use, and other sensitive topics such as information regarding mental health and specific illnesses [Woessner, (2013)]. Others have pointed to the issue of low employee morale and concerns regarding compensation, including the fact that Penn State's administration has simultaneously delayed salary increases, which typically would go into effect at the beginning of the fiscal year, on July 1st. Instead the university has announced that salary increases would take effect on October 1st, yet employees have yet to receive notification about increases, creating uncertainty in the minds of faculty and staff about real reductions in compensation, in addition to potential cost increases associated with the "Take Care" initiative.

While the above mentioned issues are clearly important (administrative transparency and university governance; ethical considerations and employee privacy; and reductions in employee compensation), they are not the focus of this summary. Instead, this summary focuses on yet another concern raised by the "Take Care" initiative; namely that the evidence base for the wellness and prevention programs, including the required online health profile and biometric screening, does not support the goals of the program, which have been identified by the university as reduced health benefits costs and improved employee and beneficiary health (see http://news.psu.edu/story/282659/2013/07/25/administration/benefits-changes-focus-employee-wellness-long-term-cost). In short, spurred by news articles and opinions from national experts on the impact of employment based wellness programs, many Penn State employees and retirees are questioning whether the Penn State administration has fulfilled its fiduciary and fiscal responsibility in planning the "Take Care" program, and thus whether the initiative will lead to the expected cost reductions and improvements in employee health the university is assuming.

We address this topic in this document, relying on a summary of the scientific evidence for the proposed changes rather than on rhetoric or personal opinions. The faculty members involved in reviewing and synthesizing this literature are Penn State faculty members in the Department of Health Policy and Administration in the College of Health and Human Development. Dennis Scanlon, Ph.D., has research and teaching expertise in health insurance, health benefits, and health policy and finance, including experience conducting research on employment based health benefits with employers such as General Motors, GTE, Boeing, the Leapfrog Group and the National Business Coalition on Health, among others. Scanlon, who has been at Penn State for 17 years, also has experience conducting educational and continuing education classes for health benefits managers and occupational medicine physicians through organizations such as the American College of Occupational and Environmental Medicine (OCOEM), the National Business Group on Health (NBCH) and the National Business Coalition for Health (NBCH). He has also served on advisory boards for these organizations. Dennis Shea, Ph.D., has research and teaching experience in health economics, financing, and policy. During his 23 years at Penn State he has conducted research funded by the National Institute on Aging, Centers for Medicare and Medicaid Services and the Commonwealth Fund and has consulted for several employers and organizations. Given their research and teaching backgrounds, Dr. Scanlon and Dr. Shea were asked to assess the scientific evidence base for Penn State's proposed "Take Care" program. Both agreed to review and summarize the literature and to write this document in an attempt to clearly elucidate the state of evidence on this topic. Both authors understand the challenge of increased cost inflation in employer sponsored health insurance programs, and the need for employers and their employees and retirees to be partners in addressing these issues. The authors feel it is important that the facts regarding evidence be honestly

communicated, and that factual information about key drivers in employer health care costs, as well as alternative approaches to addressing cost inflation and health improvement, be understood.

The remainder of the document proceeds as follows. First, we briefly discuss trends in health care costs and the costs of providing employment based health benefits, outlining the challenges faced by all employers that provide healthcare benefits, including Penn State. Importantly, in this section we highlight the key factors that explain increasing health cost trends, clearly denoting which drivers are being addressed by the "Take Care" initiative. Second, we summarize the specifics of Penn State's proposed "Take Care" initiative and outline important areas where evidence can inform the likely success of this program in meeting its stated goals. Third, we review the scientific evidence on the cost and health impacts of employment based wellness and prevention programs, drawing inferences from the published literature for the changes Penn State has proposed under the "Take Care" initiative. Fourth, we discuss important alternatives and additional approaches to accomplishing the stated goals of reducing health benefits costs and maintaining or improving the health of the Penn State employee and retiree population. Fifth, we provide suggestions regarding how Penn State administration might move forward, particularly in light of its land grant research university status. We focus specifically on the opportunity to better develop the scientific evidence on employment based health care costs and benefits, taking advantage of Penn State's faculty expertise in this area, and the opportunity for Penn State to contribute useful practical knowledge about an important current social problem. Finally, we identify important questions for university administrators, related to proposed changes to Penn State's health benefits programs.

Key Drivers of Health Care Inflation and Increasing Employment Health Care Benefits Costs

For many years health services researchers have investigated the influence a variety of factors have on the level and trend of health care costs where the populations studied range from a nation to an employer group. In a sense, this seems simple. Health care costs or spending in any year depend on the number of persons who were treated and the cost per person. If health care costs rise, then either the number treated increased and/or the cost per person rose. But, each of those can be driven in a variety of ways. The number treated can change because the size of the population changes (i.e., an employer has more employees), or because the underlying level of illness increased (the clinical prevalence of illness). Furthermore, each of those has underlying drivers. The underlying level of illness or clinical prevalence can change because there was a worse flu season, because the workforce got older, because employees health behaviors are leading to increases in illness, or for a variety of other reasons. So, within the simple accounting of costs, there are many layers of complexity to what drives cost increases.

While exact estimates vary, a relatively clear pattern of the important factors driving increases in cost has emerged, with only a few areas of significant disagreement. One of the key challenges in research on health care cost drivers is that there can be significant overlap in the estimated impact of different factors driving costs. The number of people seeking treatment can change because their insurance became more generous, because their income rose, because physician practices did a better job following up to get people in for treatment, because a government agency launched a public health campaign, and so on. Thus, trying to demarcate the line where the effects on costs of medical technology, treatment patterns, or prices of care often leaves some range of estimated effects. This section of the report briefly reviews that research with the following questions in mind: If an employer[1] wants to impact the health care cost trend in its insured population, what are the key factors that impact costs? Which of those factors are amenable to the influence of the employer?

Technology

In our simple equation above, the cost per person can change because each year new medical technologies—drugs, devices, tests, treatments, etc.—become available. These new technologies increase the number of people treated, often have higher prices, and can spread through a health system rapidly. A consistent body of evidence has shown that the most important factor driving the rise in health care costs has been the introduction and growth in the use of new medical technologies, where technology means both new products—drugs, devices, supplies—as well as new procedures and processes of providing health care. The evidence is summarized well in a 2008 Congressional Budget Office Report (CBO, 2008a) which reviewed the studies available at that time (Cutler, 1995; Newhouse, 1992; Smith, et al., 2009)]. Other studies also support these estimates of the impact of technology [(Chandra and Skinner, 2011; Cutler and McClellan, 2001; Ginsburg, 2008 and 2012; Robert Wood Johnson Foundation, 2011; Skinner, 2013). Collectively, these studies have indicated that technology related change in health care was likely to be responsible for approximately 40-60 percent of the growth seen in health care costs over time.

Some research (Cutler, 2001; Chandra and Skinner 2011) has focused on delving into the details on technology-related health care cost growth noting that there exist at least 3 types of technology change:

1) Highly cost-effective innovations which improve health, have little likelihood of misuse, and may even reduce costs;

[1] While we will use the term employer, in many cases these are decisions made and implemented by all third-party payers insurance: Medicaid, Medicare, self-insured employers, insurers, and others.

2) Innovations that are effective for some segments of the population, but which can be misused (e.g., applied in situations or on populations where the innovation is ineffective), leading to higher costs;

3) Innovations with uncertain clinical effectiveness, which often lead to higher costs without clearly demonstrable improvements in health.

The key to trying to control technology related cost growth, naturally, is to try to implement type 1 rapidly, manage type 2 effectively, and contain and study type 3. While this may seem a daunting task, it is clear that the ability of nations, states, communities, and organizations like employers vary. Some have been much more effective at controlling cost growth than others. Chandra and Skinner, for example, show that even within U.S. regions, cost growth in the Medicare program has varied dramatically, with cost in some regions growing 3 times faster than in others.

Malpractice

While physicians and others often focus significant attention on the malpractice system and the impact it has on causing doctors to practice defensive medicine (care given primarily to avoid a lawsuit), the evidence from health services research suggests that it is not a significant factor in either the level or the trend in health care costs. Most estimates suggest that malpractice and defensive medicine constitute less than 2 percent of total national health care costs at any given time (see Mello, 2010 and articles cited there), and contribute close to nothing in the growth of costs over time (CBO 2008a).

Demographics

Demographics—in particular, the aging of the population—is another key cost driver that has been examined in health services research. Looking at a cross-section of the population, it is clear that older people spend more, primarily as the result of the development of multiple chronic diseases as people age. People age 65-74 spend 3 times as much as persons age 35-44, and people over age 75 spend 5 times more.

, in terms of health care cost growth, population aging represents a very small portion of cost growth. Estimates consistently suggest that the aging population explains only about 2 percent of the total increase in health care costs over time (CBO, 2008a; Reinhardt, 2003).

Lifestyle and Health Behaviors

Over the last few decades, the rise in obesity in the United States has generated great interest in the extent to which lifestyles and behaviors may impact health care costs and cost growth. Lifestyle and behavior can encompass a wide variety of factors—physical activity, eating, smoking, alcohol, substance abuse, use of motor vehicles and subsequent accidents, gun violence—and many more. Clearly trying to assess the impact of all lifestyles and behaviors on health care costs and cost growth is challenging.

One way to approach this, however, is to consider the simple equation outlined at the start. Studies that examine the impact of lifestyle and behavior on health care cost growth often approach the issue differently than studies that have examined technology or population aging. The most common approach decomposes cost growth into factors reflecting the prevalence of diseases, on the one hand, and the cost per person, reflecting the way disease is treated within the medical system, on the other hand. One primary way that the role of lifestyle or health behavior can influence cost growth, then, is through an increase in the number of people with an illness, the clinical prevalence. Many studies also assess this role by looking at the treated prevalence, because of the availability of data from hospitals and others treating illness. While treated prevalence brings in the possibility that factors other than the underlying illness are driving costs, the effect may be assessed by comparing different data sources on illness. Similarly, while the cost per person may be influenced by lifestyle and behavior (e.g., people may be getting more costly treatment because the severity of their life-style related illness is greater), most health services research suggests that illness severity can be controlled, and that much of the differences in treatment costs come from other sources. By looking at some recent research on obesity and costs, and overall illness prevalence and costs, a sense of the role of lifestyle is emerging. Over the last decade, Ken Thorpe has made a detailed examination on the role that obesity has played in the health care cost growth, highlighting what is likely one of the most critical lifestyle related factors for health care costs (Thorpe et al., 2004; Thorpe and Howard, 2006; Thorpe and Philyaw, 2012)

Thorpe's research estimates that over the 20 year period from 1987-2007, obesity accounts for approximately 20% of the total increase in health care spending; however, less than half of that is attributable to the rise in the prevalence of obesity in the population, with the rest attributable to changes in treatment patterns for

people with obesity. Thus, he estimates that obesity prevalence explains just 9 percent of the increase in health care costs during this period. An alternative analysis in the 2008a CBO report estimated a nearly identical percentage, concluding that the rise in obesity accounted for 8% of the total increase in health care spending from 1987 to 2001.

Looking at the impact in the prevalence of all disease, not just obesity and not just those related to lifestyle, further suggests the estimate that can be made of the role that lifestyle may play in cost growth. Roehrrig and Rousseau (2011) examine changes in prevalence and treatment intensity for all illnesses from 1996 to 2006. They find that increases in prevalence account for just 25 percent of overall growth in spending, with the rest—75 percent—related to the patterns of treatment and care for people that have the disease.

In summary, whether looking at one of the most important lifestyle-related diseases (obesity) or in looking at all diseases (both those related to lifestyle and those unrelated, for example those due to random or genetic causes), the increases in disease prevalence among the population accounts for an important, though not dominant factor, in health care cost growth. The rise in obesity prevalence may account for 8-10 percent of overall cost growth, with the rise in all disease prevalence accounting for approximately 25 percent. Thus, even attributing the entire disease prevalence rise to lifestyle, at least 75 percent of the increase in costs results from the choices made in treating disease. There is some uncertainty in that estimate, because some of the rise in prevalence may reflect treatment decisions that are driven by factors other than lifestyle and behavior. Similarly, some of the increases related to cost per case treated may be related to the severity of illness, a factor that may depend on lifestyle and behavior. Nonetheless, the research gives us some sense of the role of lifestyle and health behavior in driving costs.

Provider practice patterns

As indicated by the prior section, differences and changes in treatment have a significant impact on health care costs and health care cost growth. This idea is also significantly linked to the issue of technology and costs, as new technologies represent new treatment methods and lead to changes in practice and treatment intensity. This area is simultaneously one of the most agreed upon and controversial factors in debates on health care costs.

Health services researchers agree that treatment differences across geographic areas represent a significant factor in explaining differences in health care costs. The most well-known source of data here is the long series of studies based on the Dartmouth Atlas of Health Care showing wide ranging variation in health care spending across geographic regions in the United States (Dartmouth Institute for Health Care Policy and Clinical Practice, 2011). Much of that research was summarized and examined in reports by the Congressional Budget Office (CBO, 2008b) and the Institute of Medicine (2013). These and related studies show that spending in some

geographic regions is 2 to 3 times higher than in others, suggesting the potential that health care costs could be cut dramatically if other areas of the country adjusted their patterns of care to those of the lower cost areas. These analyses of differences in spending across regions at a point in time are closely related to the previously cited evidence on the links between technology and treatment intensity and the growth in costs over time. In all three cases, differences in costs and cost growth appear to be closely connected to decisions made in treatment.

The $64 billion (or bigger) question and the key controversy in this area of health services research is the underlying cause and the resultant outcome of those differences. While the Dartmouth research makes adjustments for the differences in population characteristics and health across geographic regions, recent research (Reschovsky et al, 2013.) has raised questions about the adequacy of these adjustments. If the geographic differences represent differences in underlying population characteristics, then the treatment differences observed may not reflect provider decisions about treatment.

Similarly, if the differences across locations and time reflect differences in the quality of care leading to better health outcomes for patients, at the very least these benefits must be considered along with the costs. As the more recent research on technology indicates, some technology is connected to health improvements, and some is not. Once again, the Dartmouth research and other studies have found little evidence that the higher spending areas demonstrate consistently better quality or better outcomes than other regions. However, our ability to measure differences in outcomes and quality of care remains limited.

Insurance Benefits

From 1940 to 1990, growing health care coverage and growing generosity of health insurance is likely to have been a key driver of health care costs. The studies reviewed in the 2008 CBO report estimated that insurance accounted for 10-15 percent of total cost growth. Other efforts to consider a more comprehensive estimate of insurance coverage (Finkelstein, 2007) suggest that health insurance growth may explain as much as 50 percent of total cost growth during this earlier period. Since the 1990s, however, insurance does not appear to be an important cost driver (CBO 2008a; Ginsburg, 2008). The number of uninsured persons has risen significantly, and the generosity of insurance coverage has declined. Thus, expansions of insurance coverage do not appear to be a key factor in more recent cost growth. As will be discussed later, different insurance designs, such as high deductible health plans (HDHPs) or Value Based Insurance Designs (VBID), can be used in an attempt to control health spending by influencing health care utilization [Fendrick, and Chernew, (2006); Bundorf, (2012)].

Income

One of the factors that can drive both the number of people who get treatment and the cost per person is simply the overall income of the individual or population. Numerous studies show that richer individuals and richer countries tend to spend more on health care (CBO, 2008a; Newhouse, 1992; Smith et al., 2009). The range of estimates in this area is large, from as low as 5 percent to as much as 23 percent of the total growth in health care costs has been attributed to increases in income. The most recent estimate from Smith at al. (2009) suggests that income growth may be responsible for 30-40 percent of the total increase in health care costs, making it one of the most important factors.

Administrative costs and waste, fraud, and abuse

Some observers have pointed to administrative costs and waste fraud and abuse as a key cost driver in the health care system, while others question its impact in size and in driving increases in costs (Woolhandler and Himmelstein, 2003; Aaron, 2003). In the 2008a CBO report, research suggested its role might be as high as 10-15 percent of cost growth in the U.S. health care system. While several studies have examined the amount of administrative costs, waste, fraud, and abuse, very few studies have looked at its change over time or link to overall health care cost growth, so a precise estimate seems difficult at this point.

Health care Prices

Whether looking at international data, data across different areas of the United States or data over time, differences and changes in prices charged by health care providers represent a significant factor in costs and cost growth. While previous research on international differences in health care often had to estimate price differentials as a residual (Anderson et al., 2003), the trend towards greater price transparency has started to reveal the key factor prices play in health care costs.

Reinhardt (2012), for example, presents data from the International Federation of Health Plans on its annual survey of prices paid by private insurers in different countries for standard health care procedures and products. The data illustrate the significantly higher prices Americans pay for similar services. For example, the average price paid by private insurers for a CT head scan in Canada is $65. In France, it is $179, while in Switzerland, it is $360. The average price paid in the United States by private

insurers is $464. Similarly, prices for coronary artery bypass graft surgery in other nation's ranges from $11,618 to $27,327. In the United States, the average price is $59,770.

Such price variations are not confined to international comparisons. The exact same data set shows wide variation in prices paid by private insurers in the United States for the same services. The lowest price paid by a private insurer in the United States for a CT scan of the head was $82, more than 80% below the average price paid by other private insurers in the U.S. This May, Medicare released pricing data for hospitals serving Medicare patients, revealing wide differences in prices charged by hospitals across the United States (Kliff and Keatin, 2003). Similar efforts to enhance price transparency by private organizations (Castlight, Blue Cross Blue Shield Association, FairHealth, etc.) are ongoing and also indicate significant variations in prices.

Most research indicates that within the United States, these price variations are closely related to variations in the marketing leverage and negotiating power of insurers compared to physicians and hospitals (Frakt et al, 2010; Reinhardt, 2010 and 20122, Robinson, 2004). In markets where hospitals and physicians are concentrated and have significant market power, prices tend to be higher. In those areas where providers have to compete against each other for a concentrated population insured by just a few insurers and employers, prices tend to be lower. Employers and insurers who have been able to effectively employ contract negotiations can leverage significant price discounts. In addition to their importance in regional differences in costs, research suggests that growth in prices represents approximately 10-20 percent of the total growth in health care costs (CBO, 2008; Smith et al., 2009).

Summary on Health Care Cost Drivers

In summary, the factors that drive costs in the United States are many and there still remain questions about the relative importance of the different elements. Disease prevalence, which would include the increase in numbers of persons with an illness associated with aging and lifestyle, as well as

other factors that drive health and illness, appear to explain only about 25 percent of the increase in health care costs. Treatment costs per person represents the other 75 percent, but this is a complex mixture of several factors: changes in technology, changes in practice patterns, changes in prices, changes in severity of illness, changes in malpractice, insurance coverage, administrative costs, and income. While research suggests that technology, income, lifestyle, practice patterns, and prices may represent the most important parts of these other cost drivers, there are still questions about their relative importance compared to illness severity and income and insurance related demand factors.

Summary of the Take Care of Your Health Initiative

The "Take Care" initiative is the first component in what appears to be a larger plan to change health benefits at Penn State University. The other components, which have been signaled in a press release, but the specifics of which have not yet been announced, appear to include the offering of multiple health plan options, including a high deductible health plan with a Health Savings Account (HSA) for those willing to accept more first dollar risk. Providing multiple plan options will reverse course from 2008 when the University strategically moved to a single plan option, the Highmark PPO, in an attempt to streamline administrative costs and avoid the need for cross-subsidies across plan options based on enrollees' risks. Other forthcoming changes appear to include employee premium and cost-sharing changes, differential cost-sharing for use of certain health care providers, most likely those affiliated with Penn State's own Milton S. Hershey Medical Group, and specific benefits that apply to employees diagnosed with certain conditions, including diabetes, high cholesterol, or hypertension. A press release dated July 25, 2013 (see http://news.psu.edu/story/282685/2013/07/25/administration/health-benefit-choices-value-based-design-offer-lower-cost) provides very general information about these additional benefits changes, which will take effect on January 1, 2014, but promised that more specifics would be announced in "late August" (as of September 6, 2013, these additional details have not been released). In addition, the University also announced in July that it was changing its policy on spousal or same sex domestic partner (SSDP) eligibility for health insurance benefits, requiring as of January 1, 2014, a $100 per month premium surcharge to remain on Penn State's coverage for eligible spouses or SSDP's that have access to health insurance from their own employers. There is also a planned tobacco use surcharge of $75 per month.

While specifics of these other benefits changes have not yet been released, details of Penn State's wellness program, labeled as the "Take Care" initiative, have been announced. This program includes three components and

requires employees to comply with all three parts (eligible spouses or SSDP's need only comply with two parts) in order for employees to avoid a $100 per month penalty in the form of a payroll deducted premium surcharge. These three components include completion of an online health risk appraisal (HRA) managed by WebMD, the scheduling and documentation of an annual preventative health exam with a licensed health care provider, and completion of a biometric testing battery (not required of employees and SSDPs), including blood work monitoring for cholesterol and glucose levels, blood pressure screening, as well as measurement of body mass index (BMI) and waist circumference (see http://ohr.psu.edu/benefits/benefits-enrollment/take-care-of-your-health/). As described above, there has been significant criticism that the "Take Care" initiative was not formulated based on well developed scientific evidence. In the next section, we specifically examine the scientific evidence base for wellness program and the three required components of the "Take Care" initiative, focusing on whether there is evidence that these requirements will both lower Penn State's overall health expenditures and/or result in health gains for employees and beneficiaries.

Scientific Evidence on Effectiveness of Employment Based Wellness and Prevention Programs

The scientific evidence for employment based wellness programs is a highly contentious area, and has become even more contentious since the Affordable Care Act of 2010 was passed (the nation's 'health care law' also known to some as 'Obamacare'), since the law included specific provisions to promote wellness and to allow employers to offer penalties and incentives for participation in employer sponsored health benefits programs [Mattke et al., (2012)]. Interestingly, most analysts attribute the ACA's focus on wellness to the Safeway Company, an employer that was touting cost savings due to its own wellness programs. As a Washington Post article later detailed however, the evidence from Safeway's program was found to be false [Hilzenrath, (2010)]. In addition, the wellness industry has grown significantly, with hundreds of vendors marketing their services to employers and making claims about potential cost savings and health benefits. In short, workplace wellness has become a big business for vendors that offer products and services, and for fully insured health insurance plans, or third party administrators of self-insured health plans, who face increasing pressure from employers to find solutions to the problem of health cost inflation.

The contentiousness of the evidence base on wellness is due to several reasons. First and foremost, while there is a growing scientific literature in this area, it is a literature that has yielded conflicting results, with some studies suggesting positive return on investment (ROI) to employer sponsored wellness programs and other studies showing a negative ROI. Some studies have found no differences relative to control groups. The same applies to health outcomes, with studies showing mixed results in terms of benefits of wellness programs to employees and their beneficiaries. Thus, the results from the myriad of studies that have been done, as well as several reviews of the

scientific literature, have not clearly demonstrated, in a way that is convincing to the scientific community, that wellness programs can generate a positive ROI with any degree of external validity [Mattke et al., (2013); Baicker et al., (2010), Horwitz et al., (2013); Lewis and Khanna, (2013)]. It is important to understand why the current scientific evidence on wellness programs is mixed. There are several factors that are highlighted in the literature, each of which are described below.

Definition and Measurement of the Wellness Program Intervention - A recent report by RAND**,** commissioned by the U.S. Department of Labor (DOL) and Department of Health and Human Services (HHS) found there is not a standardized or well accepted definition of what constitutes a wellness program [Mattke et al., (2013)]. As such, there is significant variation in the literature on the 'wellness interventions' that are studied. Variation in the intervention scope and breadth can easily lead to different findings about the cost and health impacts of wellness programs. The same RAND study has categorized wellness programs as including one or more of three types of activities including; a) screening activities to identify health risks; b) lifestyle management including primary prevention (e.g., weight reduction programs) and secondary prevention activities (including management of existing diseases); and c) health promotion activities (smoking bans, healthy options in cafeterias, occupational health interventions) [Mattke et al., (2013)]. Thus, the literature is full of evaluations of wellness programs where the intervention varies (i.e., includes one or more of these above categories) and importantly, where new wellness programs are added to situations where existing components of wellness programs already exist (as is the case for Penn State, where for the last several years Highmark has operated a disease management program called *Blues on Call*, in addition to other programs such as *My Care Navigator*, etc.). In fact, while there may be disagreement among entrenched camps about the value of wellness programs generally, most studies that do find a positive overall effect are clear to point out that there is very limited generalizable scientific evidence about the optimal components of a wellness program that comprise a cost-effective intervention for employers.

Measurement of Wellness Program Participation and Participation Intensity – A related but different issue than wellness program definition is measurement of employee participation in wellness programs. The literature is quite varied in how it measures employee wellness program participation and this variation, and the measurement error associated with it, can significantly impact estimated program outcomes. For example, some studies simply measure participation in any component of the wellness program, such as completing an HRA, while others go further and measure intensity and frequency of participation. A classic example is web based educational programs. Some studies simply identify if an employee logged on to a web page with educational content without capturing details of

whether they stayed long enough to read the content, whether they clicked through to subsequent materials, or if they digested the content provided, etc.

Single Case Studies – Much of the wellness literature is full of analyses from single employers that have rolled out wellness programs. While these individual case studies can be useful on the one hand, they are limited in terms of their potential generalizability to other employers for a number of reasons. These reasons include differences in health plan benefit designs, since the impact of wellness programs are very much dependent on the overall specifics of the insurance coverage of the employer. For example, a wellness program with a screening component that identifies newly diagnosed chronic conditions will have a different effect based on the generosity of the pharmaceutical plan. An employer with generous drug coverage will likely fare better since there are fewer financial barriers to medication compliance. An employer with no or low generosity drug coverage will likely fare worse since drug compliance has been shown to be poorer as drug insurance coverage decreases. This is a basic principal *of value based insurance design*, which has seeing growing attention nationally in the last decade [Fendrick and Chernew., (2006); Lee et al., (2013)]. Another reason why single case studies have limitations has to do with the motivation of the employer to initiate a wellness program to begin with. These reasons are often unobserved to the researcher and difficult to translate to other employers. For example, consider the employer with a workforce that inherently values employee health and wellness. The SAS Company has been heralded as an example of such a company, because in addition to its health benefits policies, SAS has a variety of other workplace programs related to stress reduction, lifestyle management, flexible work schedules, fitness facilities and concierge services available to employees [Kaplan (2010)]. But most employers are not like SAS and do not offer these other services. Thus, both the acceptability of a wellness program in this type of employer, as well as the likely results of the program, will most likely be much different than for another employer that has an entirely different culture and employee demographic.

Self Selected Participation in Wellness Programs – Similar to the limitations associated with single case employer studies, are concerns about the external validity of study findings when employees are given the option of voluntarily participating in wellness program activities. Quite simply, the concern here is that employees who voluntarily participate in wellness programs are different than most employees, likely in ways that are favorably correlated with program outcomes. As such, if studies only measure program effects on the subset of employees who willingly participate in wellness programs – as opposed to all eligible employees – there is concern that the results will be biased towards more favorable conclusions about the impact of wellness programs. Many studies in the existing literature have acknowledged the problem of selection bias. For example, a study published in 2008 that examined the impact of a wellness program initiated by Highmark stated the following:

> "Despite the growing body of evidence that worksite programs may achieve a positive ROI, heroic claims from such studies should be tempered given the problems of conducting rigorous economic evaluations in business settings. Many of the studies reporting savings compare health and productivity-related expenditures of participants with non-participants. Thus, many of these studies suffer from selection bias where healthier and more motivated employees are more likely to participate in programs than their less healthy and more costly counterparts. [Naydeck et al., 2008, p. 147]."

In the research literature, the problem of selection bias manifests itself in terms of study design considerations that involve identifying a suitable comparison group of employees not eligible for wellness programs. Sometimes these 'controls' come from the same employer population and other times they come from employees of 'matched employers' often using data from an insurance company providing access to de-identified records from many employers. Still, despite using statistical techniques such as propensity score matching to identify controls, there are concerns about whether the control groups contained in studies are suitable comparisons. Few studies have been able to use random assignment to wellness programs, which is one way to account for important influential unobserved characteristics, both because of the politics and challenges of randomizing wellness programs within a given employed population, and because many studies are done retrospectively and without good upfront research designs.

Simultaneous Changing of Other Components of Employer Sponsored Health Insurance Benefits – Another problem with the literature is the inability to control for other changes in components of the employer sponsored insurance program that can effect health care utilization, health care costs, and health care outcomes. In the simplest case, for example, a rich literature has documented an inverse relationship between health care utilization and employee cost sharing [Keeler, (1992); Newhouse, (1992); Newhouse, (2004)]. So if an employer that has initiated a wellness program simultaneously has increased employee cost sharing, in the form of higher deductibles, coinsurance or copays, an analysis of the wellness program that does not account for these cost sharing differences might attribute lower utilization and thus lower spending to the wellness program, when in fact the real attribution is due to the changes in cost sharing provisions of the insurance policy.

Measurement of Costs – Related to the point above, some studies of wellness programs only include employer/plan payments for health care utilization and not employee payments required due to cost-sharing. Since total payments for health care services include both employer/plan and employee paid amounts, both should be included. Yet several studies in the literature do not include employee payments or do not clearly indicate whether employee

payments are included, thus leading to concern about biased estimates of the impact of wellness programs, usually in the favorable direction.

Time Horizon Examined – To the extent that wellness programs are beneficial, many analysts believe that benefits are most likely to be realized over the longer rather than in the shorter term. In fact, wellness programs that pay for detailed screenings that lead to increased health utilization often experience higher health utilization costs upfront, with the hope for savings in the future. But these savings, should they exist, can potentially take years to realize, potentially accruing to other employers or the Medicare program. Many studies in the wellness literature have very short follow-up or post-intervention periods, suggesting that studies that find no effect may not have incorporated a long enough time horizon.

Positive Publication Bias – while the published literature on wellness programs does contain a mix of studies with both positive and negative findings, many reviews of the literature have pointed to the possibility that there are more studies with negative findings that have not been published. If true, the implication is that there are many more 'negative' results that have not been widely publicized, leading the published literature to be more favorably biased towards the success of wellness programs. Since many vendors and employers have a vested interest in their own wellness programs, these program sponsors may be less willing to share negative results than favorable results. Indeed, in a 2010 article, Baicker et al. state that, "it is difficult to gauge the extent of publication bias, with programs seeing high return on investment most likely to be written about and studies with significant findings of positive returns most likely to be published."

Underlying Logic or "Theory of Change" for Wellness Programs

In a recent review article on workplace wellness programs, Horwitz, Kelly and Dinardo (2013) conclude that workplace wellness programs may not reduce costs without being discriminatory, with discrimination occurring primarily through cost shifting to the most vulnerable employees, namely those from lower socioeconomic strata and those with the greatest health risks. The authors suggest that the expectation that workplace wellness programs will reduce costs is based on three key assumptions. First, that wellness programs can accurately identify employees with specific health risks and effectively target incentives to employees for participation in wellness interventions to address these risks more effectively than usual care (i.e., care without workplace wellness programs). Second, financial incentives to participate in wellness programs will lead to behavior change on the part of employees that will improve health. Third, improvements in health will result in cost savings for employers. In their article, the authors assess the existing research evidence related to these assumptions, focusing on well designed studies (e.g.,

experimental studies) related to four health conditions; smoking, hypertension, high cholesterol, and obesity, all of which are frequent targets of workplace wellness programs. The authors conclude, based on their review of the evidence, that, "program savings may not, in fact, derive from health improvements. Instead, they may come from making workers with health risks pay more for their health care than workers without health risks do (p. 469)."

The assumptions posited by Horwitz et al. for wellness programs to have a positive ROI for employers are important, and raise questions about how effective components of wellness programs, such as health risk appraisals (HRAs), biometric testing and education programs are at both targeting specific employees and changing employee behavior. For example, some analysts have suggested that Health Risk Assessments may actually do more harm then good, in terms of both increased costs and lower quality, (see http://thehealthcareblog.com/blog/2013/04/26/caution-wellness-programs-may-be-hazardous-to-your-health/). Importantly, as many analysts have argued, simply providing workers with information on their health risks will not necessarily change long established behaviors. Instead, as models of patient engagement and health behavior have illustrated, changing health habits is difficult, and is often a long incremental process that takes time, and most occur at a pace the employee is comfortable with **[**Mittler et al., (2013; Prochaska et al., (1992), and Hibbard et al. (2004)].

Another way to think about the logic of wellness programs is in a chain of continuous probabilities. The stated value of wellness programs is finding and treating the at risk employee who does not know he/she is at risk. But if the wellness program screens all employees, including those at risk but already in treatment, or those who have been previously screened (e.g., via an annual checkup), then such screening will add unnecessary costs since screening is not free. In addition, for savings to occur, those who are identified at risk through screening will include some that may never have a significant health event, or for whom that health event will not likely occur until the future, perhaps long after being employed by the screening employer. Thus, many analysts have suggested that screening of entire populations, including most employees who are already in active relationships with doctors, is highly inefficient. Some have advocated using claims data to identify, for example, employees without any health care claims in the past 2-3 years and to conduct outreach to this population only. Doing so might be a more efficient way of targeting those that wellness programs are seeking.

Summary of the Scientific Evidence on Wellness Programs

In summary, the literature on employer sponsored wellness programs is mixed. There are some studies that report favorable results while others report unfavorable results. There is a high degree of variation in how wellness programs are defined, how participation is measured, how the 'dose' of the intervention is captured and how study

designs are executed. There is a high degree of concern about external validity of any study, suggesting that any employer should be cautious about projecting the impact of their own program based on the existing scientific literature. In addition, there are many other important factors, such as other changes to health insurance benefits programs and the manner in which costs are measured, and over what time horizon, that impact the ability to project results for a given employer based on the scientific literature. As wellness programs appear to be increasing in popularity, hopefully more of them will be studied in a rigorous way, adding to the literature, so that applicability to other employers may increase.

Evaluation of the Evidence Cited by Penn State in Its Response to the Faculty Senate's Questions

Questions were submitted to the Penn State Benefits Office by the Faculty Senate in advance of its meeting on Tuesday September 10, 2013. On Thursday September 5, 2013, Penn State provided answers to these questions (see http://news.psu.edu/story/286134/2013/09/03/administration/health-care-changes-be-discussed-faculty-senate-meeting). One question specifically addressed the evidence base for the design of the "Take Care" program. In its response, the university references four studies as evidence for the proposed program. References for these studies are provided along with a short review and assessment of the evidence from each article.

Before reviewing the specifics of each of these studies in turn, two things should be noted. First, the university's response to the question cited only studies suggesting favorable outcomes of workplace wellness programs. The response did not include mention of studies that report unfavorable outcomes, including results from more recently published literature [for example, recently published studies in *Health Affairs* by both Gowrisankaran et al. (2013) and Horowitz et al. (2013)]. One study that is cited in the University's response as the "Harvard Study" was authored by Katherine Baicker and colleagues in 2010 and published in the journal *Health Affairs*. In that article, Baicker and colleagues report a positive return on investment of $3.27 in reduced health care sending per $1 spent on wellness programs. In addition, the authors report a positive return related to reductions in employee absenteeism, estimated to be valued at $2.73 per dollar spent on wellness programs. However, in a recent interview for a story on the Penn State "Take Care" initiative as part of NPR's *Marketplace* program, Baicker is quoted as saying that "it's too early to tell whether wellness programs pay off". Baicker continues to say, "We'll find out the answer better as more employers experiment with these programs, and we see what happens to the participants' weight [and] blood pressure". The fact that there is uncertainty among a highly regarded

Harvard researcher and author of one of the studies cited in Penn State's response, underscores the conclusion identified above – that the evidence regarding workplace wellness programs is inconclusive and controversial. Indeed, when one reads beyond the abstract of Baicker et al.'s 2010 study, the authors report that there are important caveats listed in the limitations section suggesting caution when projecting to other employers. For example, the authors state; "Our analysis cannot address the important question of which attributes of wellness programs are most important, and how such programs should be optimally designed. Well-designed field experiments that compare the effectiveness of program components such as patient education and professional counseling across different industries and populations are needed to answer it [(Baicker et al., 2010, p. 7)]."

Published Evidence from Highmark

The university's response to the Faculty Senate question on evidence references two published Highmark studies as evidence for the proposed "Take Care" program. The study published in 2011 [Naydeck et al., (2008)] examines the impact of a wellness program initiated by Highmark for its own employees in 2002, estimating the impact of the program on costs for four years after wellness program implementation, and calculating an overall ROI. Reported results suggest an overall ROI of $1.76 for every $1 spent on the wellness program. Specifically, the authors estimated that wellness program participants had annual health care expenditures that were $176.47 lower than those that did not participate in the wellness program, with the majority of the savings resulting from lower hospitalization costs ($181.78) for program participants versus non-participants. While this study is interesting, there are a number of limitations related to the categories identified above in the overall assessment of the literature. One limitation, as the authors identify, is the possibility of error when assigning wellness program participants into various intervention categories. Other significant limitations relate to the fact that the main study results excluded payments made by employees due to cost sharing, such as copayments and deductibles, an important issue identified above for many studies in the literature. Related, to this, the study reports little detail about how employee cost sharing changed between 2002-2006, raising concern about potential endogeneity between wellness program implementation and benefit design changes.

There are a number of specific limitations for Penn State in using the results of this study as evidence for its proposed wellness program. First, the program studied was initiated over ten years ago, and thus there is more recent evidence in the literature, and the field of wellness has expanded since in important ways, particularly in the use of electronic devices and online tools. Second, Highmark, as a health company, may have a different culture and employee demographic relative to Penn State. Second, Highmark has a business incentive to demonstrate that their program was effective, since they sell wellness services to their clients. Third, the specific wellness intervention adopted by Highmark is different than that proposed in Penn State's "Take Care" initiative in one very important way that effects both expected program benefits and actual program costs. Specifically, in addition to an HRA and biometric screening, as well as other educational programs, Highmark made a significant investment to open "state of the art" fitness centers at its Pittsburgh and Camp Hill locations, reporting a cost of $577,000 to open the Camp Hill center (costs for the Pittsburgh center are not reported). These fitness centers were available to employees (presumably free of charge), something absent from Penn State's proposed wellness program, suggesting a lack of comparability with Penn State's proposed "Take Care" initiative.

The second Highmark study, published in 2011 [Williams and Day, (2011)], attempted to examine the impact and value of "web based wellness program components" added to existing wellness programs during the period of 2004-2007. The study utilized employees of employers with Highmark coverage that adopted the web based wellness features (the treatment group) and compared outcomes relative to employees of other employers with Highmark coverage that did not adopt any wellness program components (the control group). The results showed lower costs for program participants relative to non-participants, and also suggested that web based content can have value. Like the previous study however, there are a number of limitations. Limitations include measurement of program participation, whether employee out-of-pocket costs were accounted for in the overall costs of the wellness program, and a lack of details regarding important differences in benefit designs across the employers of the employees included in the study sample. All of these are important issues in the literature generally, as identified above and as such pose significant caveats for Penn State when translating the potential impact to its own employee population in 2014 and beyond.

The final study identified in the University's response to the Faculty Senate question, is a report from the Centers for Disease Control's Task Force on Community Preventive Services [Task Force on Community Preventive Services, (2010)]. The report, which is entitled, *Recommendations for Worksite-Based Interventions to Improve Worker's Health*, assessed the value of workplace Health Risk Assessment Programs (e.g., HRAs) and other commonly used workplace interventions such as smoking cessation policies and immunization initiatives. Like most of the literature, the task force's recommendations are mixed regarding the effectiveness of these various workplace interventions. For example, the task force found insufficient evidence for the value of assessments of health risks with feedback (AHRF), where AHRF is defined to include the following three elements, according to the report (page S233): (1) the collection of information about at least two personal health behaviors or indicators; (2) translation of the information collected into one or more individual risk scores or categorical descriptions of risk status; and (3) provision to the participants of feedback regarding their risk status, either overall or with respect to specific risk behaviors [Task Force on Community Preventive Services, (2010)].

In its review, the task force indicated that there was insufficient evidence about the effectiveness of AHRF's when implemented alone as a primary intervention. For example, the task force explained:

> The Task Force finding of insufficient evidence to determine effectiveness is based on concerns with recurring combinations of flaws in individual studies across the body of evidence. The most important concern was the paucity of comparative studies in which the intervention was offered to one defined population and outcomes compared to another defined population that received a lesser (or no) intervention. Many of the studies identified in this review provided the intervention of interest (AHRF alone) to the "control" arm of a trial that was primarily intended to evaluate the effectiveness of a more comprehensive intervention that included AHRF as a single component. The absence of measurements from a relevant concurrent comparison group in these studies raised the potential for bias in the estimated intervention effects, particularly for self-reported changes in behavior. Most studies analyzed only a small subset of participants for whom there were complete follow-up data, which may have favored the inclusion of results from individuals who had changed their health behaviors in the interval. [Task Force on Community Preventive Services, (2010), page S232]

While the task force found that AHRF by itself was not supported in the published evidence, the task force did recommend AHRF when combined with meaningful health education programs. When combined with well developed health education programs, the task force found the potential for positive outcomes related to a number of behaviors, including tobacco and risky alcohol use, increased physical activity, and other behaviors. Of key importance is what constitutes meaningful health education as studies have shown that the design and delivery of workplace education programs can vary tremendously. Thus, for Penn State, the value of the health risk appraisal and biometric screening may hinge greatly on the quality of, and take-up of, other educational interventions or offerings, yet details about plans for these additional program and benefit design changes are scarce at the moment.

Alternative Approaches to Addressing Employment Based Cost and Health Concerns

As noted in the review of cost drivers, some significant portion of health care costs and health care cost growth are related to the ability of the employer/insurer/purchaser to negotiate and reduce prices and to identify and remove inappropriate practice patterns, particularly those areas where services are overused and contribute little to improving health. Assessing whether an employer like Penn State is effective or could do more in this area is very complex, especially in light of the overall lack of price, use, and quality transparency in the United States and Pennsylvania. Nevertheless, there is some mixed evidence regarding the opportunities for such an approach and a wealth of options that have been explored by others, few of which appear to be part of Penn State's current effort.

Evidence on opportunities for cost savings through reduced price and more effective use

Without a detailed opportunity to access Penn State's data, as well as compare its data on health care prices and use to other purchasers in the area, it is difficult to draw conclusions about the opportunities to negotiate better prices or improve treatment patterns. In addition, Penn State operates in a complex market environment. Its largest campus in University Park plays a dominant employer role in the market, easily the largest employer in the region. While this would typically give an employer great leverage to lower prices, Penn State faces one major hospital in town, Mount Nittany Medical Center, which has an affiliation agreement with Penn State's Hershey Medical Center, 90 miles to the south. In addition, MNMC recently purchased the major physician group practice in State College, transforming to an integrated delivery system called Mount Nittany Health System (MNHS). Thus, effectively, in economic terms, the local market best resembles a bilateral monopoly, with Penn State the dominant payer and MNHS the dominant provider. Economics suggests such an arrangement can have a wide array of outcomes, including excessive pricing, skimping on quality and/or quantity of services, and even prices established so low that they harm quality of care. Complicating that basic economic model further, Penn State has an obvious interest not only as a payer, but as a major provider of care, both through its affiliation with MNHS and through referrals and direct care to HMC. Penn State also has executed plans to develop a regional medical campus, bringing clinical training and clinical research opportunities from Hershey to State College.

Penn State also operates more than 20 other campuses across the state, with a diverse array of locations from highly rural to urban. In some cases, Penn State is a major employer in negotiating with hospitals and physicians in those areas. In other areas, Penn State has little to no effective bargaining power.

Thus, caution is warranted about generalizing about the opportunities that might exist for Penn State to negotiate better rates and/or influence practice patterns However, several pieces of evidence from national and state data suggest that these options should be explored:

Prices

- Data released by the Centers for Medicare and Medicaid services and analyzed by the Washington Post showed that Pennsylvania hospitals, along with hospitals in 5 other states, charged Medicare the highest prices in the country (Kliff and Keatin, 2013; Meier, et al., 2013)
- While these same CMS data indicate that Mount Nittany generally charged Medicare significantly below average rates, Hershey Medical Center consistently charged above average Medicare rates.
- A recent analysis of hospital price increases by the insurance trade group, America's Health Insurance Plans (AHIP), showed that Pennsylvania inpatient hospital price increases were among the highest in the nation from 2008-2010, averaging 8.4% per year.(Lemieux and Mulligan, 2013)
- Recent data from the Pennsylvania Health Care Cost Containment Council (PHC4) indicates that MNMC operating costs grew 13.76% per year from 2009-2012 compared to an average for other hospitals in the region of just 5.86%. Similarly, HMC operating costs over the same period grew 10.54% compared to the overall regional average in that area of 3.11%. During this period MNMC had an average total margin of 12.35% (compared to a regional average total margin of 8.2%), while HMC had an average total margin of 9.32% (compared to an average margin in the region of 7.76%). (Pennsylvania Health Care Cost Containment Council, 2013).

Treatment patterns

- Research by the Congressional Budget Office suggests Pennsylvania is among the states with the highest level of practice related variation in health care costs (CBO, 2008b)
- The comprehensive report by the Institute of Medicine (2013) also finds Pennsylvania is among the highest cost regions in the nation, after controlling for differences in the underlying population factors.
- Numerous studies (Emanuel and Fuchs, 2008; Emanuel, 2012, Ginsburg, 2008; Miller, 2013) show overuse and misuse of many medical procedures is common and contributes both to unnecessary costs and potential patient harm. In fact, agreement about such overuse is so widespread that the American Board of Internal Medicine (ABIM), in collaboration with more than 50 other physician specialty societies, has started a campaign, called "*Choosing Wisely*", which now provides a list of medical tests and procedures that

patients and physicians should question before using. The full list is now 56 pages long (see www.choosingwisely.org).

In summary, while availability of data (to the authors) makes a comprehensive analysis of the opportunities to address Penn State's cost growth problems through reduced prices and more effective use impossible, available data on prices and use of services in the region suggests there may be opportunities worth exploring. What sort of options have innovative employers been exploring?

- Reference Pricing and Centers of Excellence: Reference pricing and centers for excellence are an increasingly common approach to establishing prices for services to be paid to health care providers, especially hospitals (Robinson and McPherson, 2012). Using both public and private data sources, employers and payers identify one or more high quality provider who is also cost-effective and then benchmark their prices to all providers on that provider's price and/or direct the majority of in-network care to that provider. To cite on example, the CalPERS, the California payer insurer for retirees from state government, found its range of payments for knee surgery ran from under $20,000 to over $100,000. They identified a group of high quality providers performing the surgery for $30,000 or less, and told other providers they would no longer pay any more than $30,000. The system reported that "…use of lower-priced quality hospitals increased by 21% and use of higher-priced hospitals decreased. Moreover, the higher-priced facilities reduced their prices by 34% in order to avoid losing patients. As a result, CalPERS saved $2.8 million and its members paid $300,000 less in cost-sharing." (Miller, 2013)
- Price Transparency: With a growing body of data available on prices, some employers are pushing a price transparency approach for patients. This can take a number of forms, including providing physicians with the prices patients will pay when they are referred to other providers or for tests, providing patients with online data resources so they can examine prices of

physicians, hospitals, and other providers before choosing care, and many more. Since the availability of such data is still limited, evidence for its effects is unclear.

- Bundled/Episode/Global Payments: The U.S. health care system costs are often driven by a payment system based on the number of services provided. Such fee-for-service systems have well known inflationary effects, and many payers have moved away from such systems over the last 30 years. Still, many private payers still use these payments for much of their hospital and physician care, and movements to eliminate such payments and provide all care within a bundled approach- a payment for an acute episode of care and/or a global, upfront bundled payment for individuals with chronic illnesses, can have dramatic impacts on generating cost effective care by providers.
- Competitive Bidding: More and more payers are using a competitive bidding process, especially for health care products and medical devices. When Medicare shifted to this approach for the purchase of wheelchairs, its costs dropped by more than 40%. Competitive bidding approaches appear to be effective for devices, laboratory tests and some diagnostic services (Emeanuel et al., 2012)
- Quality Improvement and Quality Based Payment: Tying payments to quality measures and working collaboratively with providers on quality improvement efforts is an approach that is rapidly growing among innovative payers (Rosenthal, 2008). Many public payers will no longer pay for the costs of care associated with medical errors, hospital acquired infections, and other areas where the provider clearly increased costs through errors. Private payers are increasingly incorporating these approaches into their payment systems, too. An aggressive payer effort to pay on quality (as well as use reference pricing and other methods) can spur independent efforts by providers towards quality improvement and spark opportunities for collaborative quality improvement efforts. Such efforts can lead to significant cost savings. For example,

Intermountain Healthcare, an integrated delivery system in Idaho and Utah, details how a number of its quality improvement efforts since 1987 have helped them keep cost growth low (James and Seitz, 2011).

The effort to reduce health care costs by an employer requires ongoing diligence to address all of the major factors that drive health care costs. Focusing only on one aspect of these cost drivers—whether prices, treatment patterns, lifestyle changes or any single factor—is like trying to win the battle with at least one hand, or even both, tied behind one's back. The best approaches seek to apply a range of efforts across several cost drivers, rather than a myopic focus on one.

While the approaches that might be taken by employers are described somewhat generally in this section, it is important for Penn State to know that there are numerous applied examples of these things happen by employers and their third party administrators and health plans all across the nation. Thus, these approaches have advanced beyond merely theory, to action, and thus there are many good examples that Penn State could learn from. As a more specific example of one approach, we provide more details below about one possible change in insurance design, known as High Deductible Health Plans (HDHPs).

Example: High Deductible Health Plans:

High-deductible health plans (HDHP) have experienced substantial growth in recent years, with enrollment tripling between 2006 and 2012 (Kaiser Family Foundation, 2012). As of 2012, 34 percent of workers with employment-based coverage were enrolled in a plan with an annual deductible exceeding $1000 and 14 percent were enrolled in a plan with a deductible of $2000 or more (Kaiser Family Foundation, 2012). Continued growth is expected, both in response to increasing health care costs and as a means of averting the tax on "Cadillac" health plans scheduled to take effect in 2017 under the Affordable Care Act (Buntin et al., 2011).

HDHPs have been shown to be effective at reducing the growth of health care costs, at least in the first few years after adoption. Importantly, these reductions reflect more than the costs shifted to employees; total costs – the sum of

those borne by the employer and the employees – fall as well. Evidence from the best-designed studies suggest that overall health care expenditures are 5 to 14 percent lower among HDHP enrollees than among comparable employees enrolled in traditional plans (Bundorf, 2012). Research on how HDHPs affect expenditure growth over a longer time horizon has been hampered by the relatively short follow-up periods available in most studies and remains an open question.

A key concern with HDHPs is that the imposition of a higher deductible will lead enrollees to indiscriminately reduce their utilization of necessary medical care, especially preventive care, which requires that individuals incur costs immediately in exchange for benefits that may only be realized, if at all, far in the future. Although there appears to be a consensus that HDHPs reduce overall expenditures, existing evidence is more equivocal with respect to the impact such plans have on the utilization of necessary and preventive medical services. For example, some studies have found that consumers maintain utilization of necessary care despite higher out-of-pocket costs (Reiss et al., 2011; Wharam et al., 2008), while others have documented declines in essential services, such as high-severity emergency department visits (Kozhimannil et al., 2013) and cancer screening (Wharam et al., 2011). Many employers have sought to address these concerns by exempting preventive and other high-value care from the deductible.

What Has Been the Return on Investment to Penn State's Exclusive Ten Year Relationship with Highmark?

In 2007, Penn State and Highmark highly publicized a decision to develop a ten year exclusive relationship in which Highmark would be the third party administrator of Penn State's entire health benefits portfolio (see http://news.psu.edu/story/197690/2007/03/07/highmark-penn-state-penn-state-hershey-medical-center-announce-10-year). This relationship was touted as one that would create efficiencies for the university and save Penn State money in its overall employment health benefits trends, as well as other promises, such as improving the health and wellness of the Penn State employee population and anticipated benefits for research. An important question is what value Penn State has received from Highmark, now when seven years later, Penn State is still experiencing unmanageable cost increases related to its health benefits program? This question is particularly important in light of the fact that Highmark has been implementing a number of programs designed to better manage the health and costs of the Penn State population. These include disease management programs labeled *Blues on Call*, a pharmacy benefits management program, a quality improvement program, and a health care navigator program called *My Care Navigator.* In addition, Highmark has conducted predictive modeling of claims data to better identify those with the most significant health risks in the Penn State population, with the goal of bringing them in to care management. Thus, before moving forward with yet another program recommended by Highmark, the university should seriously consider, and quantify, whether it has received value from this relationship to date.

Suggestions/Recommendations for Moving Forward In Light of Penn State's Mission

As a land grant institution committed to both discovering and disseminating important scientific evidence to address pressing societal problems, Penn State has the opportunity to provide valuable lessons to other employers wrestling with the continued high cost of health care benefits. As the literature summary above has concluded, while there is optimism about the potential for employment based wellness programs, the current evidence is mixed due to a variety of factors. Many of these factors related to the research design employed, with most studies lacking important design characteristics to be able to definitively answer key questions, such as what are the essential components of wellness programs, and how important are wellness programs relative to other alternatives for addressing cost concerns. By recognizing the limitations in the existing literature, and incrementally testing different interventions, Penn State has an opportunity to lead the way in understanding what works in terms of more effectively providing efficient and affordable employment based health insurance. By taking a more conservative yet measured approach, and collaborating with the research expertise and health across the university, Penn State can provide significant benefit to society in this area. In addition, Penn State Hershey has the opportunity to set itself apart from other health care providers, by serving many employers and other health care payers, by using research and clinical and behavioral science to manage population health in a cost-effective way.

The scientific evidence base suggests value in revisiting Penn State's expectations regarding cost and health outcomes for its proposed "Take Care" initiative, to avoid the unpleasant surprise associated with the possibility that the program will actually increase university costs and further decrease employee morale. However, if the administration insists on moving forward with these changes, despite the evidence base, the university should commit to a rigorous independent evaluation of its program. This evaluation will be important for informing the broader employer community, but also for reconciling the overall effects on employee compensation that the program may have. Stated differently, if the program does not succeed at reducing costs, employees want to be assured that these increased costs are not passed on to employees in the form of job layoffs or lower wage growth. Given the high degree of skepticism and distrust in the employee population over this proposed program, it seems reasonable to recommend that the university commit to a serious, rigorous, and scientifically sound, independent evaluation. This suggestion is particularly important in light of the close relationship that Penn State has with Highmark, and the vested interest that both the insurer and the university have in the "Take Care" initiative. In a response to a question asked by the Faculty Senate, the university indicates that Highmark will evaluate the success of the "Take Care" initiative. Since Highmark was involved in its design and will be involved in its implementation, it would not be good fiduciary responsibility to have Highmark evaluate the program, nor would it be responsible to have Penn State's

administration evaluate the impact of the program. Thus, a credible third party, either internal or external to the university, would be the only acceptable option for the faculty and staff should the "Take Care" program move forward.

Important Questions for the PSU Administration

In light of the scientific evidence base for workplace wellness programs, as well as the broader facts regarding key drivers of health care inflation, and other alternatives being implemented by employers and other purchasers nationally to control health care costs, the following is a list of questions for the Penn State administration regarding the planning, design and assumptions of the proposed "Take Care" initiative. In the interest of transparency, something the university has apparently committed to, it would be beneficial for the University to provide Penn State employees and retirees with specific answers to these questions.

1. What specific methodology did Penn State use to make a return on investment (ROI) calculation for the "Take Care" initiative? Specifically, what were the per-beneficiary program costs and what are the assumed savings in reduced health care utilization? Were savings resulting from reduced university spending due to proposed future changes in beneficiary cost sharing included? Are there any improvements in health status that are monetized and included as part of the ROI calculation? Did the methodology account for the imprecision in estimates from the wellness literature, and thus reflect a worst case, most likely case, and best case scenario? What discount rate was used to compute a net present value for future savings and expenditures?
2. Did program administration costs include all of the fees paid to consultants, including WebMD, and Penn State's third party administrator, Highmark BlueShield?
3. The 2008 Highmark article by Naydeck et al. estimates annual savings per employee of $156. If this is the expected savings from participation in the wellness program, then why is Penn State imposing a penalty of $1,200? Shouldn't the penalty be consistent with the expected value of the savings for a program participant?
4. Given Penn State's exclusive ten year agreement with Highmark BlueShield (see http://news.psu.edu/story/197690/2007/03/07/highmark-penn-state-penn-state-hershey-medical-center-announce-10-year), why has Penn State's health benefits expenses been increasing at double digit rates, as reported in the communication by President Erickson (see http://news.psu.edu/story/283812/2013/08/09/administration/presidents-message-explains-health-care-benefits-changes-penn)? Why hasn't Penn State been able to work with Highmark to address this cost

inflation now seven years into that exclusive relationship? If wellness programs are really believed to be the solution, why did Highmark and Penn State arrive at this decision much earlier? What evidence is there that Penn State has benefited from this exclusive relationship with Highmark over the first seven years of this relationship?

5. Given the rapid rise in costs and the high profit level of two of the main providers of hospital care for Penn State employees, what has Penn State done to drive health care providers to operate more efficiently, reduce inappropriate care, eliminate waste, and supply high value health care?
6. What data have Highmark and Penn State examined to identify the impact of underlying prevalence and cost per case on the University's rising costs, why have those data not been shared in a transparent way, and what does that evidence show about the success or failure of Highmark and Penn State in reducing unnecessary variation in treatment costs?
7. What have Penn State and Highmark done to explore and implement efforts to control excessive prices in the region through reference pricing, competitive bidding, pay for performance and other innovative approaches?

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