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# Paradise Lost: Return on Investment in Disease Management

by Don Fetterolf



**F**or a health plan or a disease management company, no client presentation can be complete without a painful discussion of the return on investment for the involved medical management or disease management programs. Organizations bring the best and brightest they have to sit in a stuffy conference room for long periods and tediously debate which aspect of the return on investment calculus are the most appropriate and apply to their case. Even to individuals who are pathologically addicted to detail, this is a painful process. It may be time to rethink our approach altogether.

There is widespread industry consternation around the issue of return on investment for disease management and medical management programs. Over the past five to six years, a considerable amount of effort was directed at the pursuit of the ideal return on investment methodology. A great deal of research has been done and a large number of articles have been written creating a chronicle of the frustration the industry experienced in this pursuit.<sup>123456</sup> An important conclusion learned is that any return on investment calculation in a subject as complex as this is highly dependent on methodology and is rarely satisfactorily resolved. Almost everyone who creates a calculation has his own method. Some methods have more rigor than others, but in the end, two or more organizations end up in a conference room and painfully confront the fact that they really do not know what the ideal method for determining the value of medical management may be or what the reasonable return on investment for the proposed program is.

From the perspective of most who have been involved in working through these issues for more than 20 years, the problem can sometimes seem hopeless, with a large number of equations trying to characterize an even larger number of variables. In the absence of a controlled clinical trial, only estimations carry much weight, and debate over the estimation methodology consumes hours of

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<sup>1</sup> American Healthways and Johns Hopkins Consensus Conference. Standard Outcome Metrics and Evaluation Methodology for Disease Management Programs. *Disease Management*. (6) 3. Fall 2003. pp. 121-138.

<sup>2</sup> Fetterolf, D., Wennberg, D., and DeVries, A. Estimating the Return on Investment in Disease Management Programs Using a Pre-Post Analysis. *Disease Management*. (7) 1. 2004.

<sup>3</sup> Linden, A. and Roberts, N. A User's Guide to the Disease Management Literature: Recommendations for Reporting and Assessing Program Outcomes. *Am J Managed Care*. (11) 2. February 2005. pp. 113-120.

<sup>4</sup> Fetterolf, D. and Sidorov. Disease Management Program Evaluation Guide. Washington, D.C. Disease Management Association of America (DMAA). 2004.

<sup>5</sup> Duncan, I. PART 2: ACTUARIAL ISSUES IN CARE MANAGEMENT INTERVENTIONS: Paper 4: Understanding the Economics of Disease Management Programs. Society of Actuaries (SOA). August 16, 2004.

<sup>6</sup> Duncan, I., Owen, R., and Dove, H. Testing Actuarial Methods for Evaluating Disease Management Savings Outcomes. Society of Actuaries. June 2, 2005.

time for individuals whose brainpower can be used elsewhere. Clearly, medical programs present value, which is rarely debated. Value develops in a variety of ways from clinical interventions and produces outcomes along a multidimensional range.

It is important to step back from the grueling debate on return on investment and think about what the actual questions are that we must resolve. From the perspective of an organization undertaking these types of activities, senior management wants to know only a few basic questions. They are concerned mainly about the business rather than an academically pure solution to the problem:

- Is the program underway? Does it meet contractual requirements?
- Is the return on investment a “red number” or a “black number”? (i.e., is there a return on investment at all, or not?)
- If there is a return on investment, is it a *large* one or a *small* one? While the CEO is interested in whether the numbers are black or red, vice presidents need to know whether the number is large or small to appropriately allocate resources.
- How certain are we that value is being created for the amount of money being spent?
- Given two or more possible methods for delivering the service, does one appear to be better than the others are?
- Given several competing demands for capital, should this program be on the list?

If you think about it, a precise return on investment number to two or three decimal places is unnecessary to answer most of the above questions. Therefore, if you take a step back and think about the problem, you might find the following recommendations lead you out of the morass and the stuffy conference room and let you get back to work.

- First, it is important to stop driving ourselves crazy regarding the optimal return on investment methodology. Given the fact that there are a lot of different options, you should simply pick a method. Become familiar with that method, its limitations and its general overall ability to predict whether the program is returning a black number or a red number or a large black number or a small black number. Use it until the industry decides on a “generally accepted accounting principle” for doing it or a decidedly better method emerges.

- Pick a method that you feel most comfortable with, and one that is explainable to senior management. I am sure there are individuals within your organization who assure you that the only way to create a return on investment methodology involves the use of genetic algorithms, neural network simulations or predictive modeling programs that can only be understood by black-belt SAS programmers and PhD statisticians. Resist the urge to go down that path. The additional amount of specificity developed by these methods may be real, but is unlikely to add substantially more insight into the answers to the questions above, cost a considerable additional amount of money, and rarely leave anyone outside a small number of highly focused analysts with a feeling that they have truly resolved the issue.

### **Value develops in a variety of ways from clinical interventions and produces outcomes along a multidimensional range.**

- Absolutely do not propose providing *multiple* ROI methods as a way of resolving the issue or demonstrating choices. Senior managers repeatedly note such a course only confuses the issue and suggests the analysts really don't understand the process at all.
- Use simple methods to come to a consensus that the effect on overall medical costs is a reasonable number, and can be signed off by financial people, clinical people, operations staff, etc. Complex or black-box methods breed anxiety among the non-analytical, who then ask more questions and create more analyses. Use the same method each year to allow comparability. Provide insight into the limitations of the method and whether you believe the results are overstated or conservatively understated.
- It is important to make sure that the method used does not contain some obvious errors in methodology that have now been listed fairly completely in the appropriate literature. Regression to the mean, selection bias, and other basic errors in evaluating programs are errors well documented and known in the industry.

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- Consider discussing the impact of all programs on overall medical care cost trends as opposed to more arbitrary estimates of “return on investment” for individual programs, which share much overlap. The real money is where the total medical care cost trend is moving in any event, and the impact of any medical management programs should be no more than a reasonable change in trend might allow.

### ROI is significant but is alone insufficient for characterizing the economic impact of disease management.

- Present the results as a three-part distribution. Note there is an upper limit on the return that is possible, a lower limit below which it is unlikely the program is having an effect, and an optimal value around which you can develop a discreet point for risk calculations.
- Consider taking the least of the most optimistic results and the greatest of the least optimistic results to represent a confidence interval around which you base your decisions. For example, if the net impact on trend for a medical management program is estimated to be 2.4 percent by the actuaries, 5.6 percent by the medical management vendor and 3.2 percent by the staff and informatics, consider accepting the value of 2.4 percent as an area where *all* can agree. It is a conservative approach, but senior management will see a united agreement on the decision. Similarly, at the lowest end, if the least amount of impact that is estimated is 1.3, 1.7 and 1.0 percent of trend, consider using the 1.7 percent as the lower boundary of the “confidence interval.” The resulting interval, which by definition is agreed upon by everyone, thus puts within range answers to the questions most required by senior management, namely, “Is it a red number or a black number?” and, “Is the number large or small?” Senior management, who have significant fiduciary responsibility

for a large public or private organization prefer to remain conservative about the total impact of medical management efforts.

- Avoid contractual agreements that base reimbursements on ROI guarantees. Because there is no standard method, organizations waste many hours of productive time arguing about the ROI. Given the large number of possible calculations and the problem of high cost and variation in the clinical base in any case, this is sheer folly. Instead, suggest that the contracts build guarantees about easily measurable, discrete outcomes such as program implementation milestones, clinical outcome changes and similar statistics.
- Given the fact that value actually develops from multiple sources, make sure the group presents its findings in a multidimensional format. ROI is significant, but is alone insufficient for characterizing the economic impact of disease management. These other factors are impressive contributors to disease management value and should be considered in their own right. Comprehensive, specific, and sensitive indicators of program activity and results are available across a number of dimensions. A “balanced scorecard” approach may make some sense here.<sup>7</sup> With it, you might describe results along the following axes:

*Operational outcomes*, targeting execution milestones and other proof that the program is executed and developed as described in contractual materials. While not a quality indicator in itself, the absence of operational evidence would suggest any downstream results would be unrelated.

*Clinical outcomes* can be broken down into utilization management results (such as changes in emergency room or hospital admissions) and more quality-oriented results (such as changes in HEDIS scores). While clinical values do not directly

<sup>7</sup> Kaplan, R. and Norton, D. The Balanced Scorecard—Measures that Drive Performance and Putting the Balanced Scorecard to Work, *Measuring Corporate Performance*. Harvard Business Review Books. 1998.

address the issue of return on investment, a clear estimate is possible for the financial impact of many of these changes that result from interventions.<sup>8</sup>

*Financial impact* can be described in a number of ways. But, most senior managers now recommend that these be limited to estimating the effect an overall trend, and perhaps one or two estimates of economic impact, such as predictive models, ROI calculation using reasonable guidelines, call center estimates of projected impact, etc., which seek to confirm the directionality and general magnitude of medical care cost savings.

*Intangible results* also remain important and include patient satisfaction and provider network satisfaction with the process.

- Consider early how you will handle year two and year three of a program. Each year, effective programs will reduce waste and improve quality on a decreasingly incremental scale. Movement of indicators from an unmanaged population can be impressive, but are often less extreme as time goes on. This is not a reason to abandon the programs. If your children could not manage their finances and you started them using a software product to keep track of their bills and income, you would not recommend discarding it after they corrected the problem. Similarly, claims from other vendors that they could produce dramatic impact in a program underway must be viewed very skeptically.
- Follow the activities of the Disease Management Association of America and others seeking to quantify and standardize methodology. The course of this work has

steadily moved from wildly varying results and methodologies to increasingly robust computational recommendations that will help you in your work.<sup>9</sup> While not yet at “the method,” these efforts have greatly helped the industry and will continue to do so.

Overall, the approach described above represents a reasonable, indeed the only reasonable, way large organizations can come to terms with the diffuse issue of economic value in medical management programs. Estimates of whether or not the program is executed properly, and whether or not an impact is being seen, are all that is necessary to determine whether the program should continue. Once a methodology is fixed, changes in the activities undertaken or costs incurred could have expected results on the outcome as one becomes familiar with the limitations, good and bad, of the chosen methodology.

The program administrators will continue to have trouble evaluating the question as to which of two different programs are most effective. There is unlikely to be any realistic way of doing so within the near term until a more standardized and consistent method of evaluation is developed. Problem reduction strategies and methodologies for making choices and complex decisions are available and might be used better than the seemingly quantitative, but inaccurate, approach of ROI calculation.<sup>10</sup>

In conclusion, by stepping back and considering what the important questions are for an organization to decide, medical management programs can be evaluated and a decision made to move forward without the lengthy and expensive process of extended debate over methodology. By contemplating a rational approach to the problem from the outset, an organization can avoid the expensive needless consumption of resources working on an insolvable problem and get on with the business. 📧



Don Fetterolf, MD, MBA, FACP, is corporate vice president, Health Intelligence with Matria Healthcare, Inc. in Marietta, Ga. He can be reached at (770) 767-7074 or don\_fetterolf@matria.com.

<sup>8</sup> Fetterolf, D. and West, R. The Business Case for Quality: Combining Medical Literature Research with Health Plan Data to Establish Value for Nonclinical Managers. *American Journal of Medical Quality*. (19) 2. Mar / Apr 2004. pp. 48-55.

<sup>9</sup> Fetterolf, D. and Sidorov. Disease Management Program Evaluation Guide. Washington, DC. Disease Management Association of America (DMAA). 2004. A follow-up text is scheduled to be available in late 2006.

<sup>10</sup> Hammond, J., Keeney, R., and Raiffa, H. *Smart Choices. A Practical Guide to Making Better Decisions*. Harvard Business School Press. Boston, MA. 1999.