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# Medicare Disease Management in Policy Context

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*Interim results of the Medicare health support (MHS) demonstration projects suggest that commercial disease management (DM) is unable to deliver short-term medical cost savings. This is not surprising given the current DM program focus on compliance with process measures that may only lead to cost savings in the long term. A program focused on reducing near-term hospitalizations is more likely to deliver savings during the initial 3-year phase of MHS. If the early trends in MHS are indicative of the final results, CMS will face the decision of whether to abandon commercial DM in favor of other chronic care management strategies. This article supports the upcoming assessment by describing the characteristics of the current commercial DM model that limit its ability to deliver short-term medical cost savings and the changes required to overcome these limitations.*

## INTRODUCTION

As rising health care costs continue to draw attention, the rate of increase in Medicare expenditures, which significantly exceeded those of the overall U.S. health care system (9.3 versus 6.9 percent in 2005), is of particular concern to policy-makers. The escalation in Medicare Part A spending is consuming a greater share of Federal revenue, and current projections suggest that Medicare outlays will exceed dedicated revenues by 45 percent of total

expenditures in 2012 with the Hospital Insurance Trust Fund remaining solvent until 2018.<sup>1</sup> Underlying this trend is the increasing number of beneficiaries living with multiple chronic conditions. Chronic conditions are a leading cause of illness, disability, and death among Medicare beneficiaries and account for a disproportionate share of health care expenditures. While approximately 14 percent of Medicare beneficiaries have heart failure, they account for 43 percent of Medicare spending. Approximately 18 percent of Medicare beneficiaries have diabetes, yet they account for 32 percent of Medicare spending. Thus, to limit increases in overall program expenditures, Congress is actively pursuing strategies to contain costs of the chronically ill subset of beneficiaries.

With many approaches to chronic DM and little agreement on the most effective approach, the 2003 Medicare Modernization Act included several demonstration projects to assess the various approaches and inform Medicare's chronic DM strategy. Section 721 of the Act, known as MHS, tests one approach in which commercial vendors provide DM interventions to fee-for-service beneficiaries with chronic illnesses. These 3-year demonstration projects were awarded to eight companies, with the first programs becoming operational in August 2005, and the eighth and final program becoming operational in January 2006. The pilots follow a randomized-controlled design and require

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<sup>1</sup> Projections are from the 2006 Medicare Trustees Report. Available at: <http://www.cms.hhs.gov/apps/media/press/release.asp?Counter=1846> (Accessed 2008.)

that vendors reimburse the Medicare Program in full if they are unable to achieve budget neutrality (inclusive of vendor fees).

While official results of Phase I are not due for over a year, three vendors have withdrawn early (LifeMasters, McKesson, and Cigna as subcontractor to Healthways) and, in the preliminary evaluation of the first 6 months, the remaining projects have failed to achieve medical cost savings in excess of vendor fees (McCall, Cromwell, and Bernard, 2007). These early results lend support to a growing body of literature concluding that commercial DM programs do not generate medical cost savings. The U.S. Congressional Budget Office (2004) review of the DM literature concluded that "...there is insufficient evidence to conclude that disease management programs can generally reduce the overall cost of health care services." This was followed by several literature reviews, such as Ofman et al. (2004) and Matzke et al. (2007), which arrived at similar conclusions. The most recent review by Matzke and colleagues, which included 317 individual studies, reported that "...when the costs of the intervention were appropriately accounted for and subtracted from any savings, there was no conclusive evidence that disease management leads to a net reduction of direct medical costs."

At the end of Phase I, CMS will face the decision of whether to expand MHS to a second phase. If the early trends are indicative of the final Phase I results, policymakers should consider the changes that must be made to the commercial DM model to improve the likelihood of achieving cost savings and then assess whether the model is sufficiently compelling, when compared to other chronic care management strategies, to justify pursuing it. This article contributes to this process by describing the characteristics of the current commercial DM model that limit

its ability to attain short-term medical cost savings and then discussing the changes required to overcome them.

## **MEDICAL COST SAVINGS IN DM PROGRAMS**

Prior to the initiation of a DM program, three questions should be answered to inform DM program design and set realistic expectations for the outcomes that will be realized: (1) What is the timeframe over which medical cost savings are expected to be achieved? (2) Given this timeframe, which categories of medical costs have the potential to be reduced? (3) Is there sufficient opportunity in a given population to achieve this targeted reduction in medical costs? Problems arise when the answers to these three questions are inconsistent. The current commercial DM model<sup>2</sup> suffers from a mismatch between the expectation of a short-run return on investment and an intervention that targets medium to long-term medical cost savings. Thus, the first step toward fixing the current DM model is to develop an internally consistent approach.

The answer to the first question should be guided by the financial requirements of the stakeholder seeking to pursue DM for their population. Although savings can be realized in the short, medium, and long term from altering the course of disease progression, most payers seek a short-term return on their investments. For-profit organizations strive to maximize shareholder value and, along with non-profit organizations, are hesitant to invest in long-term interventions when their population has significant turnover and they are not confident that the program will reduce medical costs. The 3-year timeframe

<sup>2</sup> Commercial DM offers payers stand-alone programs to improve the management of their chronically ill population; the components of the typical program are described in Table 2.

**Table 1**

**Reduction in Hospitalizations for Budget Neutrality in the Medicare Health Support Demonstration Projects**

Assumption	Diabetes Hospitalizations	Congestive Heart Failure Hospitalizations	Congestive Heart Failure + Diabetes Hospitalizations	Total Hospitalizations
Hospitalizations per 10,000 Beneficiaries <sup>1</sup>	402.5	1,312.50	1,715	9,500
Average Cost per Hospitalization <sup>2</sup>	\$10,000	\$10,000	\$10,000	\$10,000
Total Hospital Costs <sup>3</sup>	\$4,025,000	\$13,125,000	\$17,150,000	\$95,000,000
Total Average Program Fees per 10,000 Beneficiaries <sup>4</sup>	\$13,980,000	\$13,980,000	\$13,980,000	\$13,980,000
Reduction in Hospitalizations to Achieve Budget Neutrality <sup>5</sup>	347%	107%	82%	15%

<sup>1</sup> Average baseline rate for the intervention group across all 8 commercial disease management vendors.

<sup>2</sup> Assumed.

<sup>3</sup> Calculated: Row 1 X Row 2.

<sup>4</sup> Based on average of range of monthly fees \$74 - \$159 = \$116.5 X 12 months X 10,000 beneficiaries.

<sup>5</sup> Calculated: Row 4 ÷ Row 3.

SOURCE: McCall, N., Cromwell, J., and Bernard, S.: Evaluation of Phase I of Medicare Health Support (Formerly Voluntary Chronic Care Improvement) Pilot Program Under Traditional Fee-For-Service Medicare. RTI International. June 2007. Internet address: <http://www.cms.hhs.gov/Reports/Downloads/McCall.pdf> (Accessed 2008.)

of the first phase of MHS reflects this focus on short-term medical cost savings.

In the short term, reductions may be more easily achieved for certain types of costs incurred by chronically ill populations. In the commercially insured, Medicare and Medicaid populations, the single largest health expenditure is inpatient utilization (nearly 33 percent in 2005) with 13.3 percent of all emergency department visits associated with a hospital admission (McCaig and Newar, 2006). Chronic diseases are generally classified as ambulatory care sensitive conditions—diagnoses for which timely and effective outpatient care reduces the risk of hospitalization (Billings et al., 1993). The second and third largest health expenditures, physician and clinical services and prescription drugs, typically increase as part of successful interventions targeting chronic illness (U.S. Congressional Budget Office, 2004; Linden, 2006; Ofman et al., 2004). Therefore, the primary opportunity for commercial DM programs to realize short-term medical cost savings is via reductions in costly avoidable hospitalizations and the emergency department visits that often lead to them (Linden, 2006). Further, a focus on avoiding the first admission during the intervention period is critical

given that hospitalizations for chronic illnesses are relatively rare events and individuals may only experience one hospitalization over the entire course of a program. If the first admission is missed, the DM program may not have another opportunity to reduce the participant’s medical costs.

Before initiating a DM program in a given population, a numbers needed to decrease (NND) analysis should be conducted to assess whether there is sufficient opportunity for an intervention to achieve medical cost savings. An NND factors in variables including population-specific hospitalization rates, average cost per hospitalization, and the fees that will be charged by the vendor to project the percent of hospital admissions that need to be prevented to achieve a given savings target. Two recent studies using this analysis (Linden, 2006; Linden and Biuso, 2006) calculated that between 11 and 74 percent of hospitalizations needed to be reduced for a DM program to break even on fees. An NND for the MHS projects estimates a 15-percent reduction in all cause hospitalizations and an 82-percent reduction in disease-specific admissions (congestive heart failure and diabetes) to break even on fees alone (Table 1).

An NND also informs the size of the population that should be included in a DM intervention and the fees that should be paid to vendors. The disease-specific hospitalization rate and the percent of hospitalizations required to break even will vary in relation to the disease severity of the population; in a sicker population with a higher attendant admissions rate, a lower percent of hospitalizations will need to be decreased to break even. However, a narrowly focused program targeting only the sickest patients addresses only a small fraction of the total disease burden and is unlikely to achieve the goals of DM at the population level. To determine a reasonable fee schedule, the percent of hospitalizations the vendor expects to decrease in the specific population should be estimated and then, given the client's average cost of a hospitalization, fees should be set below the expected savings.

Under these two considerations, both DM vendors and their clients are best served by a program that is able to reduce the greatest percent of hospitalizations in the largest chronically ill population. To achieve this, each of the three components of the typical commercial DM model must be successfully executed. First, individuals within the target population at risk for a near-term hospitalization must be accurately identified. Second, they must be enrolled and actively participate in the program for a meaningful period of time. Third, the program must include interventions that modify or close deficits in participant and/or provider behavior (i.e., self-care and care-seeking behaviors and medical treatment or management) that lead to near-term hospital admissions. As currently structured, the commercial DM model is not optimally executing any of the three components. The typical approach, the barriers to realizing short-term cost savings, and recommendations

to address the shortcomings are discussed for each component in the following section and summarized in Table 2.

## **CURRENT DM MODEL AND SUGGESTED CHANGES**

### **Identification**

DM programs typically use medical claims to identify patients with a specific chronic condition who were hospitalized in the prior year and then target them to receive an intensive intervention of regularly scheduled outbound calls from clinical staff. Participants with no medical claims for a hospitalization or emergency department visit in the prior year are classified as low risk and typically receive only quarterly mailings. A recent study conducted in a large managed care population reveals the problem with this approach (Linden and Goldberg, 2007). Members hospitalized for a chronic illness in a given year were categorized by prior year hospitalization status. The claims-based identification and stratification methodology, identical to that typically employed by DM companies, showed that only 6.4 percent of patients hospitalized in the current year had been hospitalized in the prior year. Thus, the vast majority of current year hospitalizations came from members who would have been misclassified by a DM company as low risk, unidentified due to lack of claims data, or newly enrolled in the health plan. Had these members been enrolled in a DM program that targeted only high risk patients based on prior hospitalizations they would have received either a minimal intervention or no intervention at all, making it highly improbable that the program could have prevented their hospitalizations.

DM programs are increasingly using predictive modeling to improve claims-based

**Table 2**

**Overview of Current Commercial Disease Management Model, Barriers, and Suggested Changes**

<b>Component</b>	<b>Current Model</b>	<b>Barriers to Reducing Hospitalizations</b>	<b>Suggested Changes</b>
Identification	<p>Identification of potential participants via medical claims analysis.</p> <p>Focus on prior-year hospitalization as primary inclusion criteria</p> <p>Stratification via predictive modeling software.</p>	<p>Majority of people with prior year hospitalizations not readmitted in following year.</p> <p>No data on new members of a population.</p> <p>Predictive modeling software not very accurate in predicting future medical costs.</p>	<p>Supplement claims-based identification and stratification with data from a health risk assessment administered regularly.</p> <p>In the future, include newly available sources of clinical data such as electronic medical records.</p>
Enrollment	<p>Participant contacted via mail and/or telephone.</p>	<p>Labor-intensive process that results in limited scope.</p> <p>Failure to address barriers to enrollment (i.e., readiness to change, conflict with traditional care delivery).</p>	<p>Incorporate motivational interviewing-based enrollment.</p> <p>Implement interactive voice recognition or Web-enabled technologies.</p>
Intervention	<p>Quarterly telephone contact focused on compliance with process measures.</p>	<p>Timing of calls sequenced to process outcomes and not impending hospitalizations.</p>	<p>For high-risk participants, conduct more frequent contact via remote telemonitoring.</p> <p>Incorporate medication management and influenza vaccinations into intervention.</p>
Other	—	<p>Inadequate physician engagement</p> <p>Inconsistent participant compliance.</p> <p>Opportunity for medical cost savings not assessed in advance of program initiation.</p>	<p>Implement systematic approach to physician buy-in including incentives.</p> <p>Include participant incentives for participation.</p> <p>Conduct a numbers-needed-to-decrease analysis in advance of program initiation.</p>

SOURCE: Linden, A., Oregon Health & Science University and Linden Consulting Group, and Adler-Milstein, J., Harvard University, 2008.

identification of individuals at risk for high medical costs. These statistical models use past medical claims and other basic demographic data to predict future costs. Predictive modeling should improve on the approach previously described. However, it requires past claims history in order to achieve any reasonable degree of accuracy, and it still fails to incorporate many factors that explain health care utilization that are not reflected in administrative data, such as predisposing and enabling factors and perceived need. A recent study comparing the accuracy of several commercial models to predict high-cost participants based on their past claims history found that all models significantly underpredicted high-cost individuals and overpredicted low-cost individuals (Winkelman and Mehmud, 2007).

The best fitting model underpredicted costs by 73 percent in the highest cost percentile (99-100) and underpredicted costs by 52 percent in the 96-99th percentile of costs. These models fared worse when no past claims history was available and therefore would be uninformative for new entrants to a population. Given the importance for DM programs to prospectively identify individuals who will incur high costs in the near future, such low predictive ability can lead DM vendors to miss the patients most likely to have an acute episode in the near term.

In light of these shortcomings, DM programs should look beyond claims data to other sources of patient data. Psychometrically validated health risk assessments (HRAs) developed to predict future hospitalizations should be used

in conjunction with claims-based models and they offer a compelling alternative when no claims history is available. Several instruments have been developed specifically for the senior population (Boult et al., 1993) and achieve reasonably good predictive accuracy; the sensitivity-specificity tradeoff measured by an area under the curve is consistently around 70 percent (Wagner et al., 2006). At program initiation these surveys can be distributed at the population level to improve identification, and then readministered quarterly to find incident cases as well as track changes in risk status of previously surveyed participants. Many DM programs have such tools available but use them on a very limited basis; thus, increasing their use would not require a fundamental overhaul of the identification approach and, if administered electronically, would minimize the incremental cost.

There are two other potential approaches to identify patients at risk for a near-term hospitalization. A direct referral from the patient's physician is the most accurate means of identifying suitable candidates for a DM program. Despite the fact that many DM programs have a channel for such direct referrals, physicians rarely use them. Physicians may not be aware of patient eligibility for DM or may not support the program. The broader issue of how to engage physicians in DM is discussed at the end of this section. Electronic medical records (EMR) and other repositories of clinical data that include medication lists and laboratory values are rich sources of up-to-date patient information. Health systems such as Kaiser Permanente rely heavily on their EMR for such purposes (Hyatt, Taylor, and Budge, 2004), but outside of integrated delivery systems, third-party access to EMR data would have to be negotiated. Further, the U.S. health care system does not yet have widespread

EMR adoption to support this approach. Thus, while both of these strategies are promising, under the current health care delivery system supplementing claims-based identification with HRAs is the most compelling approach to improve identification of high risk patients.

## Enrollment

DM program enrollment entails calling the individual to request their participation. This process is labor intensive and time consuming, limiting the number of eligible persons that can be contacted in a timely fashion. Further, people are often wary of discussing health-related issues with strangers over the telephone and potential participants must be convinced that the program is legitimate. In commercial DM programs, enrollment rates are quite low and vary by disease, with asthma program enrollment rates averaging 10 percent and congestive heart failure program enrollment rates averaging 30 percent of the eligible population (Lewis, 2007). Vendors in the MHS project are strongly incentivized to maximize enrollment within the required opt-in approach and have achieved high enrollment rates in the first 6 months of the MHS projects ranging from 65 to 92.3 percent (McCall, Cromwell, and Bernard, 2007). However, mean time-to-agreement ranged from 37 to 100 days, revealing that in the best case it took over a month to enroll beneficiaries in the program. Further, those agreeing to participate were considerably healthier compared to non-participants, indicating that the beneficiaries who could most benefit from DM require even greater effort to enroll.

An HRA is also helpful in the enrollment process as it identifies individuals who are ready to consider changing their health behaviors and as a result are more likely

to enroll in the program. The percentage of individuals in any given population that are ready to change their behavior is not easily quantified as it is highly dependent on how readiness to change is defined and differs by the particular behaviors that are targeted. Most survey instruments include questions based on Prochaska's (1979) stages of change psychosocial model for determining the level of readiness to change. Participants who are at least contemplating change, once identified, should be contacted by program representatives trained in behavior change methods, such as motivational interviewing. Such techniques help participants overcome ambivalence and increase likelihood of enrollment (Miller and Rollnick, 1991). Representatives who are not trained in these methods may be too directive or confrontational, which can reverse a prior commitment to change (Amrhein et al., 2003) and discourage participation. Given the expense associated with telephonic enrollment, programs implemented in large populations should consider the use of interactive voice recognition (IVR) or Web-enabled technologies to maximize the outreach to eligible participants. A tradeoff exists between the narrow-and-deep telephonic approach and the wide-and-shallow approach that IVR technologies facilitate. An optimal enrollment model would include a technologically-based outreach process that draws on motivational interviewing methods. However, this combination is not currently mature enough to be widely available. Thus, the choice of approach should be driven by the broader decision on the size of the population targeted to receive the intervention.

Incentives have been shown to further increase participation rates. For example, one employer-based program achieved a 90-percent HRA response rate when a \$500

rebate on medical premiums was offered, compared to a 20-percent response rate with no incentive (Finkelstein and Kosa, 2003). Incentives also appear to elicit changes in health behaviors. A recent study demonstrated that even modest incentives were effective in motivating overweight employees to lose weight. After 3 months, individuals who received \$14 for their participation lost 4.7 pounds on average compared to only 2 pounds in the control group (Finkelstein et al., 2007). Physician incentives can further bolster enrollment by sharing the cost savings associated with the program or by providing a pay-for-performance initiative in which they are paid for enrolling and supporting their patients in the program. While incentives increase program costs, at the right level they may be offset by a concomitant increase in enrollment and active engagement assuming that the subsequent intervention reduces medical costs.

## **Intervention**

For participants classified as high risk, most commercial DM programs share a common intervention approach focused on improving process measures (e.g., increasing regular testing of glycosylated hemoglobin [HbA1c] in diabetics) in order to avoid costly complications in the future. Since most process measures are performed periodically (i.e., diabetics should receive an HbA1c test between two and four times per year), the core DM intervention is comprised of patient calls around the time that these tests should occur. A recent study conducted by Healthways, Inc. reported that program participants with diabetes (245,668 unique members with diabetes from 25 different health plans across the United States) received no more than four calls in their first 12 months of the program

(Coberley et al., 2007). While periodic calls to participants have proven adequate to elicit improvements in screening rates (Coberley et al., 2007), they are insufficient to pick up on signs that patients are at risk for a near-term emergency department visit or hospitalization. Further, there is evidence to suggest that most clinical practice guidelines for chronic illnesses are not modified to consider the needs of older patients with multiple and complex comorbidities (Boyd et al., 2005). Thus, it is possible that this emphasis on adherence to practice guidelines focuses on the wrong aspects of care for this population and may have a detrimental effect on outcomes.

Several interventions have been shown to be successful at reducing avoidable admissions, but they require a greater frequency of patient contact than is currently the norm. Most participants at highest risk of a near-term hospitalization need to be assessed daily. One strategy is to use outbound calls conducted by individuals proficient in behavior change methodologies. Remote telemonitoring (RTM) technology offers an alternative strategy for assessing patient status and is typically less costly than daily outbound calls. Via RTM, the signs or symptoms of an impending acute exacerbation triggers an alert to a nurse who can respond immediately and triage the patient to the appropriate ambulatory care setting. For example, daily monitoring of congestive heart failure patients catches symptoms including weight gain, lower extremity edema, and increasing dyspnea that are typically present in the 8 to 12 days prior to hospitalization (Schiff et al., 2003). A recent systematic review of RTM reported that, in the majority of studies of chronic obstructive pulmonary disease and cardiac diseases, RTM led to significant decreases in hospitalizations, emergency department

visits, and length of stay; studies of diabetes and hypertension had mixed results (Pare, Jaana, and Sicotte, 2007). However, RTM is expensive and, in diabetes, it is estimated to cost between \$300 and \$400 per patient per year when sponsored by a physician practice (Adler-Milstein et al., 2007).

Other interventions shown to reduce near-term avoidable admissions include the provision of seasonal influenza vaccinations (Nichol, Baken, and Nelson, 1999) and a monthly pharmacist review of a patient's medication profile (Hepler and Strand, 1990). The latter may substantially reduce avoidable hospitalizations caused by drug-related problems such as untreated indications, use of the medication without indication, improper drug selection, sub-therapeutic dosage, overdose, adverse reactions, interactions, and failure to receive the drug (Strand, Morley, and Cipolle, 1990).

### **Physician Engagement**

One of the biggest challenges in commercial DM is engaging physicians to support the program. These programs have little ability to collaborate with physicians, many of whom are skeptical of DM initiatives and view them as disruptive to the physician-patient relationship (Leider, 1999). Without explicit endorsement from their physician, many patients will not enroll or adhere to the intervention provided by the DM program (Leider, 1999). This is problematic as physicians are well positioned to identify potential participants and persuade them to participate in a DM program. Further, when physicians are actively involved in the intervention process, it is more likely that a DM program will be able to effectuate sufficient change in a patient's clinical condition to avoid an acute exacerbation.

A recent article on the role of physicians in DM reports several barriers to physician engagement including a lack of financial incentive, a lack of technology to facilitate communication, and the need for a trusted practice-based program champion (Kuraitis, 2007). Leider (1999) suggests five core strategies to achieve physician buy-in for disease management programs. These include (1) educating physicians on the goals of the DM program, (2) identifying champions with positive views of the program, (3) setting clear goals and expectations for physicians who participate in the program, (4) demonstrating that a relatively easy program works before attempting a more complex or controversial program, and (5) sharing the gains by rewarding physicians for their time and effort supporting the program. While such strategies are likely to strengthen physician support of commercial DM, they raise the broader question of the appropriate role for each player in supporting chronic DM.

Some view commercial DM companies as filling a gap in our acute care focused delivery system that has consistently failed to deliver high-quality care to those with chronic illnesses. However, the flaws of a third-party work-around are evident in the increased fragmentation of care that results from a lack of coordination between DM vendors and traditional care delivery settings. A compelling alternative is Wagner's Chronic Care Model that includes a primary care-based medical home. Proponents of this model believe that the primary care team is the entity best suited to deliver chronic care management (Geyman, 2007). In this model, the primary care physician leads a team of specialists, nurses, dietitians, pharmacists, and health educators to provide and coordinate all the care for a chronically ill population. With evidence of cost reduction and quality improvement from Group Health

Cooperative and Kaiser Permanente, primary case-based DM enjoys empirical support (McCulloch et al., 2000). Recent pay-for-performance programs that attempt to align payment incentives with high-quality chronic care also reflect a belief that chronic care is the responsibility of physicians and the systems in which they operate (Rosenthal et al., 2007).

## **IMPLICATIONS FOR MEDICARE HEALTH SUPPORT**

The current commercial DM model has shortcomings within each program component that severely limit the short-term medical cost savings that can be achieved. By relying on claims data, individuals at risk for a near-term hospitalization cannot be accurately identified. Behavior change specialists and physicians are not actively engaged to support recruitment and intervention efforts. Finally, participants are contacted too infrequently to detect impending acute episodes. While there are few easy solutions to address the flaws in this model, there are several evidence-based changes that could be implemented to increase the likelihood of achieving short-term medical cost savings. These include: (1) drawing on clinical data and health risk assessments for patient identification and risk stratification; (2) using behavior change experts in conjunction with patient and physician incentives for enrollment, participation, and retention; and (3) tailoring the intervention to the risk level of the participant with the participants at highest risk for a near-term admission receiving daily monitoring via RTM as well as monthly medication reviews, quarterly process reminders, and seasonal interventions. It is critical that changes be made to all DM program components as they are interdependent; improving

identification will only lead to medical cost savings if the enrollment process and interventions are properly designed. However, making the model more robust could substantially increase the cost of implementing the program, increasing the medical cost savings required to deliver net savings.

Placing this discussion in the context of MHS, at the conclusion of Phase I CMS will have to determine whether to authorize a second phase. Along with an assessment of beneficiary and provider satisfaction, process improvements, and health outcomes, CMS will assess the financial outcomes. The results of a simple NND calculation suggest that, on average, a DM vendor participating in the MHS demonstration would have to reduce all-cause hospitalizations by about 15 percent to break even on fees alone. If DM can only impact congestive heart failure and diabetes (the primary and secondary conditions targeted by MHS), the percentage decrease in hospitalizations needed to achieve the cost savings target lies closer to the 82-percent reduction estimate. The MHS interim report reflected few statistical or substantive differences in the rate of hospitalizations, 30-day readmissions, and emergency room visits between the intervention and control group after 6 months. Thus, in light of the DM model flaws, achieving a 15-percent reduction in all-cause admissions or an 82-percent reduction in disease-specific admissions is unlikely for the current programs. If vendors implement the changes previously discussed, a sufficient reduction in hospitalizations may be achieved before the final MHS evaluation is conducted. However, this will require further investment in the interventions on top of the current monthly fees that range from \$74 to \$159 per beneficiary (McCall, Cromwell, and Bernard, 2007). Thus the

question remains as to whether commercial DM can achieve net cost savings in the chronically ill population. Ultimately CMS will have to assess the potential for commercial DM to be more cost effective than alternative approaches currently under study in other demonstration projects in deciding how to proceed with managing the chronically ill.

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