

Driving Value:

Estimating the economic impact of health and disease management services

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Purchasers of health and disease management services have had limited insight into cost savings or specific clinical activities that create value for their employees or members. Learn how OptumHealth is addressing that issue with our Real-Time Performance Management solution.

Summary

A persistent concern for purchasers of health management services is that of quantifying the value of its activities.ⁱ Recognizing that a wide variety of methods are available for assessing financial outcomes of health management programming, as well as a continued lack of consensus on best practices for evaluating program outcomes, OptumHealth developed a Real-Time Performance Management solution using Value Drivers to provide a practical method for measuring and reporting leading indicators of value delivered.

The Problem: No single system exists to help manage activity and costs.

Just as no single model of health improvement works best in all settings, no single measure or method of value assessment is appropriate for all circumstances.ⁱⁱ Not only do positive financial returns often take years of health care management program exposure, but determining the full impact of health management investments also requires rigorous research methods that compare health and cost outcomes of those intervened upon with outcomes of an equivalent comparison group. Many employers and providers lack the resources to delve into such detail.^{iii,iv} In addition, several measures, such as referring consumers to appropriate programs, helping people achieve wellness goals or providing health education, for example, are not routinely found in claims data. As a result, finding specific information about health care management program activities or the effectiveness of such programs, including proving the return on investment (ROI) to senior management, has been a major concern for many business managers. In an effort to balance the operational constraints of conducting rigorous scientific evaluations across all business settings and client types with purchasers' desire for more timely reports of leading indicator metrics, OptumHealth developed a reporting tool that provides real-time indicators of value delivered from identifying and proactively managing members with chronic or other health conditions.

The Solution: OptumHealth eSync intervenes before major health care events

Using eSync, a proactive predictive modeling tool based on medical claims and pharmacy data, lab results, self-reported data, and behavioral and segmentation information to identify potential member health issues, OptumHealth intervenes with members before major health events occur. OptumHealth Care Solutions features best-in-class programs and services to manage health conditions and risks. By improving adherence to evidence-based medicine, reducing unnecessary hospitalizations and health care utilization, and enhancing quality

of life, we give participants, employers and payers the information and tools they need to achieve optimum clinical and financial outcomes. Based on accepted clinical guidelines for care and quality standards, OptumHealth programs and services are intended to "drive" clinical outcomes that result in healthier members and corresponding reductions in health care costs.

The eSync Platform creates an accurate holistic perspective of each member including medical and behavior.



To determine potential medical cost savings resulting from program participation, OptumHealth monetized 800 of these value-driven services or “Value Drivers.”

A Value Driver can have a clinical outcome, such as coaching a consumer to maintain normal blood pressure or blood glucose levels, or be a significant milestone to achieving an outcome, such as helping a consumer increase adherence to beta blocker medication after a heart attack. Value Drivers estimate both clinical and financial outcomes for populations engaged in health management programs.

Value Drivers balance the feasibility and cost of more rigorous claims-based evaluations of financial outcomes with more immediate and clear indicators of potential return on investment in real-time by measuring multiple savings areas, including value related to consumers seeking appropriate treatment, finding the right care providers, making healthy lifestyle modifications or using medication properly.

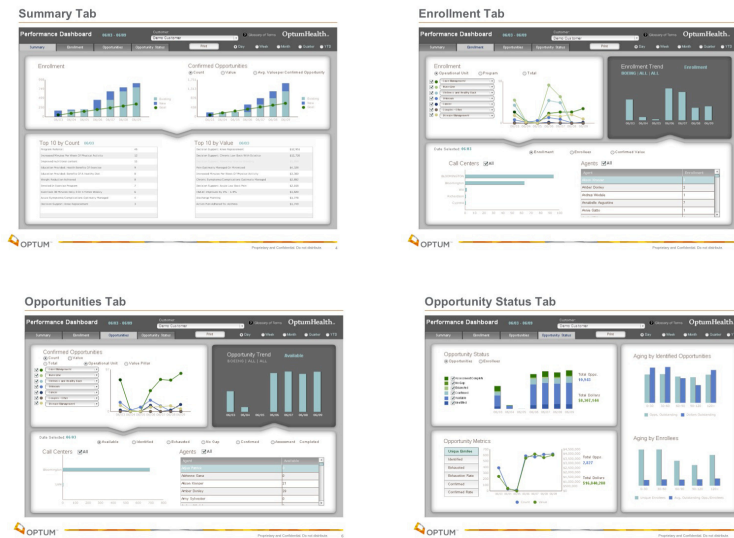
The Real-Time Performance Management capability using Value Driver methodology offers a clear view into specific health management services provided and removes traditional medical claims reporting lags to help payers better understand the potential impact of clinical interventions in a timely manner. In the past, the ability to tailor program activities to specific populations has been limited because reports are not generated until a year or more after program implementation. Real-Time Performance Management provides the ability to continuously modify health care management approaches and operations to create the most value for the payer and consumer by customizing enrollment approaches and delivering focused solutions to address specific gaps and cost drivers.

Methods: Leverage evidence based guidelines

We created and monetized over 800 Value Drivers based on services provided to members by OptumHealth Care Solutions telephonic- or web-based health coaches or nurses. A team of medical directors, health care experts and research analysts developed Value Drivers by examining systemic issues

within given disease states (e.g., over/under utilization of care, lack of education, variation of care), leveraging evidence-based medicine guidelines from recognized leading authorities, utilizing claims-based cost data and examining care recommendations from medical experts. Value Drivers span several domains, including chronic and acute-care conditions, preventive services, health promotion and lifestyle modifications. Each Value Driver is documented to indicate the potential clinical and financial impact of closing a gap in care, methodology for monetization, strength of evidence, assumptions and caveats, supporting documentation and estimated monetary value. Recognition and closure of each Value Driver is either self-reported by a consumer or case-manager reported.

Real time, interactive performance monitoring outlines metrics and ties to goals.



Monetizing Value Drivers: 800 Value Drivers based on OptumHealth Services

Health care analysts created Value Driver monetization models based on medical claims cost data, in-house research analysis of program outcomes or surveys, results reported in peer-reviewed medical literature, or expert medical opinion. To monetize each Value Driver, annual per capita savings and costs related to each service activity were calculated, then summed to yield a net financial effect (cost saved, cost incurred or zero value) for each measure. All Value Driver models calculated with claims data considered only direct medical costs, typically over a one-year time frame. Indirect costs, such as productivity and presenteeism, were addressed for a select group of health conditions based on availability of self-reported work loss survey data, but are not reported here.⁹ To more closely align to future medical expense impacts, Value Driver analyses considered a one-year time frame, and included cost increases (such as additional medication or evaluation charges), as well as cost reductions (such as fewer adverse events, e.g., heart attack, stroke or readmission).

Value Drivers were monetized based on calendar year 2010 data. If existing cost data were used to create a Value Driver and reported results were prior to 2010, a 4.8 percent inflation factor was used to adjust all dollar amounts to 2010 levels (based on the Bureau of Labor Statistics average annual inflation factor for Medical Care Services from 1999–2009). Similarly, if existing data reported values over several years, figures were annualized and assumed to be linear over time. Peer-reviewed literature searches were often conducted to determine metrics needed for a Value Driver model, such as average number of condition-specific medical events per year or statistics supporting an intervention's effect on measures.

All claims-based Value Drivers were monetized using Allowed Amount, which includes health plan liability (net paid amount) and patient liability (coinsurance and deductible amounts) using a UnitedHealthcare commercial population as the reference population. Condition-specific allowed amounts were obtained by analyzing relevant Agency for Healthcare Research and Quality (AHRQ) diagnosis code categories available in claims data. Whenever possible, Value Driver models using claims data included three months of claims run-out to ensure complete information for analyses.

When claims or OptumHealth research data were unavailable or such analyses were unduly complex, valuation estimates were developed based on literature searches to find studies and meta-analyses reporting cost and utilization outcomes. Literature-

based analyses reported over several years were assumed to be linear and annualized. When medical claims or clinical literature were not available, expert estimates were used to monetize a Value Driver. The results of each valuation model were subject to peer review by a multidisciplinary expert panel and documented to support annual savings or cost estimates. Expert panels were asked to avoid undue optimism or conservatism in making their estimates.

Traditional Care Management	OptumHealth Solution
Low numbers of members with focused needs make it difficult to justify specialty programs (i.e. sickle cell anemia, cancer or kidney disease)	OptumHealth integrates a wide spectrum of clinical programs and flex operations accordingly to maximize value for the employer, aslo realizing savings for the member.

Results: Customized to the individual

To illustrate a monetization model, consider a consumer with sickle cell anemia. Based on claims data, the eSync platform flags those not adhering to medication and OptumHealth nurses contact those consumers. By providing helpful tips on how to remember to take medication and education on the importance of taking medication regularly, nurses are able to help patients become compliant with their medication regimes. Research shows that adherence to hydroxyurea, an oral chemotherapeutic drug, improves clinical problems of sickle cell disease, particularly pain. A Value Driver was created to reflect the value of helping consumers become adherent to hydroxyurea therapy. The clinical benefits of this Value Driver include reduction in sickle cell crises and transfusion requirements. The financial benefits include reduced hospital admissions and ER visits related to sickle cell pain crises.

To monetize this Value Driver, a peer-reviewed literature search was first conducted to determine the average number of inpatient (hospital admits) and outpatient (ER) visits for pain crises among sickle cell anemia patients per year. A Cochrane review reported an average of 2 ER visits and 1.95 inpatient admissions per year among sickle cell anemia patients not taking hydroxyurea. Literature was also consulted to determine the difference in rates of pain crises and resulting health care utilization among those treated with hydroxyurea as compared with a placebo group. The Cochrane review showed differences in favor of hydroxyurea treatment, reporting a 38% reduction in inpatient events and a 33% reduction in ER events among sickle cell anemia patients receiving hydroxyurea when compared to patients receiving placebo over a one-year time period.^{vi}

UHC inpatient and ER visit claims data were used to determine the average allowed dollar amount per inpatient admission (\$9,590) and ER visit (\$1,317) for sickle cell anemia. The average daily cost of hydroxyurea was retrieved from a pharmacy database (\$1.20). The total cost of increasing adherence to hydroxyurea was calculated as 91.25 days x \$1.20 = \$110.^{vii}

Value Drivers allow for immediate adjustment in shifting cost drivers.

Savings for this Value Driver were calculated by multiplying the average number of annual ER and inpatient admissions by the average cost of such an admission (including facility and professional charges), then multiplying those costs by the percent reduction in utilization due to treatment as reported in the literature.

The cost of increasing adherence to the medication was then subtracted from calculated savings to determine final estimated savings (Table 1).

Table 1: Sample Value Driver Monetization Model

Savings/Cost Type	Metric/Assumptions	Parameter	Total
	Avg. number of outpatient crises per year	2	
Savings due to reduced number of outpatient (ER) visits	Avg. ER cost for sickle cell patient	\$1,317	
	Reduction in ER use due to treatment with hydroxyurea	33%	
	Subtotal ER savings		\$856
	Avg. number of IP crises per year	1.95	
Savings due to reduced number of in-patient (IP) visits	Avg. IP cost for sickle cell patient	\$9,590	
	Reduction in IP use due to treatment with hydroxyurea	38%	
	Subtotal IP savings		\$7,193
Cost of improved medication (Rx) adherence ^{vii}	Daily cost of medication	\$1.20	
	Medication days added to care plan	91.25	
	Subtotal medication costs	\$110	
Total savings	ER savings + IR savings – Rx cost		\$7,939

While valuation models for most Value Drivers are similar to the one described above, not all result in cost savings. Some Value Drivers have a positive clinical effect, but a net negative financial effect. Examples include improving adherence to high-cost medications, referring consumers to specialists for certain conditions or encouraging consumers to get appropriate tests or procedures for their conditions, all of which could increase medical costs in the short-term, but are likely to improve health over the long-term. Other Value Drivers have \$0 financial effect, but help consumers better navigate the health care system or become more knowledgeable about their health. Examples include educating consumers about providers best able to manage a condition, referring members to other programs best suited to their needs (e.g., NurseLine or wellness coaching), going over details of a treatment plan (e.g., care planning or removing barriers to care) or assessing a consumer’s quality of life.

Real-Time Performance Management reports project per member per month (PMPM) savings for clients. As an example, we examined the number of enrollments in OptumHealth programs and the number of closed or confirmed Value Driver opportunities over a one-year time period for an average-size client. Results showed an average of 3.2 closed opportunities per enrollment across nearly 164,000 members with over 7,400 program enrollments, or an average of \$943 in savings per enrollment or \$3.58 PMPM (Table 2).

Up-to-daily updates quickly identify areas of opportunities to maximize savings.

Table 2: Sample Annual Savings Projects for Average Size Payer

Membership	163,761
Enrollments	7,477
Total savings opportunities identified	\$20,390,736
Project annual savings opportunities closed	\$7,052,860
Opportunities per enrollment	5.1
Closed opportunities per enrollment	3.2
Average savings per enrollment	\$943.27
Average savings PMPM	\$3.58

Real-Time Performance Management customer reports also include metrics on program eligibility, programs and opportunities that drive the most real-time value, any programs with a large amount of value identified but not closed, and the top three opportunities by prevalence and by monetized value, among other service activity statistics.

As with other methods for measuring financial outcomes associated with health and disease management services, the Real-Time Performance Management solution using Value Drivers to estimate medical cost savings opportunities has some limitations. First, claims-based analyses were limited to UHC — due to detailed data requirements and availability, but medical cost savings based on a UHC population may not be generalizable to a given large employer group population. In addition, regular review of the clinical and financial value of Value Drivers is required to keep up-to-date on industry changes (e.g., advances in pharmaceutical treatments, improvements in procedures, medical developments, etc.) and to keep cost models current. Also, potential savings estimates can vary widely by opportunity type and severity of health conditions for particular populations. Value Drivers for different programs targeted populations with various acuity levels (high-, moderate- and low-risk). Case Management/Disease Management program Value Drivers, for example, were monetized based on a high-acuity population. Value Drivers associated with other programs (e.g., NurseLine) were based on a low- or moderate-acuity population. If claims data did not contain information regarding disease acuity level, scientific literature was reviewed to obtain prevalence and health care utilization rates for specific disease risk levels.

Despite these limitations, continuous management and assessment of performance in a real-time environment allows OptumHealth to proactively align operational activities around the most impactful Value Drivers. As the debate continues to determine the best approach to analyze financial outcomes associated with disease and other health management services, our Real-Time Performance Management methodology offers a balanced scorecard approach. Further research is ongoing to determine the validity of Value Driver methodology as a leading indicator of cost savings when compared to medical cost savings for the same conditions among program participants.

Average savings for real-time analysis were 39% below traditional claims analysis.

Conclusion

Typically, disease and health management program results are reported after an 18-month delay in savings calculations for the payer. Our Real-Time Performance Management solution using Value Driver methodology, however, provides an opportunity for immediate understanding of value delivered and the details on specific services provided that lead to closing gaps in care across all types of interventions and health conditions.

Armed with information included in Real-Time Performance Management reports, purchasers can more easily and accurately determine what care services were provided to their members and, as a result, how best to engage their employees to better manage their health.

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- ^v Mitchell R, Bates P. Measuring health-related productivity loss. Population Health Management, in press.
- ^{vi} Jones AP, et al. Hydroxyurea for sickle cell disease (review). Cochrane Database of Systematic Reviews, Issue 2, 2001. (Review updated in February 2007).
- ^{vii} We used the expert opinion of the National Medical Director for OptumHealth Pharmaceutical Solutions to create formulas for Value Drivers using pharmacy metrics, assuming patients who report non-adherence to medications were 65% compliant pre-intervention (237.25 days of medication per year) and 90% compliant post-intervention (328.50 days of medication per year) — a difference of 91.25 additional days of medication annually. The average daily cost of medications was calculated from aggregate cost and utilization pharmacy claims data available from the Gopher Analysis System. To calculate allowed amount for any particular drug, analysts combined paid amount, co-pay amount, and deductible amounts retrieved from the Gopher database. Allowed amount per day was then calculated by dividing allowed amount by days supplied.



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