

## **Disease Management Programs: Can Savings Ever Be Validated?**

By

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### **Introduction**

There is a shift of paradigms afoot in managing the cost of health care. In the 1980's and 1990's the focus was on managing supply side costs (utilization and unit costs for physicians and hospitals). Today, the focus is shifting to consumers – or the demand side. Most of us can easily acknowledge that Americans can – and should – take better care of their health. But how can savings from programs reinforcing demand-side strategies be captured and, more importantly, validated?

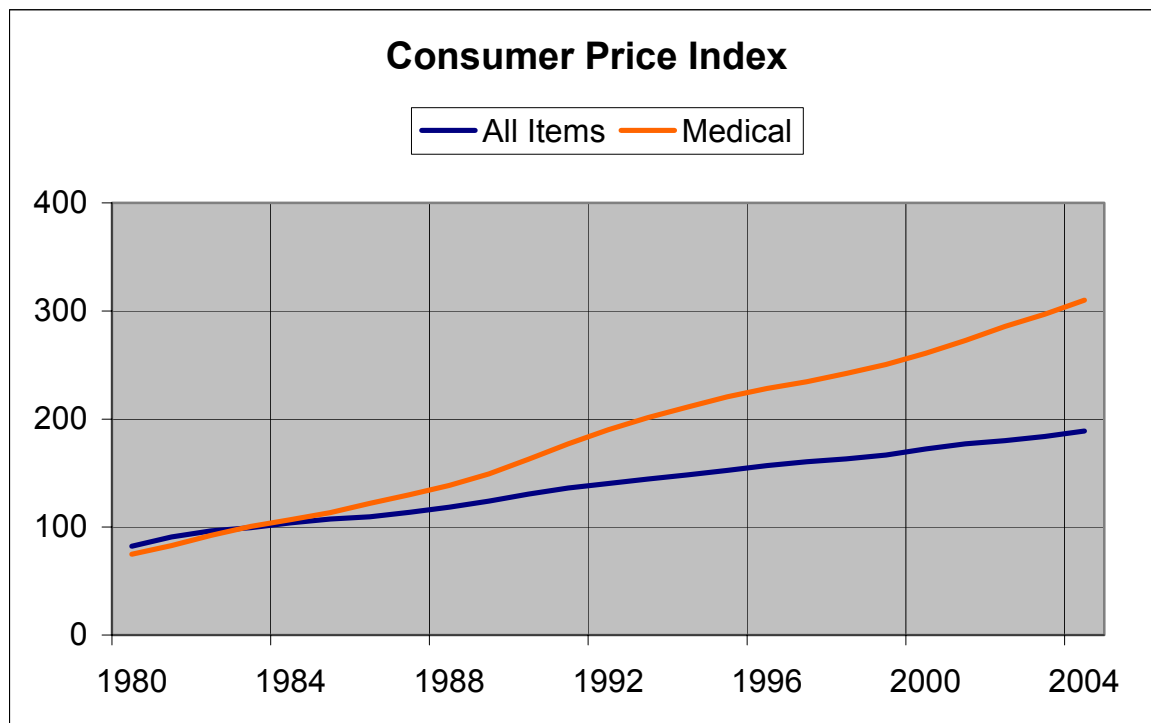
Demand-side strategies include programs to help those who are currently healthy remain so, and to move those who are ill (episodically, chronically and catastrophically) toward better health. Disease management is one of those strategies; it seeks to empower those with chronic illnesses to take better care of themselves by adhering to the tenets of evidence-based medicine.

Disease management usually involves a combination of nurse counseling and communications. The disease management industry is coming of age and starting to develop a competency in measuring the value of programs. Even as these competencies develop, there is controversy about appropriate measures, algorithms used and reliability of data.

This article provides a strong case that savings from disease management programs in particular, and care management programs in general, can be captured and validated using conservative actuarial methodology.

### **Influencing the Supply Side of Health Care:**

Increases in health care costs significantly exceed the inflation rate for most other goods and services. As a result, business profits are eroded by health care expenditures.



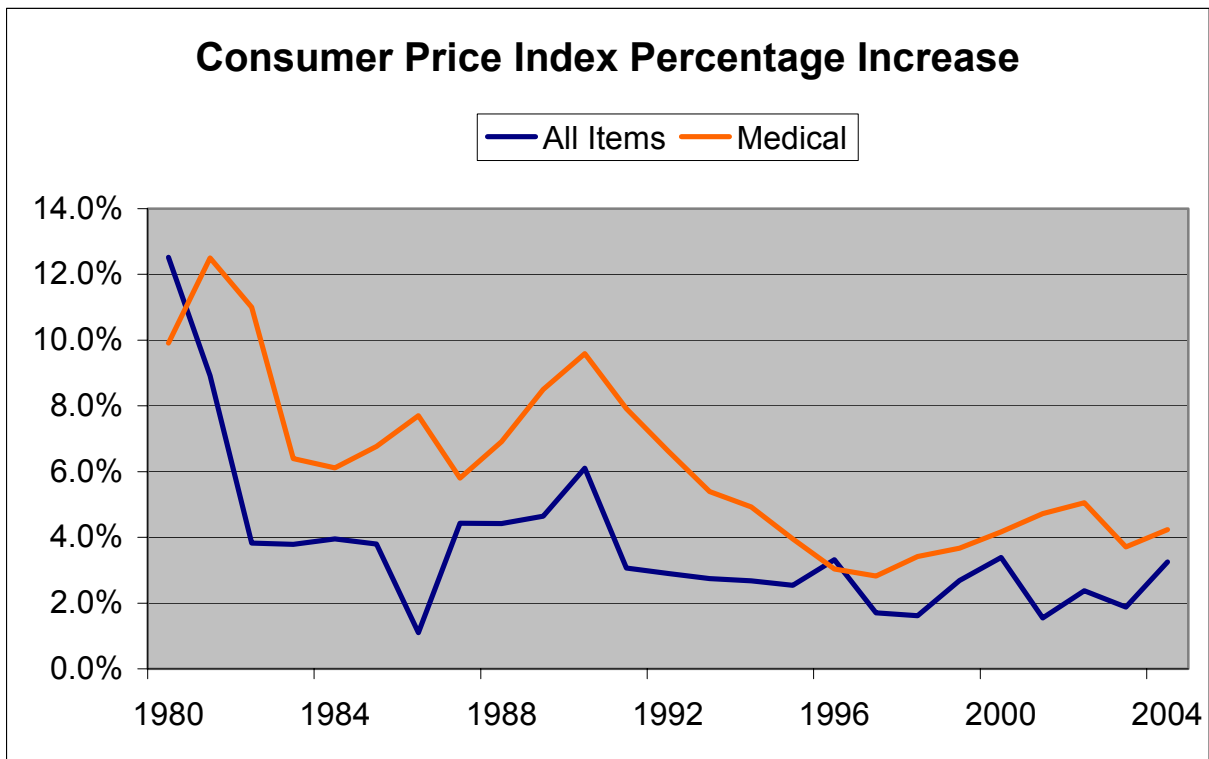
THE WIDENING GAP: MEDICAL INFLATION VS. THE CPI-U.

Faced with similar issues over the past two decades, employers have developed supply-side responses to ease the situation. In the 1980s, employers drove down costs by using preferred contracting. This strategy produced temporary relief in cost increases and brought Preferred Provider Organizations (PPOs), Health Maintenance Organizations (HMOs) and Point-of-Service (POS) plans into being. Unfortunately, a few years later, prices returned to levels that significantly outpaced inflation again.

Managed care, in its various forms, was implemented during the mid 1990s to keep health care costs under control. Managed care was effective in reducing utilization of the health care system and keeping costs virtually flat for many employers. Unfortunately, some of the more draconian measures led to litigation and “horror stories” leading to a retreat from this strategy. Employers and health plans eased the constraints put in place by managed care and health care costs began to steadily rise.

### **Health Care Increases Exceed Consumer Price Index**

Historically, annual health care costs exceed the increase for general goods and services, but the consumer price index for medical services has generally been within a few percentage points of the consumer price index for all goods and services.



There are at least three factors that have driven health care cost increases to exceed general inflation:

1. Changes in utilization – The increase in the frequency of medical procedures and prescriptions written. After significant decreases in utilization during the era of managed care, many utilization statistics have risen significantly over the past five years.
2. Advances in technology – Newer procedures and equipment are more costly than previous measures [e.g., magnetic resonance imaging (MRIs) replacing computed tomography scans (CTS) replacing plane X rays].
3. Cost shifting – Physicians and hospitals have shifted costs from fixed or discounted payers (e.g., Medicare or Medicaid) to reasonable and customary payers (e.g., self-funded health plans or health insurers).

There are other factors at play too:

- An aging population.
- America becoming increasingly overweight.
- Providers doing more testing and using higher-cost technology as they practice defensive medicine.

- Purchasers looking for new strategies. We believe this decade is the decade of “consumerism and wellness”. Unlike the past two decades, this decade focuses on the demand side. Consumerism is focused on making the health care system more transparent to employees, thereby enabling them to become wiser consumers of health care. Conversely, in the past two decades, supply-side remedies were applied to the problem.

Wellness plans are designed to make individuals more aware of their health and life-style while providing them with actionable solutions to maintain or improve their health. Disease management programs provide support to those with chronic illnesses where the individual’s actions are significant in controlling symptoms and progression of the condition. The success of both of these programs is predicated on changing the individual’s behavior.

Employers who have implemented one or both of these approaches have seen slowing in their annual increases of health care costs. They have generally not seen immediate reduction in annual increases like those seen when a managed care plan or a network was implemented in previous decades.

People are slow to change. Moreover, the effects of a behavioral change are often slow to develop. Imagine a cardiac condition that has developed over a lifetime. While simple dietary changes, weight reduction, exercise and smoking cessation will have significant impact, the impact to claims experience will be seen on a three- to five-year horizon. A disease management candidate needs to be identified, enrolled, and engaged in a program before an analysis can be done to validate any positive changes in behavior or health status.

Employers faced with aging populations, lower turnover, and no short-term “silver bullets” in their cost management weapons cache have implemented care management programs.

The business case for this demand-side solution is simple: Improving the health of employees will reduce health care costs. The validation of this proposition is not nearly as simple. The industry has become accustomed to measuring the impact of supply-side predecessors, where changes in fee schedules or utilization statistics could be quickly analyzed.

Last fall, the Congressional Budget Office (CBO) released a study, "An Analysis of the Literature on Disease Management Programs," in response to a request from Sen. Don Nickles, R-Okla., to determine the impact of disease management programs in reducing the overall cost of health care and how those programs might apply to Medicare. The cover letter for the study indicated there was insufficient evidence to conclude disease management programs can reduce overall health spending.

## **Inherent Flaws in Disease Management Savings Calculations**

Few people within the health care industry were surprised by the CBO's findings. The methodologies employed to provide financial justification for wellness and disease management programs has been debated widely. The lack of standardized (and credible) return on investment (ROI) methodology in the market has caused significant confusion among purchasers and consultants. While industry organizations have encouraged standardization, there is still a wide array of methods being utilized. While all methods have specific strengths and weakness, virtually all methods are prone to the following flaws:

### *Law of Large Numbers*

Mathematically, the credibility of a study increases as the number of participants increase. There is a large variance in potential dollars of an individual's annual health care claims (e.g., \$15 for a generic prescription vs. several hundred thousand dollars for a catastrophic claim). Complete credibility for analysis of an employer's total health claims is generally not attained until there are approximately 2,000 employees.

When studying a specific disease, such as congestive heart failure, atrial fibrillation, stroke or peripheral vascular disease, two additional challenges arise. First, the variance in claims dollars for a given disease is greater than the variance in aggregate dollars as interventions increase. For example, an appropriate intervention for coronary artery disease might vary from a recommendation to take a daily low-dose aspirin to stent implantation. In the aggregate, most members will have annual claims of less than \$1,000. This means an even greater number of participants are required to assure credibility.

Second, congestive heart failure, atrial fibrillation, stroke and peripheral vascular disease generally have a prevalence rate within a business of less than 0.5 percent. Thus, for an employer with 2,000 employees (and 2.3 members per employee) it is likely that only 10-25 members will be afflicted with any of the diseases mentioned above. Furthermore, the number of members who would actively be engaged in a program may be less than half of that number. While we can agree that good health matters, not all people are ready to make changes to their personal health habits, not even in the face of a chronic disease.

Diabetes and asthma, which are also commonly managed in disease management programs, have incidence rates in the three- to five-percent range. Even with these greater incidence numbers, it's generally necessary to have a group of 20,000 or more members to attain a level of mathematical credibility for meaningful analysis.

### *Lack of Control Group*

The “gold standard” of the scientific method requires the use of a control group. In this scenario, one group receives the treatment under study, while a matched group receives no treatment. This is virtually impossible in health care as each member has a different health status and family history. Moreover, there are ethical issues attached to withholding an intervention from those who could benefit from it.

Making the best of a less than ideal situation, studies of wellness programs often compare participating groups to non-participating groups. Unfortunately, this strategy is ineffective as there is an inherent selection bias for disease management programs.

In virtually every instance, members electing to participate in a disease management program have higher claim dollars – and are more severely ill than those who refuse to participate -- during the most recent 12 months. This means those who perceive a greater need for assistance are more receptive, but the impact of changing health behaviors is not as great. Members who are not yet severely ill may actually be more in need of assistance to avoid progression of their disease. A review of data from SHPS’ disease management program consistently shows participating and non-participating groups are not equivalent. Thus, the capability to structure a study using a control group is elusive. Employers should be wary of studies that draw comparisons of dollars saved between participating and non-participating groups.

### *Regression to the Mean*

Many disease management vendors provide their customers with a clinical intervention study to illustrate the financial impact of the intervention for both participating and non-participating groups. A baseline dollar value for health care spending is established for the 12 months prior to intervention for the study group(s), followed by the dollar value for health care spending for the study at a designated time post intervention.

While this study’s methodology would appear to be valuable, reality dictates that both participating and non-participating groups’ health care spending will decrease (regress toward the mean), whether an intervention is applied. This is because health care spending increases dramatically as the individual approaches and experiences a health care event (such as cardiac arrest), and declines to a lesser spending level following the event. This occurs for a variety of reasons, including short-term effectiveness of the medical treatment, natural fluctuation of a chronic condition, as well as changing behavior and life-styles to accommodate the chronic condition.

### *Overlapping Savings*

Employers typically use multiple and simultaneous strategies to reduce health care costs. These include a variety of supply- and demand-side interventions, such as plan design

changes, network changes, contribution strategy changes, health risk assessments, behavioral modification programs, 24-hour nurse lines, care advocacy, utilization management, case management and disease management.

It is impossible to precisely identify the savings attributed to each program. Failure to adjust for the savings attributable to other initiatives will result in an overstatement of the program's savings under study. Assume an employer switches its network from Carrier A to Carrier B, and that change results in all claims being discounted an additional 10 percent. These savings will flow through to the analysis of all other benefit initiatives, unless the savings attributable to that initiative is factored out of the savings calculations of all other initiatives.

Often the information is unavailable to a vendor of a wellness or disease management intervention. This means the savings they do not directly generate cannot be factored out. The result is reporting of total savings from all strategies, not necessarily the one under scrutiny. Thus, the purchaser is led to believe the total savings achieved from all programs are attributable to the program in question. This situation leads to skepticism of the measurements provided by each vendor.

Given the issues with credibility, lack of control groups, regression to the mean and overlapping savings – combined with the time it takes for savings to begin to emerge in these types of programs – it is easy to understand the CBO's position on the value of disease management programs.

### **Validation of Wellness and Disease Management Programs**

The value proposition for disease management and wellness programs is that improving the population's health will reduce health care costs. We noted above there is a lag of several months from the time an individual is identified to when behavioral changes can begin to be quantified and validated. While we expect the debate over savings will continue for several years, there are statistical measures that can be put into place to validate the population's health is improving.

1. *Clinical Status:* Using criteria established by HEDIS, statistics can be established that measure whether individuals are receiving the certain tests and the resulting test scores. For example, one can then review the experience of the total diabetic population against the population receiving tests, the test results and changes in both statistics over time.

An effective disease management program should be able to demonstrate significant increases in the percentage of members being tested as well as improved tests scores. The test scores may deteriorate early on given the selection bias of candidates.

2. *Health Status*: If members work effectively with nurse and behavioral counselors, they will be better able to manage their disease, including health behaviors known to promote well-being. There are several predictive modeling tools that analyze eligibility data, medical claims, prescription drug claims, to name a few. These models derive a prospective and retrospective risk score for each member.

These risk scores can be aggregated across all the employer's members, and compared to prior measurement periods. As members are better able to manage their diseases, unnecessary hospitalizations and emergency room visits are reduced, and treatment patterns modified.

Predictive modeling software is based on grouping methodology, which identifies these changes and alters the prospective and retrospective scores accordingly.

3. *Compliance with Evidence-Based Medicine*: Paul Keckley, PhD, authored an article "Evidence-Based Medicine in Managed Care: A Survey of Current and Emerging Strategies" that was published April 1, 2004 on Medscape General Medicine 6(2), 2004. © 2004 Medscape. Appropriate application of the evidence in practice occurs only 54 percent of the time. There is a significant amount of literature supporting the theory that delivery of evidence-based medicine improves both the health status of the individual, as well as saves long-term health expenditures.

This provides another metric to validate the performance of a disease management intervention to improve the health of its members. As the percentage of times evidence-based medicine is delivered increases, health status increases. If the disease management provider is working effectively with the member and provider, this percentage will increase over time.

Using the metrics cited above, and those like them, can validate that the right activities are happening and behaviors changing toward improved health. Those behavioral changes should slow the rise of health care increases. In reality that slowing will appear as a reduction in an employer's total annual health care trend relative to the expected trend.

The employer may elect to make additional changes to their benefit plans, such as plan design and network that can also be captured in the trend reduction. Ultimately, working from the macro level rather than the micro, the estimated savings attributable to all changes made by the employer can be calculated.

This approach avoids the overlapping of savings of the various initiatives and is based on numbers large enough to be credible. Multivariate analyses can then be run to determine which portion of the defined total savings is attributable to each initiative. These analyses will produce ranges or reasonable results from which the effectiveness of the initiatives can be gauged.

The impact of demand side solutions to the health care crisis is more difficult to measure than its supply-side counterparts, which have had immediate but short-lived impact to date. As consumerism and wellness begin to transform America's health care system, our ability to validate their effectiveness will need to improve.

### **Conclusions:**

As strategies for controlling health care costs shift from supply to demand, it becomes increasingly important to focus on valid measures of success. While the industry continues to wrestle with standardizing the metrics, it is incumbent on vendors to focus on sound measures and computational methodologies.

The measures commonly used are inadequate to illuminate the real value of wellness and disease management programs. These measures don't account for data set size, the need for true control group studies, and regression to the mean and separate identification of all interventions. Thus, the reporting provided by some vendors and results of some studies don't reflect the worth of wellness and disease management programs.

The measures proposed here – clinical and health status and compliance with evidence-based medicine – calculated with actuarial validation provide important views of the effectiveness of wellness and disease management. As clinical and health status and compliance with evidence-based medicine improve, health care costs are reduced and productivity increases. Even more importantly, those with health concerns, particularly chronic health concerns, are empowered to take better care of their health.