Engaging Physicians in Risk Factor Reduction

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Abstract

OptumHealth tested the feasibility of physician-directed population management in 3 primary care practices and with 546 continuously insured patients who exhibited claims markers for coronary artery disease, diabetes, and/or hypertension. During the intervention portion of the study, we asked physicians to improve the following health measurements: blood pressure, body mass index, cholesterol, hemoglobin A1c, and smoking status. We offered a modest pay-for-outcomes incentive for each risk factor improvement achieved. Additionally, on an eligible subset of these patients, we asked physicians to actively refer to population management programs those patients they determined could benefit from nurse or health coach interventions, advising us as to which components of their treatment plan they wished us to address. The 6-month intervention period exhibited a 10-fold improvement in the trend rate of risk factor management success when compared to the prior 6-month period for the same patients. A net of 96 distinct risk factor improvements were achieved by the 546 patients during the intervention period, whereas 9 net risk factor improvements occurred in the comparison period. This difference in improvement trends was statistically significant at $P < 0.01$. Of the 546 study participants, a subset of 187 members was eligible for participation in OptumHealth care management programs. Physicians identified 80 of these 187 eligible members as appropriate targets for program intervention. Representing ourselves as “calling on behalf” of the physician practices, we established contact with 50 referred members; 43 members (86%) actively enrolled in our programs. This enrollment rate is 2 to 3 times the rate of enrollment through our standard program outreach methods. We conclude that physician-directed population management with aligned incentives offers promise as a method of achieving important health and wellness goals. (*Population Health Management* 2010;13:255–261)

Introduction

TODAY, DISEASE MANAGEMENT, CASE MANAGEMENT, and health and wellness programs typically approach potential program participants directly, assess medical needs, and make recommendations for modifications to lifestyle and/or treatment plans. Physician engagement, if it occurs at all, usually happens after program interventions are under way. Physicians are often unaware of these interventions or, if aware, feel disconnected from and sometimes at odds with program recommendations. Recent discussions are beginning to highlight the advantages of working more closely with providers to increase clinical effectiveness, decrease care fragmentation, and reduce medical costs. Leveraging the patient’s “trusted clinician” has been demonstrated as an effective tool to enhance population management program results.^{1–3}

OptumHealth, a division of UnitedHealth Group, offers employers population management programs in disease

management, case management, treatment decision support, wellness, and demand management. The initiative we report on here links providers and their patients to our programs in at least 2 new ways:

1. Without defining how they should accomplish this goal, physicians were asked to improve common and important biological risk factors for disease. We offered physicians modest pay-for-outcomes incentives as biometric improvements were achieved.
2. Physicians made direct written referrals to our programs for a subset of the study population. Physicians’ care plans were included with the referral and set the agenda for subsequent patient–staff interactions.

Our goal was to determine whether increased partnership with physicians across these 2 dimensions would yield measurable benefits in program participation and clinical outcomes.

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Methods

Practice selection characteristics

Through a liaison with a local hospital network (Scottsdale Healthcare), we approached 4 primary care practices in Scottsdale, Arizona. Three practices, comprising 14 physicians and 3 nurse practitioners, elected to participate in our demonstration project. These practices had a reputation for quality in the community, and 9 of the 14 physicians are recognized as high-quality, cost-efficient providers through UnitedHealthcare's Premium Designation Program. The smallest practice had 3 practitioners; the largest had 10 including all 3 nurse practitioners. A lead physician and a practice administrator from each practice educated the physicians and office staff about the requirements of the project.

Patient selection characteristics

UnitedHealthcare members who had been treated by these practices within the 24 months prior to the onset of the project were screened through claims data and OptumHealth analytic tools. Patients who had claims or other data markers for diabetes, hypertension, coronary artery disease, lipid/cholesterol abnormalities, and/or obesity were selected for participation. Physician practice personnel cross-checked this membership listing to confirm that these were indeed patients in their practices. Of 586 patients initially identified as potential project participants, 546 patients remained continuously enrolled throughout the project and became the subjects of analysis.

Incentive payments for biometric marker improvements

An incentive payment of \$65 was made for every improvement made in any one of 6 biometric markers: blood pressure (BP), low-density lipoprotein (LDL) cholesterol, high-density lipoprotein cholesterol, body mass index, hemoglobin A1c (if diabetic), and smoking status. Biometric values were categorized into discrete risk levels in accordance with medical literature (Table 1). Changes in biometrics were compensated if a biometric value was identified as at a lower risk level at the end of a payment period than it was at the outset of the payment period. Deductions in payments were not made if biometrics worsened during the payment period, but no additional incentive payment was made to return a patient to the original level of risk. Payments were made at the 3-month and 6-month points during the intervention period.

Physician referrals to population management programs

A subset of 187 of the 546 project participants had full program benefits for our population management programs. We asked physicians to identify target patients from this subset for referral to us by independently judging the clinical suitability of their patients for our program interventions. Physician targeting of patients for programs replaced our usual targeting process for this eligible population. No incentives were paid for physician referrals. A fax referral form was used by providers to indicate clinical topics they wished our nurses and health coaches to address with their patients.

TABLE 1. STAGING OF BIOMETRIC VALUES

Category	Systolic	–	Diastolic
<i>Hypertension</i>			
Stage 2	≥160	or	≥100
Stage 1	140–159	or	90–99
Pre-hypertension	120–139	or	80–90
Normal	<120	and	<80

from:

Category	A1c value
<i>Diabetes</i>	
Poor Control	>9.0
Intermediate Control	9.0–7.0
Goal	<7.0

from: National Committee for Quality Assurance Screening and Control Criteria.

Category	Smokes?
<i>Smoking</i>	
Smoker	Yes
Nonsmoker/Quit Smoking	No

Lipids	LDL value
<i>Low-Density Lipoprotein Category</i>	
Very High	≥190
High	160–189
Borderline High	130–159
Above Optimal	100–129
Optimal	<100

High-Density Lipoprotein Category	HDL value
Low	<40
Normal	40–59.9
High	≥60

from: Adult Treatment Panel III

Category	Body mass index value
<i>Weight Management</i>	
III – Extreme/Morbid Obesity	≥40.0
II – Severe Obesity	35.0–39.9
I – Obese	30.0–34.9
Overweight	25.0–29.9
Normal	18.5–24.9

from: National Heart, Lung & Blood Institute.

The physician's care plan as indicated on the referral form became the main focus of the interaction between the referred members and our disease management nursing and/or health coaching staff. Our staff conducted no direct outreach to project participants except as guided by physician referral. Interactions between our staff and referred patients were conducted telephonically.

Secure e-mail and direct telephonic access to a nurse or health coach were offered as additional means of communication, but were not used by the physicians during the study.

Reporting and analysis

Available biometric values from the medical records of all 546 study participants were reported at the beginning of the comparison period, again at the onset of the intervention

period, and at 3 months and 6 months after onset of the project. Detailed on-site training and subsequent spot audits were carried out to make sure practices understood the reporting requirements and could consistently meet reporting expectations. All practices had electronic medical records (EMRs). In 2 of the 3 practices the data were extracted by hand from the medical record and transposed into an electronic spreadsheet. In the third practice, data extraction was performed by query of the EMR, printed, confirmed by manual review, and directly entered into our reporting database. Practices were paid a small administrative fee for each patient report submitted.

Submitted reports were analyzed for clinical and administrative performance. The project team staged reported biometric risk values into appropriate risk corridors as reflected in Table 1. Measurement of progress on biometric risk factor management was conducted over a year's worth of data according to a pre-post study design, wherein the first 6 months comprised the comparison period and the last 6 months comprised the intervention period. The analysis compared the trend of risk factor improvement prior to the intervention to the improvement trend during the intervention period. Outcomes during the comparison period were identified by changes in risk corridor levels between the starting value of the comparison period and the starting value of the intervention period. Outcomes during the intervention period were identified by changes in risk corridor levels between the starting value of the intervention period and the ending value of the intervention period. For purposes of analysis, if not for payment, net changes in biometric risk profiles (improvements minus regressions) were taken into account.

Results

Biometric risk factor improvement

Net biometric risk factor improvement was calculated as the difference between the number of improvements in a biometric value during a measurement period less the number of regressions. This calculation established the trend of risk factor improvement for each period, respectively. For example, during the intervention period BP improvements = 111 and BP regressions = 48; net was therefore = 63. Net improvements combined for all risk factors = 96 during the intervention period, versus 9 during the comparison period, representing a 10-fold improvement in the rate at which biometric improvements were achieved during the intervention period over the comparison period. This finding was statistically significant ($P < 0.01$, Wald Chi-Square). Biometric marker improvements were led by improvements in BP (net = 63) and LDL cholesterol (net = 22) (Fig. 1).

Analysis further suggests that physicians improved their performance by employing at least 3 tactics (Fig. 2).

1. Increased screening for biometric opportunities 54%. During the comparison period, 581 opportunities were identified, whereas 895 opportunities for improvement were identified during the intervention period.
2. Increased monitoring of biometric progress 27%. Monitoring progress implies the presence of 2 results: a starting result and an ending result. There were 419 pairs of monitored biometric values during the com-

FIG. 1. Biometric risk factor trends. BP, blood pressure; BMI, body mass index; LDL, low-density lipoprotein.

parison period compared to 532 pairs of monitored values during the intervention period.

3. Improved clinical management of identified opportunities 7-fold. (A net of 9 of 581 opportunities improved in the comparison period vs. a net of 96 of 895 opportunities improved in the intervention period).

We noted an increase in pharmacy costs of 6% overall and 2% for medications in pharmaceutical categories related to the biometric interventions. Other utilization numbers were noted to improve, but small numbers and a short time frame precluded any serious statistical analysis.

Referrals by physicians into OptumHealth population management programs

Of the subset of 187 participants in the study who were eligible for referral, physicians elected to refer 80 participants to our programs. Reasons for and the conditions underlying these physician referrals are displayed in Tables 2a and 2b, respectively. We established contact with 50 (63%) of the 80 patients referred. This contact rate is 2 to 3 times higher than our standard contact rate, but not as high as we had hoped. Though we believe we had much more accurate contact information from the physician offices, some of the referred patients did not respond to our calls and the messages that were left. Nevertheless, of the 50 contacted, 43 enrolled in our programs and actively engaged with our nurses and health coaches. By the end of the 6-month intervention period, 21 of the 43 had completed their call care plan with our staff, 19 continued to receive ongoing program support, and 3 had dropped out (Fig. 3). At 86%, this engagement rate following physician referral is considerably higher than our usual program engagement rates and comparable with engagement rates driven by physician input reported elsewhere.²

We noted a shift in the use of program personnel as a result of physician referrals: when compared to participants who enter our programs through standard outreach methods, participants who were referred by physicians were more likely to be managed by health coaches than nursing staff. Physicians appeared to refer participants to our programs at earlier stages in their chronic illness, effecting a redistribution of program participants from those with tertiary prevention

FIG. 2. Physician actions on biometrics.

opportunities to those with more secondary and primary prevention needs. Our nursing staff interviewed all referred participants to determine whether nurse-level intervention was appropriate. Because lifestyle modification guidance is more appropriately given by individuals with health coach training and background, after screening our nurses “turferd” large numbers of study participants to health coaches for

definitive intervention. Distribution of nurse and health coach activity on referred study patients is shown in Table 3.

Finally, patients referred by physicians to OptumHealth programs were 2 times as likely to experience a biometric improvement as those who were not referred. On many occasions, physicians made referrals to assist in patients with achieving biometric improvements, and the increased

TABLE 2A. REASONS FOR REFERRAL TO NURSES & HEALTH COACHES

Opportunity	n	%
Blood Pressure Goal	57	16.3%
Exercise (Walking)	38	10.9%
Exercise (Time > 20 min)	37	10.6%
Weight Loss Goal	35	10.0%
LDL Goal	31	8.9%
Diet/Nutrition (low fat diet)	25	7.2%
Diet/Nutrition (general)	19	5.4%
Medication Adherence (med noted)	15	4.3%
Self-Care Opportunity	15	4.3%
Diet/Nutrition (reduced salt)	14	4.0%
Diet/Nutrition (other comments)	12	3.4%
A1c Goal	13	3.7%
Condition Education (CAD, Diabetes, Hypertension)	10	2.9%
Diet/Nutrition (simple carbohydrate)	11	3.2%
General Comments Made	8	2.3%
Exercise (Time 10–20 min)	5	1.4%
Social Support Opportunity	2	0.6%
Behavioral Health Opportunity	1	0.3%
Exercise (Run)	1	0.3%
Medical/Surgical	0	0.0%
Exercise (Time <10 min)	0	0.0%
Total	349	

TABLE 2B. CONDITIONS INDICATED IN REFERRED CASES

Condition	n	%
CAD	16	11%
Diabetes	15	10%
Hypertension	51	36%
Wellness*	61	43%
Total	143	

*Wellness conditions reflect a number of potential referral indications: smoking cessation, diet and nutrition, exercise, etc. CAO, coronary heart disease; LDL, low-density lipoprotein.

FIG. 3. Referral retention rates at successive phases of population management (after Frazee et al³)

performance on biometric improvements in the referred group suggests that our programs may have been helpful (Tables 2a and 2b). But many biometric improvements also occurred in the group of patients who were not referred. The difference in net biometric improvements per participant in the 187 project participants eligible for referral compared to the net biometric improvements per participant in the 359 project participants not eligible for referral was not statistically significant. The failure to find statistical significance for the better outcomes in the population eligible for referral may be driven by either small numbers in the study, or by the actual probability that selection bias occurs in the manner in which physicians select patients for referral. This latter possibility is not entirely undesirable; having physicians choose appropriate and appropriately motivated patients for participation in our programs can greatly help to improve program efficiency and overall effectiveness.

Discussion

Placing physicians at the center of program management of patients who have or who are at risk for chronic disease

has been recommended as a way to improve population health.¹⁻⁴ It is our belief that putting physicians front and center requires placing our program human and data resources at the physician's disposal and fully supporting the physician's treatment plan for his or her patient. Physicians, of course, must accept accountability for the results and use the resources offered. Previous reports have demonstrated that physicians will actively use well-structured programs.⁵ This investigation was structured as a demonstration project to determine the feasibility and potential usefulness of involving physicians more directly in population management programs and the achievement of population health goals.

When guided by physician referrals, our programs experienced better reach rates for referred patients, higher consumer enrollment and engagement rates, and better and more appropriate patient selection. At first, physicians expressed concerns over the nature of the population management program content and sought reassurance from our nurses and health coaches that they would be "calling on behalf of their practice" to execute physician-driven care plan directives. Prior to the outset of the intervention period, we conducted a 1-hour conference call between the physician offices and our nurses/health coaches during which our staff explained program procedures and physicians asked questions. This advance conversation about population programs proved to be very beneficial in stimulating the referral process. Ultimately, physicians expressed disappointment that more of their patients were not eligible for referral services.

Additionally, from the physicians' standpoint, a key component to success of this project would prove to be the degree to which project requirements could be integrated into day-to-day clinical practice with minimal or no disruption to office routines. All 3 practices had EMRs, which facilitated information retrieval during the reporting periods. One of the

TABLE 3. IN-CALL TIME ALLOTMENTS

<i>Nurse Calls</i>	
n	271
In-call time (h:m:s)	30:32:17
Average in-call time (m:s)	06:46
<i>Health Coach Calls</i>	
n	265
In-call time (h:m:s)	73:59:03
Average in-call time (m:s)	16:45

3 practices was particularly adept at integrating the project into their daily flow via their EMR, reporting the following advantages⁶:

1. By integrating the project eligibility information and referral forms directly into their EMR, physicians in this practice could fax program referrals directly from their EMR while in the exam room with their patients.
2. Quarterly reporting by this practice was performed by an electronically driven data abstract from their EMR, and was completed by their practice administrator within approximately 2 hours per reporting period.
3. In this practice, other office staff routines remained completely unaffected. Amazingly, except for the practice administrator and the physicians, none of the other office staff was even aware a project was in progress.

For other practices that lack EMRs and/or automatable reporting capabilities, much could still be accomplished through manual self-report (eg, National Committee for Quality Assurance and/or Bridges to Excellence style). Modest financial compensation for manual reporting is likely needed for fully scaled programs, as both positive and negative progress on all targeted patients must be followed. In a fully electronic environment, wherein reporting could conceivably be automated, compensation for reporting could arguably be eliminated. For the ultimate payers of these services, full electronic reporting of referrals (program access) and biometrics (clinical outcomes) also creates new and exciting reporting opportunities.

By far the most important findings in this study were the period-over-period improvements in biometric risk factor management. Shifting attention from chronic disease management to management of its root causes has elsewhere been recommended as an important developmental need for population health programs.⁴ The biometric risk factors targeted by our project are clear drivers of long-term complications of chronic illness, and have been identified as cost-effective clinical targets.⁷⁻⁹ They are intuitively understood by physicians as powerful levers to improve long-term outcomes, and obtaining physician commitment to improve patient risk status was not difficult. The ability to significantly alter population risk profiles through modification of these simple measures could have a profoundly positive effect on patterns of health care in the United States. Our results showed that physicians took specific and measurable actions to address biometric opportunities, especially by improving screening, monitoring, and pharmacologic management. Increased pharmacy costs were not surprising given the potential for medications to positively affect biometric values during a relatively short 6-month intervention period. Blood pressure and LDL cholesterol, the 2 leading biometric improvements in this study, are especially responsive to drug therapy in the short term. Though other changes in biometrics measured (eg, hemoglobin A1C, body mass index, smoking) were also generally positive, demonstrating substantial progress for these variables may require intervention periods longer than 6 months.

We believe the inclusion of a modest, outcomes-oriented incentive combined with other pilot characteristics was instrumental in obtaining the favorable improvements in biometric risk factor measurements. Incentives in this program were clear, direct, and timely. Clear: the physician knew

exactly what was required to earn an incentive (eg, move BP to a lower stage). Direct: the physician knew that he or she would be rewarded independently of other compensation when a specific patient improved. Timely: the physician knew that incentives would be paid within a reasonable time of the improvement (in this case, quarterly).

Incentives were outcomes-oriented, not process-oriented, and were paid on an individual achievement basis rather than as a percentage of population reaching a specified target goal. Each biometric—with the exception of smoking status—also offered an incentive for improvement in a stepwise fashion along the gradient from abnormal to goal. We rewarded progress along the entire journey, not just at the final destination. Thus, it was unnecessary for BP to completely normalize before an incentive was paid. Such partial improvements can be of significant clinical value¹⁰: for example, a 1% improvement in A1c from 10 to 9 will yield greater reductions in complications, costs, and utilization for diabetics than a 1% A1c improvement from 8 to 7.

Stair-stepped rewards also provide physicians with a continued incentive to treat patients who otherwise might not be serious candidates for incentive payments in a “percent at target” type of incentive program. For providers who continue to manage difficult cases, rewarding modest improvements in a stepwise fashion counters perverse incentives found in other pay-for-performance programs (eg, physicians may overtreat some patients to achieve an “optimum” target value [“numerator management”], and/or may discharge patients from their care who seem unlikely to ever reach compensable levels of performance [“denominator management”]). Offsetting denominator management tactics could have special relevance for the care of subpopulations for whom ideal results are particularly elusive. Modest improvements in performance in these communities can have important effects on overall care.¹¹

Approaches like ours can support patient-centered medical homes (PCMH), but can also be applied to non-PCMH practices that accept responsibility for chronic disease management. Furthermore, while this program by no means fulfills all the requirements for PCMHs (eg, access requirements), important PCMH components such as patient management, outcomes, and alternative payment methodologies are reflected in the program design and its results. Successfully engaging physicians, as we have, extends physician practice capabilities in ways that ultimately help them qualify for future PCMH recognition.

There are certain limitations to generalizing these results to other practices and other populations. Pertinent to this study:

1. Physician practices were selected for participation on the basis of perceived interest in projects of this nature, and may not reflect interest in or capabilities of other practices in population management.
2. The study period lasted only 6 months, following which our ability to further track biometric progress was surrendered. Therefore, we do not know whether biometric progress was maintained, or whether perhaps further progress was achieved. We hypothesize that a continuous program will be required to preserve and further improve long-term outcomes.

3. Related to continued achievement and maintenance of clinical improvements, projections of incentive costs for other populations is uncertain. On the basis of these reported findings, providing incentives for biometric improvements to physicians on a net improvement basis across comparable full covered-life populations would cost in the range of \$0.33 per member per month. Other populations with differing burdens of risk will likely experience different costs for incentives. On the positive side, greater incentives paid under this model are the direct result of greater risk reductions, which are then accompanied by greater medical cost offsets for the diseases and complications these risk factors portend.
4. Because the comparison and intervention periods were sequential, the passage of time from one period to another may have been instrumental in the improving biometric results. For example, one confounding factor often noted over time is regression to the mean. We believe regression to the mean is an unlikely explanation for the observed differences in biometric performance between the two periods. Because we compare the underlying trend of risk factor improvement during the comparison period to the trend of risk factor improvement after intervention, any rate of regression to the mean is captured in the comparison period measurement. Differences in trends from one period to the next are therefore likely due to intervention effect.

We believe the results of this pilot are encouraging enough to stimulate the larger and more sophisticated studies required to confidently generalize these findings to other populations and other settings. If these interventions can be generalized to other practices in other communities and with other patient population characteristics, broad scale application of such programs may be worth entertaining. Challenges to broad scale application of these principles are not insignificant. Use of these methods in thousands of physician practices and with millions of potential health care consumers can ideally be envisioned only in an electronically connected health community.¹¹ The task would be daunting but in our opinion qualifies as a meaningful use of health care technology.

Acknowledgments

The authors would like to acknowledge Harlan A. Levine, M.D. for his leadership in the development of the conceptual basis of this study.

Author Disclosure Statement

Dr. Springrose and Mr. Friedman, and Mr. Gumnit were employees of OptumHealth Care Solutions, a division of UnitedHealth Group, at the time this work was done and

currently. Mr. Schmidt was an employee of Optum Health Care Solutions at the time this work was done and is currently an employee of Accetive Health. They were not compensated for the writing of this paper, and disclosed no conflicts of interest.

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