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ISSUE BRIEF

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Disease Management Programs: What's the Cost?

Escalating health care costs and an increasing public focus on health care quality are causing employers and insurers to reassess the value and effectiveness of their medical management procedures. Many are looking at disease management programs as a means for improving the treatment of major chronic diseases as well as the quality of life of their employees/insureds while reducing the need for and the costs of medical care. The improved health of participants in well-executed disease management programs (such as programs aimed at managing diabetes and asthma) is clear and well documented. However, there is often a gap between the favorable clinical results and a clearly identifiable financial impact. Many disciplines, including the actuarial profession, are approaching consensus on how to address many of the complex analytical issues inherent in assessing the financial impact of these programs.

This paper was prepared by the American Academy of Actuaries' Disease Management Work Group to provide policymakers and the public with a basic background on the financial evaluation of disease management programs and to highlight some of the analytical challenges.

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Members of the Disease Management Work Group include: Robert Parke, ASA, MAAA, Chairperson; David Axene, FSA, MAAA; Kevin Dolsky, FSA, MAAA; Ian Duncan, FSA, MAAA; Charles Fuhrer, FSA, MAAA; Peter Lopatka, FSA, MAAA; Sandra Loyal, FSA, MAAA; Catherine Murphy-Barron, FSA, MAAA; Donna Novak, ASA, MAAA; Timothy Robinson, FSA, MAAA; Marcia Sander, FSA, MAAA; Geoffrey Sandler, FSA, MAAA; Charles Smith, FSA, MAAA; Steele Stewart, FSA, MAAA; Michael Thompson, FSA, MAAA; Greger Vigen, FSA, MAAA; Margaret Wood Wear, ASA, MAAA; and Ruth Ann Woodley, FSA, MAAA.



AMERICAN ACADEMY *of* ACTUARIES

1100 Seventeenth Street NW Seventh Floor Washington, DC 20036

Tel 202 223 8196 Fax 202 872 1948

www.actuary.org

Kevin Cronin, Executive Director
Noel Card, Director of Communications
Craig Hanna, Director of Public Policy
Cori E. Uccello, Senior Health Fellow
Geraldyn Trujillo, Health Policy Analyst, State

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Definition of Disease Management

The Disease Management Association of America (DMAA) defines disease management (DM) as “a system of coordinated healthcare interventions and communications for populations with conditions in which patient self-care efforts are significant. Disease management:

- Supports the physician or practitioner/patient relationship and plan of care;
- Emphasizes prevention of exacerbations and complications utilizing evidence-based practice guidelines and patient empowerment strategies; and
- Evaluates clinical, humanistic, and economic outcomes on an ongoing basis with the goal of improving overall health.”

Disease management programs may also be referred to as chronic care improvement programs.

Value Proposition/Return on Investment

DM programs are implemented primarily to improve health and productivity. In addition, the potential to save money for the ultimate payer (e.g., state Medicaid plans, employers, and other plan sponsors) may provide financial validation for a DM program. Clinical and humanistic outcomes could be at odds with economic outcomes. A precise calculation of economic outcomes or return on investment (ROI), would take into account the clinical and humanistic components and the effects on other employer-provided programs (e.g., paid time-off, disability, and workers' compensation). However, for practical purposes, ROI is often measured by factoring in only the cost of the DM program and the program's impact on the cost and utilization of medical services (referred to as the “effect on medical costs” throughout this document). For example, if the savings generated from more efficient use of the health care system are greater than the cost of the program, the program has generated a positive ROI. For payers using an outside DM vendor, the cost of the program would include the vendor's fees plus the internal cost of incorporating and running the vendor's program. For payers who choose to implement their own DM program, the costs would include those of development and operation.

Aside from the pure cost-savings aspect, there have been other measures of economic success set forth by health economists. One of these is the “quality-adjusted life year” (QALY).

QALY places a weight on time in different states of health: a year of perfect health is worth one, a year of less than perfect health or life expectancy is worth less than one. The quality and quantity of life following health care interventions are estimated and assessed in relation to the costs of the intervention. A discussion on QALYs is beyond the scope of this brief.

Methodologies for Determining Effect on Medical Costs

Currently, there are few published, peer-reviewed studies identifying DM programs' effect on medical costs, due to the many complex analytical and actuarial issues associated with the evaluation.

To evaluate a DM program's effect on medical costs, it is necessary to compare the results for the targeted DM population to some other population. For the comparison to be valid the two populations must be substantially equivalent. Most methodologies tend to fall into one of two categories, a control group or a noncontrol group.

Control Group Methodologies

In typical actuarial analysis, a standard technique is the comparison of financial or utilization experience to benchmarks. A control group methodology will compare the results for the targeted DM population to those of another similar population (the control group) that is not part of the DM program. The medical expenses of the two groups are compared to determine if the expenses of the targeted DM population are lower than the control group's expenses. These methods provide the greatest degree of equivalence. Comparing groups with different geographic locations, health plan benefits, and coverage periods, however, is difficult. In addition, randomized control groups are often resisted by the DM industry because it is considered unethical to withhold services from a portion of the chronically ill population.

Non-Control Group Methodologies

Some common non-control group methods are:

- a comparison of requested services to approved services. (This is called a “services avoided” methodology, although it is more commonly used for services in which pre-authorization is sought or where a specific condition is treatable by a specific procedure); and
- a comparison of expenses to external benchmarks.

These methods are easier to implement than a control group methodology, but equivalence is more problematic.

Equivalence

Because true equivalence between two populations is difficult to achieve, adjustments are required to enable appropriate comparisons between a targeted DM population and the control group. These adjustments should include consideration of differences in:

- Demographics (e.g., age, sex, and economic status);
- Components of trend (e.g., provider contracts, variations in regional treatment patterns, and potential selection bias as outlined below);
- Plan benefits and coverage levels (including the presence of duplicate coverage or multiple medical management programs such as prior authorization);
- Health status; and
- Underwriting criteria.

Measurement/Analytical Issues

Regardless of the evaluation method, there are several issues that need to be considered and adjustments made, if necessary.

Data

The quality, completeness and consistency of the underlying data can have a big impact on the evaluation of a DM program.

Regression to the Mean

Members are often recruited into a DM program during a high point of individual medical utilization. Therefore, future costs (e.g., post hospitalization, if the “pre-” cost includes the identifying hospitalization) are typically lower due to a return to lower levels of utilization and cost, resulting from the natural course of treatment and recovery. This trend occurs with or without active intervention by a DM program and is referred to as “regression to the mean”.

Selection Bias

Selection bias means that members who agree to participate in a DM program often have significantly different utilization and cost than those who do not participate. This could be due to population-based factors such as geographic, economic, or cultural differences or due to personal factors such as age, illness severity, or motivation. A commonly used outcome measurement methodology compares the utilization of elective program enrollees with those who choose not to enroll. For the reasons discussed above, among others, the utilization of enrollees is often different from that of non-enrollees.

In addition, decisions are often taken to exclude a certain group of people from the outcomes measure or the program itself. For example, an excluded group might be the terminally ill, or those undergoing treatment for cancer because the DM program is unlikely to affect these groups. However, to avoid selection bias, decisions to exclude some groups, such as those with co-morbidities from the outcomes measure, will need careful consideration.

Statistical Validity

Depending on the size of the overall population, the targeted DM population may not be large enough to be statistically valid. In addition, any measure of the financial impact from DM programs is subject to uncertainty. As a result, a definitive determination of the financial impact of a DM program is sometimes difficult.

Exposure

An appropriate measure of exposure requires consideration of numerous factors. These include:

- Clinical definition of the disease and its identification through claims-based criteria;
- Definition of eligibility for the benefit plan;
- Consistency of the population throughout a pre-defined period of exposure that could span several years (particularly difficult to achieve if there is significant turnover);
- Definition of eligibility for the DM program (criteria for exclusion of “unmanageable” cases); and
- Definition of eligible expenses for measurement (e.g., the disease or the whole person for a number of diseases, and criteria for measuring co-morbidities).

Operational Equivalence

When comparing two programs it is important to understand differences in how programs are structured. These include:

- Is enrollment by opt-in or opt-out?
- How do people resign or graduate?
- What is the full range of activities/interventions in the program?
- How successful is the program in interacting with the enrollees?
- To what extent must the patient be proactively involved?
- Is the provider’s role active or passive?

Conclusion

As costs continue to climb and prevalence rates for major chronic illnesses rise, the health industry requires sound financial analysis of programs implemented to improve the treatment of these illnesses. An understanding of the key challenges will enable actuaries to provide valuable financial and business analysis to assist decision makers in assessing the many DM options available.

Suggested Reading

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Seventh Floor
Washington, DC 20036
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