Does Care Management Work?

For healthcare organizations

PRAGMATE

July 16, 2011

Authored by: Mark P Kajdos

PRAGMATE

Does Care Management Work?

For healthcare organizations

Introduction

Assumption that managed health care decreases overall costs is accepted by most health care managers. This acceptance is intuitive since we all know that many diseases are first asymptomatic and change in condition now can prevent more expensive symptoms later. However, do we have data that show that costs of prevention or disease management result in equivalent savings?

The purpose of this article is not to discuss whether prevention and disease management result in better healthcare and lower costs. Its purpose is to outline methodology that can translate empiric data readily available in a health plan into form that supports objective impact analysis of care management and prevention programs. The program is the term used throughout the article to define group of care management or prevention activities.

The premise of this article is that some methods work better than others and that same methods work differently under different circumstances – programs that work in one environment may not work in other. Focus of this article is on methods that can be used to find the prevention and disease management methods that work in your healthcare organization.

Analysis of health care costs is based on statistics comparing groups of individuals. This article will outline the statistical concepts used in evaluation to the extent needed to illustrate the theory behind the methodology.

The HEDIS (Healthcare Effectiveness Data and Information Set) developed by NCQA® is widely used collection of measures that are mandatory for health plans serving Medicare. The methodologies and approach used in defining and computing the HEDIS measures represent useful framework that can be used to measure actual impact of meeting the measures on cost and quality of healthcare.

This article explains concepts, configuration, and computation that can help health plan to determine which measures are effective in its specific environment. The health plan using this methodology can then see which measures deliver the best results and have the data to support the analysis.

Concepts of Cost Measurement

The cost measurement in healthcare is challenging. While it is relatively easy to know how much we spent using claim history (subject to IBNR - Incurred but not received ratios), it is not easy to draw useful conclusions. Like any statistical analysis of complex environment, the analysis of the cost is subject to limitations and requires reliance on a judgment of those who design the process and perform the analysis.

Important aspects of the cost measurement are: computing costs in PMPM units, Eligibility criteria, Outliers, and Time Factor.

PMPM Use

The costs incurred in health care are function of number of members and enrollment duration. The basis for estimating the cost (and determining the premiums) is PMPM (Per member per month) cost estimates of various parts (tiers) of coverage. For example: the primary care estimate may be based on $10 PMPM. Therefore, the costs of primary care for population of 100 people will be estimated to be $1,200 per year.

The computation of estimated cost is quite complex and will not be covered here. The important is that any analysis of the costs needs to be based on PMPM value.

Eligibility

In order to measure costs of a group, the group must be identified by eligibility criteria. Only members that are eligible will be included in the measurement. The eligibility criteria may include gender, age range, and condition. The control sample (group of members) represents all eligible individuals and the program sample is the subset that is enrolled in the program.

In statistical terms, the eligibility defines a sample. This is specifically important when we want to find out whether certain program worked – the control includes any member meeting eligibility criteria and program value focuses only on members of the same eligibility criteria enrolled in the specific program.

Exclusions

Exclusions are needed to exclude otherwise eligible members from computation. The reasons for exclusion may be many and need to be applied equally to both control and specific program groups. For example: if a member suffered accident causing high claim costs and the accident is not related to the desired analysis, the member may be excluded from consideration.

All exclusions need to be clearly documented and must be considered when evaluating the results.

Outliers

Outliers may be individual claims that do not belong to the consideration. Outliers are similar to Exclusions and are used for similar reasons – specifying a group of claims as outliers allows the user to keep the member eligible and only remove certain claims from cost computation.

All outliers need to be clearly documented and must be considered when evaluating the results.

Time factor

All cost and eligibility events occur in time. The term "measurement period" best describes the time factor. The measurement period is simply beginning and ending date for measurements and eligibility. Choosing proper measurement period is important for credible results. There are several aspects of measurement period – there are: length and position of time covered, handling of gaps in coverage, percentage of claim costs incurred, and the time it takes for the program activities to have impact on costs.

Length, Position, and Impact

Typically the duration of the measurement period is set at most for 2 years for the control population and should cover the effect lag for each measured program. The time parameters may have profound effect on the computation results and the operator may need to reposition the time frame to properly show the results.

Gaps in Coverage

The typical HEDIS gap in eligibility requirement is that no member included in the computation should have gap in coverage in excess of 45 days. The reason for this limit is that there should be sufficient number of member months included for each member during the measurement period.

Incurred but not received (IBNR)

The percentage of the claims received is applicable for measurement period with recent ending date (less than 6 months since most plans use 180 days as the time limit for submitting claim). The IBNR ratios reflect the fact that the claims are received over period of time – for example: only 30% is received on the same month, 50% on second month, and so on. The percentages should be obtained from accounting department of the health plan where it is typically used to estimate monthly costs.

The nature of the program influences the measurement period – both in length and in start time. Many programs are designed with certain expectations. For example: if we expect to shorten hospital stay by managing chronic diseases in the population in that condition, we need to make a judgment call indicating that the effects should appear in 6 months. The consideration for this time is the expected effect lag – number of months from the beginning of activity when the effect is expected.

Configuration

As apparent from the concepts of measurements earlier in this article, properly setting parameters of measurement is the key to good results. Proper configuration is an important part of the result – this means that the result should always be presented together with the configuration parameters.

Simple rules

The simple rules facilitate representative samples. For example: age range, gender, and specific condition (out of many) are properties that all members have and can thus be reasonably expected. The rules should be as simple as possible. Complex rules do not improve validity of results but can invalidate them due to confusion.

Consistency

All selection rules, exclusions, and other choices that affect the rules must be applied consistently. Rather than removing one $10,000 claim as outlier, specify that all claims over $10,000 will be excluded. Inconsistently applied choices will invalidate the results.

Timeframe

Many of the effects take time over time. Part of it is reality that activities that are part of a program do not all occur at the same time; another part is that the effect of activities has lag time. Always allow enough time to let the results "mature".

Flexibility

Each set of constraints and rules is subject to change. The researcher will need flexibility to change the rules multiple times and visualize differences in results. All parameters of computation should be flexible.

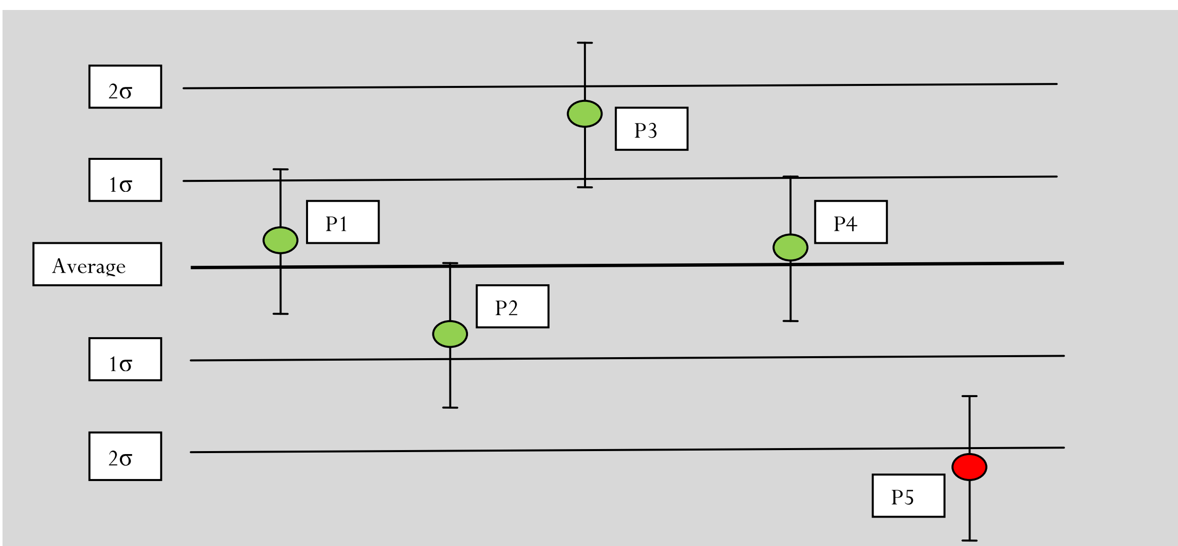
Analysis

Analyzing the results is the final step of determining whether a program works. In simple terms we will have a control groups (all criteria regardless of program) and we will have the program group (all criteria and membership in the program). Once the PMPM costs are computed, a simple comparison of the control group with program criteria shows whether there is a difference.

Is the difference statistically significant?

Outliers

The Sigma σ (Standard deviation) determines statistical significance based on commonly accepted standard distribution. Note that for healthcare costs we need more than 20 members in the program to ensure that the standard σ computation is valid. The significance then can be measured by comparing the difference in average value of control and of the specific program. We may indicate that if the difference is more than 2σ, it is statistically significant. 3σ is common in control diagrams.

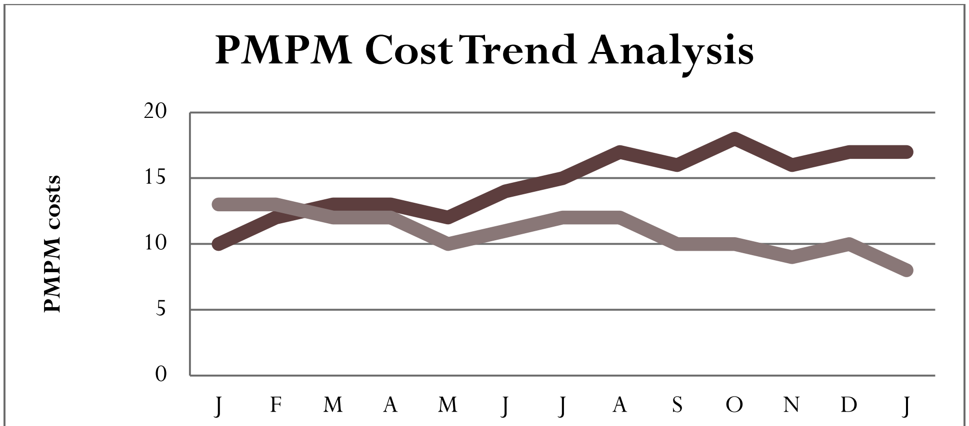


The picture shows several measurement groups and their positioning to the control group average. The horizontal lines reflect the average and 1 or 2 multiples of σ. Note that the size of σ will vary with how wide or narrow is the standard distribution. If we take individual group as significant only when they are more than 2σ from the control average. For example: the group P5 in the above picture is an outlier. The above diagram is sometimes referred to as "Control Diagram" and there is an extensive literature describing it. Where multiple programs are measured, this approach finds the outliers.

The outliers defined above represent a particular measurement period. The results may change when the measurement period changes – different groups may become outliers depending on time frame.

Trending

Trends are frequently used to determine the direction and degree of change. The premise of trending of any value is that the value changes over time and that we know the most appropriate curve of change (linear, exponential, periodic). Given the variability of possible results in health costs, our focus is primarily on linear trending – find how the overall value changes over time and establish a line that best fits that trend (least-squares methodology is common).



	J	F	M	A	M	J	J	A	S	O	N	D	J
Control	10	12	13	13	12	14	15	17	16	18	16	17	17
Program	13	13	12	12	10	11	12	12	10	10	9	10	8

The picture shows PMPM cost distribution over time. This is a simplified depiction that shows that the program costs are showing trend downward. While we could quantify the trend, a simple glance will reveal that the program costs are diverging from the control. More detailed computation may not improve the information given the stochastic nature of the subject.

PRAGMATE

Conclusion

The number of items to consider, the task of determining what works and what does not appears overwhelming. It may indeed be, if we do not place all in proper perspective. Most obvious example of perspective is Newtonian vs. quantum mechanics. Current science knows much about quantum behavior of matter down to particles much smaller than atom. Yet, the Newtonian principles are sufficient for most mechanical things that we use today. The moral of the story is, that you do not need to build complex model to get useful information.

The world that is infinitely variable and constantly changing presents substantial challenge to anyone trying to find and quantify causal relationships. That is true if we are studying climate or health care costs. The art of extracting the valid information from data will always depend on a knowledgeable observer. However, proper preparation and presentation of data can make valid analysis easier.

Successful process improvement starts with analysis and planning. Only the properly implemented technology (software) will produce desired outcome.

Mark Kajdos can be contacted at

1-800-859-5893

1.205.873.0850 mobile

E-mail: mkajdos@pragmate.com or access web site at www.pragmate.com