

How Insurers and Others Can Use Their Data to Help Achieve Consumer-Driven Health Care

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This paper presents two concepts and possible approaches for using data that will enable the design of new insurance products that simultaneously influence affordability, quality, and access to health care. Using data as I suggest in this article will bring more efficiency to our health care system, although these concepts and approaches obviously cannot fix all the problems.

Everybody knows that the most notable problems of our health care system are costs that are too high and quality and access to care that, for some, has been significantly eroded in recent years. These phenomena are evidenced by the increasing number of uninsured and the continual passage of mandated benefits and other laws that require certain levels of care. A better understanding of the health care data and the lessons they can teach are vital to rectifying these issues.

Unfortunately, the data available and/or used by insurance companies and other health care entities are often ignored, compromised, or analyzed in such a way as to limit their value. In some instances, the data may even be distorted to produce misleading results. (I do not preclude the possibility of different reasonable interpretations of the same data; but data are frequently used to support theories that can easily be rebuffed with rigorous review.)

Concepts and Approaches for Analyzing Health Care Data

The proposed concepts and approaches are:

1. **Concept:** Health care costs in the last 25 or so years have increased by 8.3% per year, while wage growth has increased by 4.3% per year. Unless this relationship is changed, the number of uninsured will continue to increase and quality and access to health care will be compromised. We should examine the interdependency of various factors so that the historically large difference between health care and wage growth trends can be reduced or perhaps eliminated for insured who do not consciously choose this result.

Approach: A model that uses company-generated data and other resources to examine the interdependencies of various cost-affecting factors, to understand why they are so high, and to develop approaches to reduce them.

2. **Concept:** We should perform outcome measurement over the continuum of care that produces treatment approaches. The measures should focus on cost, quality, and access to treatment. Measurement of only one or two of these items, as is almost always the case today, can create misleading and often erroneous conclusions.

Approach: A model that uses company-generated data and other resources to evaluate multiple treatment approaches across the continuum of care under specific scenarios reflecting a combination of cost, quality, and access.

This paper discusses the elements missing from the data used to evaluate health care, as well as the types of analyses that should be employed. It also demonstrates how changes in approach can allow us to find better alternatives to improving the delivery and cost of health care in the United States.

The Typical Insurer Database and Its Problems

The typical database used by insurers includes substantial amounts of information, such as age, sex, the coverage in force, types of services and/or costs covered under the plan, important dates, and more. Unfortunately, frequently, subsets of this information are kept in separate sections of the database that cannot be easily tied together, if at all. And data that represent certain types of risks, such as medications, blood pressure, cholesterol level, etc. appear infrequently.

As a result, insurers and others seldom, if ever, use the data to produce more consumer-friendly, efficient products and/or services. Although other reasons may exist, the two primary reasons appear to be:

- A. These factors are difficult to analyze. The health care system is so convoluted, with so many external influences affecting claim experience (costs, quality, and access), that companies cannot obtain enough information to analyze the interaction. Even when they do, building a model to assess the dependencies is very challenging.
- B. Other concerns may reduce the importance of investigating these data. Some insurers have found ways to transfer the risk to providers or governments so that they are not significantly concerned with the actual claim experience. More commonly, health care

organizations are less concerned with producing the most efficient product for health care consumers, than with producing one that can help them survive.

The environment is so distorted by mountains of regulation and industry rules and/or cultures, that considerable effort is required to produce profitable products within these constraints. Consumer interests can be factored in only once these constraints are satisfied. (The Council for Affordable Health Insurance Issue Brief on Building Blocks for Affordable Health Care discusses in detail some of the primary regulatory barriers to the health care system and the effect of their removal or modification on premium costs in various markets.¹) Therefore, attention to improving databases and corresponding analysis by insurers and others may not occur without changes that remove obstructive regulations and rules. These changes will create incentives for organizations to focus on creating consumer-driven efficiency rather than fulfilling bureaucratic or self-serving preferences.

What a Refined Database or Measurement System Can Look Like

A refined database or measurement system could present itself in many forms. In any refinements, two concepts must be addressed:

1. What factors drive health care cost trends by market and in aggregate? If we understand this, then we could more readily reduce costs. For example, Appendix 1 provides an analysis of cost trends from 1992–1998 that shows (on an illustrative basis) how they have varied among individual, small group and large group private markets, Medicare, Medicaid, and the uninsured during this time period. It also analyzes the separate impact of changes in price controls, benefit levels, managed care interventions, and risk-selection

on the growth of costs for each group. It concludes the price controls have increased, not decreased, cost growths. This analysis only begins to segment the significant interdependency among markets.

Have any insurance companies, organizations, or governments truly tried to understand this interaction? My guess is few, if any, have tried and fewer still have put such information to good use.

2. How should the efficiency treatment of any status or condition be measured? Most analyses consider only one part of the cost, quality, and access equation. Measuring all of these simultaneously is extremely difficult and, therefore, most organizations or researchers assume two of the items are held constant while the third is allowed to vary. Unfortunately, this basic underlying assumption of holding two of three items constant is usually violated through changes made to improve the result in the third component.

Appendix 2 provides an illustration of a model that could be used as a starting point to truly analyze the efficiency of health care. (This illustration does not include any direct analysis of provider efficiencies, but this consideration should also be part of any model.) Results for a combination of all conditions can then be used by a company, or be used as part of a comprehensive health care model (such as Simucare.)²

If either of the measurement systems shown in Appendices 1 or 2 were adopted as a springboard for new product development, efficiencies could be improved because the analysis would clarify the factors that produce lower cost or better quality and access.

Certainly, other types of data collection and measurement systems could improve results as much or more than the framework shown. My illustrations and comments are intended only

to address general problems associated with databases as a source of information for developing new insurance products.

What Will New Approaches to Using Data Mean?

Data can prove or reject theories and support more accurate and timely decision making. But, at the present system, no one group has the incentive to improve information—not the insurers, not the providers, not the policy-makers.

The insurers, who could make consumers their favored clients, instead spend their time addressing the regulations and rules created by policymakers and employer concerns. They then try to control the charges and/or utilization of providers, who are trying to grapple with all of the price controls and other rules the policymakers create for them.

The providers see the insurers as a necessary evil, because they create much of their revenue. But, of course, the provider does not render any services to the insurer for this revenue. Instead, the insurer acts as an agent or intermediary for the insured, who is not a part of the discussion between the insurer and provider in most cases. Thus, providers tend to want to focus on the insurer, rather than our convoluted health care system, as the problem.

Both of these survival-conscious entities, insurers and providers, are trying to protect their own turf and are not concerned with efficiency of the entire health care system. The consumer has little involvement with this struggle, other than being a pawn of the two groups.

The policymakers seemingly use the ignorance of consumers, and their limited role in dealing with insurers and providers, as a rationale for a continued mountain of regulations. The situation worsens as regulations and rules grow in volume. Policymakers have no choice but to respond to the complaints of their disenchanting and uneducated consumers, yet they fail to see

any correlation between uneducated consumers and the woes of the health care system (or worse yet, see the correlation and do what is best for them).

A more balanced health care system can emerge only when consumers start moving us in the right direction and bring the others along. It might begin to emerge if insurers spent more time educating their clients. The paradigm of insurers' becoming a source of ready information for consumers makes sense. After all, consumers are the users of the services and effectively pay for them, either directly or more often indirectly. Once consumers become the primary targets of new data and/or analysis, they could lead a revolution that decides how to balance cost against quality and access for themselves. Without such information, they will remain uneducated, and could be duped by the best sounding promise the policymaker can make. Today's promise favors more access and quality with little emphasis on cost, since it appears as though someone else is paying for most of it. But with cost already at high if not prohibitive levels for many, quality and access to treatment are starting to decline as evidenced by the continuing backlash against HMOs.

When insurance companies start helping consumers deal directly with providers, the policymakers may resist further mandates on care, particularly if the consumers, who are also the policymaker's constituents, make it clear they do not appreciate interference.

Consumer-led markets can lead the way to a more efficient health care system. But if one of the possible leaders of improved efficiency does not soon come to the forefront, free markets might altogether disappear from the U.S. health care system.

Appendix 1

An Analysis of the Factors that Increase Health Care Costs

The charts below show the aggregate and market estimated annual increases in U.S. health care costs on an illustrative basis from 1992-1998 from several perspectives:

1. An estimate of what the increase would be if only charge inflation and advancing technology occurred. The value of 3.5% in our illustration is comprised of a base charge trend and a base utilization trend. Other changes are addressed in subsequent steps of the illustration.
2. The trend after recognition of price controls and market forms of price discounts. The components of this step are the changes in price and changes in utilization due to these price changes only. The estimated trend after this step of the illustration is 5.1% (**Table A**).
3. The trend after recognition of benefit adjustments on both costs and utilization and of managed care on utilization. This step includes various clinical and financial incentives that impact utilization, except for those recognized in other steps. The trend after this step of the illustration is 4.1% (**Table B**).
4. The trend adjusted to reflect the change in the risk mix of healthy versus non-healthy individuals in various markets and the resulting impacts in other markets of these changes. This trend includes the impact of change in enrollments in the markets, except that enrollment changes in Medicare are excluded. The impact on utilization due to such changes is also included. The trend after this step is 4.3%. If benefit adjustments and corresponding utilization adjustments from the previous step are removed from this composite value, the adjusted estimated trend is 5.4% (**Table C**).

Table A: Trend Without and With Price Control/Discount (PC/D) Effect

Type of Coverage	Base Charge Trend*	Cost Shift**	Base Utilization Trend***	Increased Utilization Trend****	Subtotal Trend
Medicare	3.0%	-2.2%	0.5%	5.2%	6.5%
Individual	3.0	+2.2	0.5%	0.1	5.9
Small Group	3.0	+2.2	0.5	0.1	5.9
Large Group	3.0	+1.9	0.5	0.5	6.0
Uninsured	3.0	0.0	0.5	0.0	3.5
Medicare	3.0	-1.0	0.5	4.1	2.4
Item #1 Composite (No PC/D)	3.0	-	0.5	-	3.5%
Item #2 Composite	3.0%	-1.0%	+0.5%	2.6%	5.1%

* Base Charge Trend: The normal inflation rate or the change in the consumer price index. It includes trend due to advancing medical technology.

** Cost Shift: (price change) to reflect discounts in one market being shifted to another market. In this case, forced decreases in Medicare and Medicaid prices (via government mandate), increased discounting in the large group market through various contractual arrangements, while discounts afforded to uninsured produce large increases in the charge levels of the individual and small group markets. In the first few years of a cost shift, aggregate prices may decrease until the cost can be shifted elsewhere and accepted by consumers. Thereafter, if markets exist for potential shifting, either virtually no composite price change occurs or prices go up. Today, because most forms of cost shifts have been in effect for a while, the price change component is negligible. This item reflects only the impact on the price charged, not impacts on utilization.

*** Base Utilization Trend: Increases in services due to new technology or availability of health care providers. The combination of the base charge and utilization may not equal the change in the medical CPI because of a change in mix of services and the CPI measures a fixed base of services.

**** Increased Utilization Trend: This item includes additional usage of services to make up for a shortfall of revenue in early years because of a cost shift and other influences as created by law. Extra utilization generally occurs through unbundling of services, extra visits or services, and use of services for which the ratio of reimbursed value to the cost of such services is greatest. Extra utilization can occur each year as inefficiency compounds. Other influences would include items such as a change in the tax code either favoring higher or lower utilization of services. This factor excludes any change due to higher or lower benefits, the mix of risks in a group or financial incentives or disincentives that encourage or discourage utilization.

Table B: Trend with PC/D and Benefit Adjustment and Managed Care (BAMC)

Type of Coverage	PC/D Trend	Benefit Adjustment*	Utilization Change Per Benefit Adjustment**	Managed Care Utilization***	Subtotal #2 Trend
Medicare	6.5%	0.0	0.0	0.0%	6.5%
Individual	5.9	-0.4	-0.2	-0.3	4.9
Small Group	5.9	-0.8	-0.8	-0.7	3.9
Large Group	6.0	-0.5	-0.3	-0.9	4.2
Uninsured	3.5	0.0	0.0	0.0	3.5
Medicaid	2.4	0.2	0.1	-1.1	1.0
Item #3 Composite	5.1%	-0.2	-0.1	-0.7	4.1%

* Benefit Adjustment: This item reflects the change in average benefit levels covered in the market. A decrease in the average deductible, as has occurred in the individual market for instance, represents a negative trend.

** Utilization Change per Benefit Adjustment: This item represents the estimated change in the utilization of services due to the benefit adjustment.

*** Managed Care Utilization: This item reflects the estimated decrease in utilization due to the average increase in the use of managed care provisions in the market. Such provisions include utilization review, case management and the use of length of stay guidelines of any type; the impact of discounts is not reflected in this item.

Table C: Trend Including Adverse/Positive Selection With and Without BAMC

Type of Coverage	BAMC Trend	Adverse/Positive Selection*	Grand Total Trend	Subtotal Without BAMC Trend
Medicare	6.5%	0.5%	7.0%	7.0%
Individual	4.9	1.6	6.5	7.5
Small Group	3.9	0.9	5.9	7.9
Large Group	4.7	-0.1	4.3	6.1
Uninsured	3.5	0.0	3.5	3.5
Medicaid	1.0	-0.9	0.1	1.4
Composite	4.1%	+0.2%	4.3%	5.4%

* Adverse/Positive Selection: This item represents the change in the total cost of the market due to the mix of healthy and unhealthy individuals in it and any overall enrollment changes (except for enrollment changes occurring in Medicare). This change in cost reflects both the proportion of such individuals in the market and the different levels of utilization expected based on the type of coverage available on average. For instance, uninsured individuals generally experience costs significantly less than those in the large group market. However, when people previously uninsured become insured, they frequently experience costs on average much higher than the large group market for the next year or so.

Therefore, the current estimate of the trend in our health care system from 1992 to 1998 including all items is 4.3% versus a trend of 3.5% without any other influences. If benefit changes and the impact of managed care are removed, the difference is greater (3.5 vs. 5.4). In this example, most of the additional trend is accounted for by the price controls in Item #2.

Note that the trends for the six-year period 1992-1998 (4.3%) are significantly lower than the average trend of 8.3% from the mid-1970s to 2000. This lower trend is largely due to extensive use of price controls, increasing managed care restrictions, and a lower general level of inflation. The extensive use of price controls and increasing managed care restrictions during this period have been necessary to keep health care cost inflation more in line with wage growth so that people could continue to maintain their health coverage. However, these additional restrictions have resulted in limitations on the access to quality care and/or treatment. The impact of these restrictions is not generally captured in this analysis, but can be reflected by combining the results of this model with a model illustrated in Appendix 2.

The illustrations in this appendix indicate that price controls have contributed to higher, not lower, long-term trends and costs. However, this result should be judged as negative only if, at the same time, quality of care and access to treatment has not increased commensurately. That determination is a very difficult one. Nevertheless, in examining efficiency or inefficiency, measurement must reflect a combination of affordability, quality of care and access to treatment, not simply one or two of these items. After all, higher cost with no change in quality and access increases inefficiency, as does lower quality without a change in the other items.

Appendix 2

A Database that Measures Cost, Quality and Access Simultaneously

A database that measures cost, quality and access simultaneously should evaluate the recipients' continuum of care over their lifetime. The quality and cost of such care can be measured by assessing the change in health status of the person and the cost associated with such change. The ability to receive treatment when needed must reflect both underutilization and overutilization. The access measure can be combined with the quality measure as part of the change in health status by reflecting all status levels of health, from complete health to death.

Within the continuum of care, one can keep track of the stage or status of the person as measured by some definable method and the cost during all stages. In this way, one can measure the following:

1. The cost of treating a disease or condition over its lifetime via various methods.
2. How quality of care (including access to treatment) and cost are related.
3. Various treatment alternatives at various stages to determine which appears on average, to represent the optimal scenario.

Shown below is one illustration of the type of health status system that could be used in conjunction with the simultaneous measure of cost, quality and access to determine whether a system is efficient. Stages or identifiers of illness or other status would need to be on a global basis to create a consistent base for analysis. In the discussion below, D stands for Disease and I for Injury.

Stage 0—No disease has been diagnosed nor does a significant injury present itself. However, certain preventive measures may be needed and/or symptoms may exist that need

examination. Increasing values between 0 and 1 might represent a higher risk of moving into the disease Stages 1-3. For instance, an infection by itself does not constitute Stage 1, but a more serious infection might be represented by Stage 0.8 or 0.9

Stage 1—A condition has been diagnosed. No complications exist or problems are of minimal severity. Any situation where disease exists would be stage 1D and those where only injury is present would be Stage 1I.

Stage 2—Problems are limited to an organ or system, with an increased risk of complications over Stage 1. Any situation where disease exists would be stage 2D and those where only injury is present would be Stage 2I.

Stage 3—Multiple site involvement and/or generalized systemic involvement that results in a poor prognosis. Any situation where disease exists would be Stage 3D and those where only injury is present would be Stage 3I.

Stage 4—Death. Within each stage there can be many substages. These substages could be ranked from .1 to .9 (or via some other scale). The higher the number, the greater the risk of mortality or at least higher morbidity. An article by Louis and Gonnella³ includes an illustration of substages for appendicitis.

In all staging and substaging as discussed above, the term disease means a well-defined disruption in the normal homeostasis of psychological-physiological systems. The term injury refers to bodily harm that results in disruption to the normal psychological-physiological systems.

In some cases, injury and disease stages may be related. In preliminary analysis, it may be easier to assume that the injury stage is not a factor in the health staging of the individual. However, a person could frequently be in a different stage for disease and injury. However,

where two or more diseases or injuries are considered, a more serious condition should identify the stage.

As an illustration, a person in Stage 2 is identified below as needing a Coronary Artery Bypass Graft. The chart illustrates estimated cost for Coronary Artery Bypass Graft, using the Optimal Recovery Guideline (ORG) terminology from Volume 1 of the Milliman USA, Inc. *Healthcare Management Guidelines*.⁴ (The procedure number is ORG S-39 for the condition identified.)

For this condition, a care pathway or “branch” was developed assuming an uncomplicated patient, given the occurrence of the condition. The patient in the example was assumed to be in the middle of Stage 1. The pathway shown includes the stages of care from the preoperative stage through the actual surgical procedure and concludes with postoperative recovery and follow-up care. After the follow-up care, we assume the patient reaches a stable, optimal condition and that a reoccurrence/complication requiring further medical attention does not occur.

Coronary Artery Bypass Graft Care Pathway Assuming An Uncomplicated Patient Average Cost Under Optimal Recovery	
Emergency Room	\$250
Diagnostic Studies (ER, Lab, EKG, Stress Test)	1,100
Cardiac Catheterization	150
CABG Surgical Procedure S-390 (3 days)	27,450
Recovery Facility (2 days)	2,200
Home Care (4 Nursing Visits, 1 Physical Therapy Session)	400
Follow-up Visits (2 Primary Care Physician Visits, 2 Cardiologist Visits)	300
Follow-up Care (5 sessions of Cardiac Rehabilitation)	350
	\$32,200

The model can then be extended to add various conditions, with or without complications. Various stages are also considered at this juncture.

Once pathways corresponding to conditions/stages are developed, costs associated with Stage 0 and incidence rate varying by procedure would be added; multiple risk factors might also be considered. In theory, the more prevention in Stage 0, the lower the probability that Stages 1-3 will be attained.

We recognize that many care pathways or branches make up the entire continuum of care, including any complications that may arise. However, we have attempted to model only a single, probable care pathway for an uncomplicated patient from the continuum of care. In addition, we have assumed that the condition is the result of an acute occurrence and consequently have not included the costs associated with any preventive care or pre-occurrence diagnostic testing that may be associated with the condition.

The unit costs are illustrative only. Actual costs for the procedures will vary depending on such factors as the geographic location, underlying cost levels, physician practice patterns, available alternate care settings, etc.

The work effort required behind this or other models producing similar results is extensive. But the results used provide valuable information in assessing cost, quality and access.

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