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L&M
Policy Research, LLC

Evaluation of Care and Disease Management
Under Medicare Advantage
Contract HHSM-500-2006-0009I/TO4

Interim Report - FINAL

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EXECUTIVE SUMMARY

The projected financial burden of paying for chronic disease treatment is enormous – it is estimated that spending for individuals with chronic conditions will contribute towards approximately 80 percent of the annual $1 trillion the U.S. spends on health care[1]. This burden is particularly severe within the Medicare population, where 75 percent of those over age 65 report having at least one chronic condition and nearly half of those report having two or more conditions[2]. Medicare beneficiaries with high-prevalence, high-cost, medical conditions typically require frequent and expensive health care from a wide range of providers. The risk of fragmented and duplicative care resulting in unnecessary hospitalizations, re-admissions and poor health outcomes, is great. Beneficiaries are often poorly positioned to manage their complex care needs and navigate the health and social service systems they interact with. While some may benefit from the help of caregivers, a great number of beneficiaries lack adequate support and even those that do could benefit from additional intervention; this could include managing specific conditions and diseases, such as in disease management programs, or focus more broadly on managing and supporting the continuum of care, such as with care management programs.

To help minimize the quality of life and budgetary impact of chronic illnesses, the Centers for Medicare & Medicaid Services (CMS) has undertaken a series of major demonstrations to explore health care coverage options directed at beneficiaries with chronic illnesses. For example, the CMS initiated Care Management for High Cost Beneficiaries (CMHCB) demonstration pays provider groups under the Original Medicare program to identify beneficiaries with multiple conditions and develop interventions, such as better care coordination or appropriate use of different medical care settings, to improve care delivery and outcomes.

While CMS has funded End Stage Renal Disease (ESRD) and Special Needs Plan (SNP) evaluations within managed care settings, the spectrum of disease and care management programs available through Medicare Advantage (MA) plans is not well documented. With the advent of the Part D prescription drug benefit, enrollment in Medicare managed care products has surged and health plans now have that critical treatment component within their purview. Care and disease management (C/DM) programs are currently implemented and defined in many different ways. For the purposes of this study, "care management" (CM) programs are considered those designed to manage patients with multiple chronic conditions who are considered high-risk because of a combination of health, social, and functional problems. Disease management (DM) programs are defined as those programs managing patients with a particular disease, such as diabetes or hypertension. When referring generally to care and or disease management programs and issues we utilize the term care and disease management (C/DM).

Many health plans enroll selected members into care and disease management programs to help streamline care, optimize health outcomes and minimize health care costs. The structure and

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[1] Anderson, J. J., M. Ruwe, et al. (2002). "Relative costs and effectiveness of specialist and general internist ambulatory care for patients with 2 chronic musculoskeletal conditions." J Rheumatol 29(7): 1488-95.

[2] Congressional Budget Office. (2005). *High-cost medicare beneficiaries.* Washington, DC: Julie Lee and Todd Anderson.

nature of these care and disease management programs vary and are not well documented in the public domain. L&M Policy Research and its subcontractors, Mathematica Policy Research (MPR) and National Council on Aging (NCOA), are assisting CMS in assessing care and disease management programs available through MA plans across four key aims:

- Document and characterize the universe of care and disease management programs under MA plans;
- Document and characterize the populations enrolled in these programs;
- Characterize how health plans or vendors function in the structure and implementation of C/DM programs; and,
- Document the range of effectiveness measures (e.g. structure, process, outcomes metrics) used to monitor and provide feedback in these programs, noting any particular findings on program effectiveness.

While the scope of this work will not provide any definitive evaluation of C/DM program effectiveness, it is a critical first step in documenting a base-line distribution of program characteristics and offering up a framework for longer-term profiling efforts, charting trends, and benchmarking the evolution of these programs in the managed care arena.

To address these aims, the L&M team undertook a multi-pronged approach that includes a limited literature review, patient and stakeholder interviews, a survey of Medicare Advantage organizations (MAOs) offering care management or disease management programs, and case studies with six MAOs. This Interim Report presents the findings to date from the literature review, interviews and survey. Findings from the case studies, completed in Spring 2009, will be presented in a later report.

Literature Review

In order to ground the study findings in an evidence-based context, the project team conducted a focused literature review, using MPR's March 2000 report "Best Practices in Coordinated Care" as a departure point. In addition to providing context to the project, the literature also helps to address some of the research questions.

Despite the limited number of studies assessing care and disease management programs, the literature does suggest positive health and cost outcomes associated with these interventions. Medical service use was significantly decreased in three studies. One DM program for management of heart failure among the elderly resulted in a 23% reduction in hospitalizations, 26% fewer inpatient bed-days, 22% fewer ER visits, 44% fewer hospitalizations for heart failure, 70% fewer 30-day readmissions, and 45% fewer skilled nursing facility days in patients who received intervention, compared with rates before DM was introduced as part of treatment (Berg, Wadhwa et al. 2004). A diabetes management program resulted in a 22-30% decrease in hospitalizations (Villagra and Ahmed 2004). One multi-condition CM program reduced emergency room visits and inpatient admissions for care of diabetes, asthma, and CHF, but not for hypertension (Afifi, Morisky et al. 2007). Cost savings were confirmed in three studies, two for heart failure and one for diabetes (Berg, Wadhwa et al. 2004; Villagra and Ahmed 2004; Sidorov 2006).

Quality of care was improved in one CHF program and one diabetes program through increased use of appropriate prescription medications and increased clinical testing frequency, respectively (Villagra and Ahmed 2004; Sidorov 2006). The one study seeking direct health outcome improvement among diabetics achieved this, with significantly improved clinical indicators including HbA$_{1c}$, high density lipoprotein (HDL) cholesterol, low-density lipoprotein (LDL) cholesterol, total cholesterol, diastolic blood pressure, and body mass index (BMI) (Ibrahim 2002).

Overall, C/DM programs have potential for decreasing costs in health care by reducing medical service use. It is also evident that many C/DM programs have been able to improve health outcomes and/or quality of health care, with the literature reporting the most success in programs focused on diabetes and congestive heart failure. The implication for managed care is that C/DM programs can be beneficial in several key ways. Studies of general C/DM programs (i.e., those not restricted to managed care settings) sought to establish the usefulness of C/DM programs at keeping people more satisfied and healthier, by preventing hospital re-admission, improving health outcomes, and improving quality of life. These studies consistently showed at least some level of success where the C/DM program yielded positive outcomes along these dimensions. MAOs seem well positioned to explore ways the programs can be mutually beneficial to the health plan and the member. However, the current state of the literature on C/DM in managed care settings is heavily focused on cost-reduction. While improving patient-level outcomes may be implied, or a corollary aspect of these programs, the published studies do not necessarily frame the programs in this way. This does not imply necessarily that C/DM programs under managed care are not concerned with these outcomes, simply that the literature does not contain examples of these to date.

In sum, C/DM programs appear to benefit both managed care providers and patients. In addition to the programs discussed above, a recent Blue Cross Blue Shield report describes C/DM successes within their organization in management of CHF, osteoporosis, diabetes, kidney failure, and overall elder-care (2007). While these overarching results may in fact be an artifact of a skewed literature base of managed care-related studies, there is sufficient evidence to suggest that C/DM approaches can result in positive patient and cost outcomes. In addition to further enriching the literature base in this area, it will be important to also explore what particular features and characteristics are associated with the relative success of managed care driven C/DM programs over those in other settings. These factors may range from the broad structural differences in care delivery and management between managed care and non-managed care settings, differences in populations enrolled in these programs, or variations in how the features of the programs are implemented.

Key Informant Interviews

We conducted 28 interviews with C/DM stakeholders ranging from academic and policy experts to providers, plan administrators, and C/DM program directors, who could provide context not otherwise captured through a survey or a literature review and help identify themes and other nuances about these programs. To assess patients' views of their care and disease management

program, we recruited potential respondents via chronic disease listservs and conducted short interviews with ten patients engaged in a C/DM program.

The overwhelming theme that emerged from these interviews is that C/DM programs share the same goals of fostering appropriate health care utilization and improving and maintaining member health, and have some broad similarities from a macro-level perspective. For example, stakeholders suggest that C/DM programs are largely data driven (via claims, utilization, lab results, staff assessments), patient-directed, and focused on reaching segments of the member population who can most benefit from intervention. These segments tend to comprise members with multiple and complex chronic conditions, or are otherwise at higher risk for intensive medical care use.

Despite some consistency in these general features, examining C/DM programs at a more detailed level reveals wide variation in program focus, approach (including amount of financial and other resources dedicated to these functions), operations, staffing, and data systems. From these interviews, it is difficult to draw generalizations across plans, given the diversity in populations served, market share, geography and organization and plan structure. However, repeatedly and across nearly all interviews, it was clear that if "you have seen one program, you have seen one program."

Survey of Medicare Advantage Plan Contract Holders

Given the current lack of information about how MA plans use C/DM programs to improve member health and manage financial risk, the survey was intended to establish a benchmark against which to chart the use of such programs as they evolve over time. Care and disease management programs in managed care settings can take many forms, varying in their overarching infrastructure and design to the implementation of myriad activities. While there can be great variation, the vast majority of MA contracts are still in formative stages of developing their respective C/DM programs. Nearly every MA contract offers both care management and disease management programs, and these programs share core similarities that help paint a picture of what C/DM programs under MA in 2008 look like. Specifically, the survey instrument addressed characteristics of C/DM programs, physician interventions, provider arrangements and electronic data systems, differences between regular MA plans and Special Needs Plans (SNPs), and evidence of effectiveness and assessment of costs.

We conducted a mail survey with entities holding Medicare Advantage contracts in February 2008, excluding contracts that were not currently active, pilots, demonstrations, Medical Savings Accounts, and Cost or Health Prepayment Plans that either do not include financial risk as MA plans normally do or are unlikely to have C/DM programs. A total sample of 483 contracts comprised the sampling frame[3] - we received 149 completed questionnaires from 119 organizations reflecting 397 contracts, for an overall response rate of 84.1 percent.

Care Management Program Features

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[3] Eleven of the 483 contracts were ineligible for the survey for various reasons: they offered no C/DM, had no members enrolled, or the contract was no longer in operation.

Survey results demonstrated that CM programs are predominantly staffed by health plan staff and are directed at both members and physicians. Contracts focus on members with high costs and high utilization, significant health events, and specific procedures and diagnoses to determine eligibility, relying on claims and clinical data reviews as well as referrals from providers, plan staff and members to identify potentially eligible members for enrollment. Comprehensive assessments, conducted largely by clinical staff, are also used to help identify members for CM and monitor their needs. Nearly every plan reported that registered nurses comprise the core staff of these programs.

Telephone is a primary means of contact for communicating with CM members, reviewing care details such as discharge planning and medication management. Plans also overwhelmingly work directly with providers and facilities as part of the CM program. For education, CM programs utilize teachable moments and written materials delivered by CM staff, though the nature and intensity of these education efforts are not clear from the survey alone.

Nearly every CM program included assistance with care transitions, such as movement from a skilled nursing facility to a hospital, or from a hospital to home. In these cases the CM programs largely rely on hospitals to notify the plan of the upcoming changes. The vast majority of CM plans also offer medication management, where members report medication concerns and staff conduct claims reviews. Plans reported that the most common course of action to remedy a medication-related issue was to notify the member's physician to resolve the problem or refer the member to a formal medication therapy management program. CM programs also include support services, with needs assessed from members and their doctors to determine what is needed.

Disease Management Program Features

Nearly every plan offers DM for diabetes and congestive heart failure, and utilizes diagnoses - in most cases from insurance claims - as the primary means for determining eligibility for DM program enrollment. Similar to CM, plans use claims review as well as member and physician referrals to help identify individuals for DM. Once identified, plans conduct comprehensive assessments by clinical staff and assign the member to a needs-based hierarchy that determines what type of intervention is provided (e.g. vendor-initiated reminder phone calls or mailings, one-on-one home-based monitoring visits).

DM programs employ similar outreach approaches as CM, using the telephone as a primary (or sole) means of member contact and teachable moments and written materials for member education. Registered nurses are overwhelmingly employed to run and staff DM programs. When DM programs include assistance with care transitions, which is far less likely than with CM, it is provided via telephone directly with members.

MA Plan Electronic System Features

There is little variation among the types of member-level electronic data directly maintained by MCOs. Data elements include enrollment or disenrollment dates, service use or charges, procedure codes, assessment or care plans, prescription drug use or charges and quality related

process of care information, such as prevention screening or immunizations. Moreover, a large majority of organizations maintain data on clinical indicators, while only a few report maintaining health risk assessment data.

Although the collection and maintenance of this type of member-level information is widely embraced by contract holders, the survey does not capture the quality of the data collected or the manner in which contractors utilize these data. From the stakeholder interviews, respondents acknowledged that because health plan organizations do not specialize in information systems, *per se*, their systems have evolved over time in fits and starts. This produces a system with interoperability issues among different departments within health plan organizations and vendors. Despite these significant limitations, some contract holders continue to improve their electronic data systems with the latest information management strategies, including web portals to help providers access patient health information, and interactive voice response technology to improve contact rates with patients.

Plan-Provider Roles

On the whole, MAOs in the survey reported communicating regularly with physicians working with care and disease management programs, but this contact is not universal. Collaboration is best characterized as C/DM programs asserting themselves to fill gaps, rather than a model where care managers and physicians work together as a team. Evidence from stakeholder interviews suggests that this communication is often a one-sided conversation initiated by contractors hired to provide C/DM services for the health plan, either as employees of the plan's C/DM program or from a third party vendor. In these instances, physicians do not commonly respond. This is likely a result of the fact that most contractor communication occurs between the C/DM staff and office staff at the physician's practice rather than directly with the physicians. In many instances, however, only a few patients per physician are enrolled in any given C/DM program, leaving physicians little incentive to engage fully with each and every C/DM staff member that approaches them.

A large majority of MAOs encourage physicians to collaborate with care and disease managers, but only a very small number of physicians are contractually required to do so. Furthermore, physicians are nearly universally provided with decision support tools such as evidence-based practice guidelines or patient specific reports showing gaps in care, though it is unclear how and to what extent physicians actively leverage this information. Despite some reported disconnects between the MAO and its providers, nearly three quarters of contractors offer feedback on provider performance.

Special Needs Plans

The majority of contractors indicate that they have both regular MA plans and SNPs and that there are some differences between the care and disease management programs under each of these plans. Large majorities of contractors reported that SNP members in C/DM programs use program services with greater frequency or intensity and that services are generally provided for a longer period of time. However, one might expect that SNP enrollees are likely to be frailer and have greater health needs than their non-SNP counterparts. Only a few contractors report

that their SNP services are more structured or that they give staff smaller caseloads. This suggests that the differences between SNPs and MA plans are externally driven by the types of patients enrolled in the C/DM programs, rather than being internally driven by plan management style or protocols.

Measuring Effectiveness

In the stakeholder interviews, many managed care organizations noted the multiple difficulties in capturing high quality evidence of effectiveness due to data limitations imposed by their information systems. These included problems in measuring quality criteria, identifying the treatment group (e.g. C/DM program participants) and what C/DM programs activities have been administered to program enrollees.

Most contractors report determining the success of their care and disease management services using a similar range of criteria including, but not limited to: improved member satisfaction, whether specific care is received, reduced rates of preventable admissions, reduced costs of care, specific health outcomes, and meeting operational performance standards.

For the most part, contractors use self-reported (member) health or satisfaction, claims for covered services, and clinical data collected directly by contract holder staff to determine the success of C/DM programs. Less than half of contractors use clinical data providers report and very few use HEDIS scores to track success. Overall, the vast majority of contractors compare these data to national or local managed care benchmarks and members baseline values, but less than half use national fee-for service benchmarks and almost no contractors use HEDIS scores in this fashion.

Although the vast majority of contractors use formal criteria, it is impossible to tell what standards contract holders are setting to define effectiveness and whether these standards are in-line with best practices in C/DM. Furthermore, the data collection activities conducted to date do not document how organizations actually use the data they gather, and whether or not they are accurately collecting and correctly interpreting this evidence of success or failure of their C/DM programs.

Almost all contractors view their C/DM programs as quality management and utilization/risk management tools, but less than half view them as a separate marketable plan benefit and very few see these programs as a way to improve member clinical outcomes. This suggests that contractors currently view C/DM programs primarily as an advanced cost management tool, though interviews suggest that they are striving to shape these programs into clinical tools and member benefits.

Preliminary Conclusions

While many details on how MAOs make decisions about their C/DM programs and how staff implement different facets of the program will come from the case studies, it is possible to draw some preliminary ideas from the data collected to date. The literature, interviews and survey suggest that C/DM programs under MA today fare in the following ways:

1. **Strong self-management support** – We expect to collect this detail through the case studies, though the stakeholder interviews suggest that while contract staff can be highly involved in CM programs, particularly for members transitioning care settings, there is fairly low-level support (e.g. telephone and mail) to members encouraging self-management in DM programs.

2. **Involvement of non-physician members on the care team** – As noted in the survey, registered nurses staff the vast majority of programs and many also used LPNs, NPs, advanced practice, or vocational nurses. CM programs in particular leverage social workers and other types of non-clinical staff to round out care teams. Managed care organizations reported great difficulty engaging network physicians unless they had staff that were willing to 'round' the physician offices to discuss particular member cases.

3. **Planned interactions and proactive follow-up** – it is unclear the extent to which C/DM programs involve planned interactions, though the team plans to collect this information through the case studies. With respect to proactive follow-up, C/DM programs appear to use telephone-based follow up after discharge and in response to an identified problem. However, the survey results are variable on the extent to which C/DM program staff are very proactive in identifying problems. Most programs report relying on members to raise issues with their providers, though there is also evidence that C/DM programs typically involve at least some minimal utilization review.

4. **Use of guidelines and decision support systems –** MAOs report widespread use of clinical practice guidelines and other tools to help providers and other care team members deliver and monitor care. What is less clear from the data collected to date is the extent to which providers and C/DM program staff have the appropriate input data on hand when they need it to make full use of these guidelines. We anticipate collecting more detail on this, as well as the use of case-based learning and team decision-making through the case studies.

5. **Interactive education** – The degree to which C/DM programs offer interactive education is unclear. In the stakeholder interviews, managed care organizations note that interpersonal education, unless they are able to get members to attend group sessions, is not very cost-effective. Oftentimes vendors are hired to place outbound reminder and education calls. Survey responses suggest that all C/DM programs attempt to leverage 'teachable moments', but also note a reliance on written materials as a primary source of education. It is unclear from the interviews and survey results alone whether these educational approaches are one-way or interactive.

6. **Nimble clinical information systems –** The survey results suggest that a rich array of data are housed in the MAOs, from administrative and billing details to claims information, pharmacy records, electronic health records and lab values. The resounding finding from the stakeholder interviews is that most of these systems were built for reimbursement and other administrative purposes, not for research or evaluation. Therefore, while these data sources may exist within the organization, they cannot be

merged. One striking finding from the questionnaire development phase was that organizations were largely unable to report basic descriptive information about the members that were enrolled in their C/DM programs (e.g. age, race/ethnicity, gender), or that these reports were difficult to generate. Further, survey results suggest that contracts look at a wide variety of outcomes to determine effectiveness. However, very few of the key informant MAOs were able to report on the effectiveness of their programs beyond broad metrics such as general satisfaction levels, reductions in hospital readmission rates and HEDIS measures during and after C/DM intervention. None were able to produce these statistics for just the population enrolled in C/DM.

On average, C/DM programs offered through MA plans appear to be in the early stages of development. There is certainly strong evidence that managed care organizations are invested in C/DM and believe that these programs are important offerings to members, but are still in the process of crafting appropriate and efficient information systems to support C/DM care teams and integrate data sources across different platforms (e.g. lab data, pharmacy data, administrative data) to facilitate effective monitoring and evaluation efforts.

INTRODUCTION

Over the past several decades, health care has broadened in focus from acute care and the control and treatment of infectious disease to encompass the management of chronic and often non-fatal conditions. Rising life expectancy, medical advances, and lifestyle changes in diet and exercise have accompanied an increase in both the prevalence and relative burden of chronic conditions, such as diabetes, hypertension, asthma, and coronary artery disease. This shift in disease burden poses significant medical and economic challenges for both the public and the private health care delivery systems. Managing chronic diseases, to provide better quality of life for patients and to minimize costs for employers and taxpayers, requires an evolving understanding of the best practices for delivery of health care services, as well as the complex relationship across services, costs and health outcomes.

Those with multiple conditions, in particular, require more frequent and more expensive health care from a wider array of providers than other segments of the population. This often results in fragmented, duplicative care. The projected financial burden of paying for chronic disease treatment is enormous – it is estimated that spending for individuals with chronic conditions will contribute towards approximately 80 percent of the annual $1 trillion the U.S. spends on health care[4]. This burden is particularly severe within the Medicare population, where 75 percent of those over age 65 report having at least one chronic condition and nearly half of those report having two or more conditions[5].

To help minimize the quality of life and budgetary impact of chronic illnesses, the Centers for Medicare & Medicaid Services (CMS) has undertaken a series of major demonstrations to explore health care coverage options directed at beneficiaries with chronic illnesses. For example, the CMS initiated Care Management for High Cost Beneficiaries (CMHCB) demonstration pays provider groups under the Original Medicare program to identify beneficiaries with multiple conditions and develop interventions, such as better care coordination or appropriate use of different medical care settings, to improve care delivery and outcomes. The Home Health Independence Demonstration is studying the benefits and costs of allowing Medicare beneficiaries with severe and chronic conditions to be deemed 'homebound', thus remaining eligible for home health benefits, to determine whether access to home health benefits can reduce other health care costs for this population. Similarly, demonstrations for Consumer-Direct Chronic Outpatient Services and Project for Medical Adult Day-Care Services examines how personal or adult day care affects the quality and cost of overall Medicare services.

While CMS has funded End Stage Renal Disease (ESRD) and Special Needs Plan (SNP) evaluations within managed care settings, the spectrum of disease and care management programs available through Medicare Advantage (MA) plans is not well documented. Care and disease management programs are currently implemented and defined in many different ways. For the purposes of this study, "care management" (CM) programs are considered those designed

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[4] Anderson, J. J., M. Ruwe, et al. (2002). "Relative costs and effectiveness of specialist and general internist ambulatory care for patients with 2 chronic musculoskeletal conditions." J Rheumatol 29(7): 1488-95.

[5] Congressional Budget Office. (2005). *High-cost medicare beneficiaries.* Washington, DC: Julie Lee and Todd Anderson.

to manage patients with multiple chronic conditions who are considered high-risk because of a combination of health, social, and functional problems. Disease management (DM) is defined as programs designed to manage patients with a particular disease, such as diabetes or hypertension. When referring generally to care and/or disease management programs and issues we utilize the term care and disease management (C/DM).

Given the mixed literature on the effectiveness of such programs in reducing costs while improving health outcomes, and the relative lack of public data from plans, it is difficult to assess how care and disease management programs are faring. One could argue that managed care organizations (MCOs) are well positioned to realize both health and cost gains from C/DM, given that they have defined populations to serve and relatively integrated systems of care, compared to fee-for-service settings. However, operationalizing C/DM programs can be fraught with difficulties, as enrolled populations can change from year to year and MCOs may not have the appropriate infrastructure in place to leverage clinical and administrative information needed to identify and monitor members and evaluate effectiveness.

Any assessment of disease and care management programs in MA plans must take into account the changing face of these programs over the past decade. The evidence-driven focus has spawned a consolidation of disease and care management vendors, with large health plans increasingly bringing these services in-house and building their own internal auditing capabilities. While the structure and management of such programs have evolved, health plans, States and the federal government continue to expand them. More recently, C/DM programs are tied to incentives for patients (e.g. waiving drug co-pays for participating in a diabetes program, employees getting a bonus for completing an health risk assessment) and providers (e.g. pay-for-performance).

Some health care market trends create obstacles to effective implementation of care and disease management programs. Insurance products are increasingly consumer-driven, focusing more on flexibility and choice than previously. As a result, the utilization management tools may no longer be as effective at identifying at-risk patients who can benefit from C/DM interventions. Further, refinements in clinical practice guidelines, evidence based approaches to care delivery and rapid development of new and costly drugs, increase the information load that providers must navigate and require plans to continually update their systems and reassess how to monitor effectiveness. The need for well-functioning, comprehensive and nimble information systems that filter the right information to the right people at the right time is critical.

Despite these changes and advancements, many of the challenges in the early days of care and disease management remain relevant and valid issues today:

- Proactively identifying high risk populations and eligible patients;
- Ensuring adequate participation and appropriate involvement ("buy-in") of providers in programs to bring about effective change in patient and provider behavior;
- Capturing and synthesizing information from multiple sources about individual patient care (radiology, pharmacy, medical, mental health and financial sources);
- Prioritizing quality improvement focus areas and cost saving efforts; and measuring the effectiveness of care and disease management programs; and,

- Using this information effectively to measure improvements in care delivery and clinical outcomes.

Study Aims

The purpose of this study is to design and implement a qualitative assessment of care and disease management programs available through MA plans, centering around four key aims:

- **Type of Programs and Models**: To document and characterize the universe of care and disease management programs under MA plans;
- **Identifying the Target Population**: To document and characterize the populations enrolled in these programs;
- **Role of the Health Plans**: To characterize how health plans or vendors function in the structure and implementation of care and disease management programs; and,
- **Evidence of Effectiveness**: To document the range of effectiveness measures (e.g. structure, process, outcomes metrics) used to monitor and provide feedback in these programs, noting any particular findings on program effectiveness.

So that CMS is able to monitor trends and innovations in care and disease management, as well as to identify successful implementation of such programs, it is critical to develop a working framework that accurately depicts the current landscape, yet is dynamic enough to accurately capture changes over time. While this study will not provide any definitive evaluation of care and disease management program effectiveness, it is a critical first step in documenting a base-line distribution of program characteristics and offering up a framework for longer-term profiling efforts, charting trends and benchmarking the evolution of these programs in the managed care arena.

Given the mixed literature on the effectiveness of such programs in reducing costs while improving health outcomes, and the relative lack of public data from plans, it is difficult to assess how C/DM programs serve to minimize cost and improve health outcomes. An important starting point, particularly if eventual findings are to be generalized, is to take inventory of these programs under managed care settings, characterizing their structural and programmatic features as well as the strategies, metrics, and systems used to monitor and assess their effectiveness. The project team has undertaken a series of iterative data collection activities that include a literature review, a mail survey of MA plans, interviews with C/DM experts, stakeholders and patients, as well as case studies with individual MA plans offering C/DM programs, depicted in Figure 1 below.

Figure 1. Summary of Research Approach
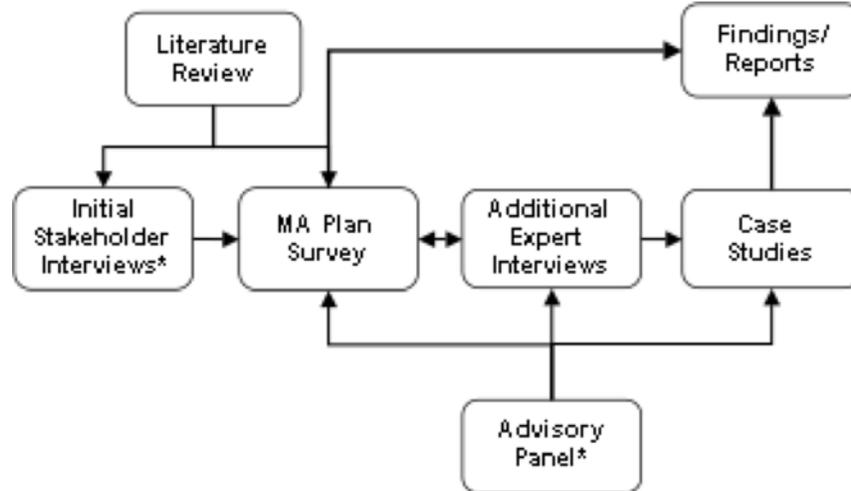
*members of the advisory panel comprised a subset of the initial stakeholders that the team interviewed.

The survey task allows the team to capture a broad snapshot of the C/DM landscape under managed care. Given the national scope of the sampling frame, results from the survey yield representative estimates on the prevalence and distribution of characteristics in C/DM programs. To maximize response rates and meaningfulness of analyses within the timeframe and resources of the project, certain trade-offs must be made, the most significant trade-off being the depth of program profiling that can be accomplished through a survey. Therefore, the qualitative research activities (literature review, interviews, case studies) of this project are critical companion tasks. While the case studies, not scheduled until later on in the project, will provide an in-depth look into individual health plans, the Advisory Panel and expert interviews helped to flesh out the policy and marketplace contexts within which the C/DM programs develop. A list of the Advisory Panel members is included in Appendix A. So that the research activities are anchored in an evidence-driven conceptual base, the team looked to the Chronic Care Model described in the following section.

Conceptual framework

To provide a conceptual foundation through which these research aims will be addressed, the team is integrating an adaptation of the Chronic Care Model (CCM), an evidence-based framework that describes the interaction between the health care setting, community and patient as they relate to health outcomes.[6,7] The CCM is widely used by health care organizations to structure disease management programs, is endorsed by the Department of Health and Human Services Health Resource Services Administration (HRSA), and has repeatedly been found to consistently characterize the elements of successful chronic disease management programs.

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[6]Wagner EH, Davis C, Schaefer J, et al (2001). "A survey of leading chronic disease management programs: are they consistent with the literature?" Manag Care Q; 7: 56-66.
[7] Bodenheimer T, Wagner EH, Grumbach K (2002). "Improving Primary Care for patients with chronic illness: the chronic care model, part 2." JAMA; 288: 1909-14.

Specifically, the components presented under the Health System portion are particularly relevant when characterizing programs designed to monitor and manage the complex health of Medicare beneficiaries living with chronic conditions. These include:

- Self-Management Support – information and support provided by an organization to patients that facilitate self-care through patient-provider collaboration;
- Delivery System Design – availability of a broad practice team that can provide outreach and close follow-up, often characterized by the involvement of non-physician practitioners;
- Decision Support – availability of guidelines and protocols that keep providers informed about standards of care and other information to assist in clinical and other decision making about the care of a patient; and,
- Clinical Information Systems – availability of timely data on patients/populations enabling practitioners to effectively monitor and understand the needs of individuals they serve.

Figure 2, below, illustrates the Chronic Care Model, as well as how this model will serve as a framework for meeting our study aims.

Figure 2. Adapted Chronic Care Model
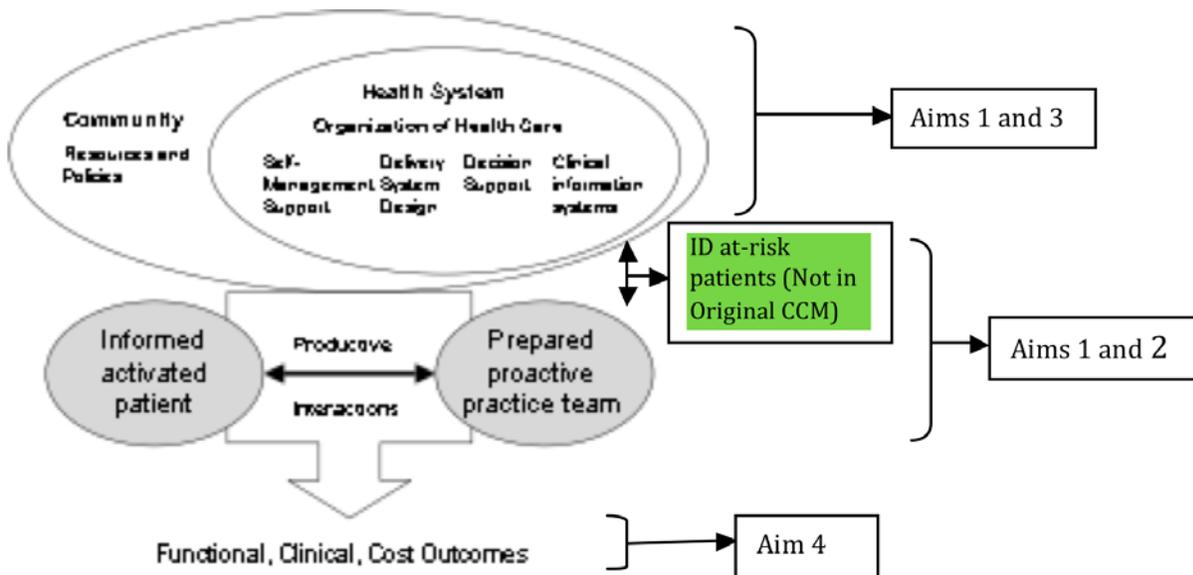
An additional component not depicted in the original framework is the identification of at-risk patients. Given the critical aspect of early and appropriate identification of patients who may benefit from these programs, we have adapted the CCM to include an identification domain, as highlighted in Figure 2.

The purpose of this Interim Report is to present findings from the research activities conducted to date. Chapter 1 presents the research approach and methods for the literature review, interviews and survey activities. Chapters 2 through 4 present results from each of these data collection activities, respectively. Chapter 5 discusses preliminary integrated findings. However, it should be noted that these findings will be updated upon completion of the case studies and should be considered preliminary.

To address the four study aims, we designed a multi-pronged approach that includes a literature review, patient and key informant interviews, a survey of MA plan contract holders and a series of six case studies. The case studies are currently scheduled to be in the field in Spring 2009. The approach and methodologies used for each of the three data collection activities completed to date are described below.

Literature Review

In order to ground the study findings in an evidence-based context, the project team conducted a focused literature review, using MPR's March 2000 report "Best Practices in Coordinated Care" as a departure point. In addition to providing context to the project, the literature also helps to address some of the research questions. In particular, the review results are relevant to Aim 4, by identifying metrics and evidence of C/DM program effectiveness.

The team used the reference software, Endnote 8.0, that connects directly to the on-line databases and imports full bibliographic information as well as abstracts. The software allows for manual input of bibliographic information for materials identified off-line and provides space for the team to make notes on the materials.

To compile an updated literature review, the project team utilized a list of pre-identified key search words to query HealthSTAR, Medline/PubMED, and the Cumulative Index of Nursing and Allied Health Literature databases. Initial search terms included:

- Case management
- Comprehensive health care
- Disease management
- Patient care management
- Patient care planning
- Patient education and self-care
- Transitional care

Articles generated by these search terms were initially included if an examination of the abstract demonstrated that the article was from the year 2000 or later and focused on care management or disease management (see definitions used below). The project team initiated a second query combining the above search terms, e.g. "case management AND disease management", and then scanned these for inclusion based on the same criteria. The resulting set included 66 citations that were then reviewed more closely to identify those describing a study or evaluation of a C/DM program. So that the literature focus included those studies most relevant to the project, we excluded literature that focused on non-elderly populations (e.g. children, pregnant women), studies conducted on populations outside of the United States, and two studies that focused on topics or conditions not highly prevalent in the Medicare population (e.g. chronic fatigue, substance abuse). The project team applied these exclusion criteria and reviewed the bibliographies of the remaining relevant articles to identify any additional articles. This process

resulted in a final set of 12 articles included in our review. These include empirical studies of C/DM in a managed care setting and C/DM in general that are summarized in Appendix B. In addition, the team incorporated qualitative review articles on C/DM and managed care to locate studies and provide background context.

Key Informant Interviews

C/DM Experts and Professionals

While the MA plan survey allows us to capture a broad picture of the range and prevalence of C/DM programs, more detailed aspects of these programs, particularly with respect to how plans collect evidence and evaluate program effectiveness and nuances of patient identification and program implementation, were better suited for open-ended interviewing.

The project team conducted 28 interviews with experts ranging from academic and policy experts to providers, plan administrators, and C/DM program directors, who could provide context not otherwise captured through a survey or a literature review and help identify themes and other nuances about these programs. Additionally, interviews with experts, plan staff, and other stakeholders helped uncover unpublished or forthcoming studies that lend evidence on the effectiveness of care and disease management programs.

The team used semi-structured, tailored interview protocols to guide the telephone interviews. Interviews with stakeholders lasted on average 1.5 hours. Stakeholders were identified through a 'snowball' technique, where the project team began with a list of stakeholders generated through the team's own contacts, suggestions from CMS and suggestions from the advisory committee. In reaching out to this initial list, the team generated additional contacts, and worked with CMS to decide upon a final list of individuals to interview that reflected a range of expertise and perspectives.

Patient Interviews

To assess patients' views of their care and disease management program, the project team recruited potential respondents via chronic disease listservs. A recruitment ad was posted on listservs for individuals with Chronic Obstructive Pulmonary Disease (COPD), Heart Failure, Diabetes, and End-Stage Renal Disease (ESRD). A member of the project's Advisory Panel, Dr. Kate Lorig, also sent a request for potential participants via e-mail through her network of care managers who work with Medicare beneficiaries on chronic condition self-management techniques. After receiving responses to the initial recruitment ad and from Dr. Lorig's contacts, the project team screened potential interviewees to determine their eligibility for an interview. Qualifying individuals answered "yes" to the following questions, "Are you currently enrolled in a Medicare sponsored health plan, often called Medicare Advantage or Medicare Part C?" and "Have you ever been contacted by telephone or mail about helping you manage your health?" The project team conducted 15-minute interviews with ten patients meeting the screening criteria.

Survey of Medicare Advantage Plan Contract Holders

The mail survey was conducted with entities holding MA contracts in February 2008, and provided basic information on whether and how MA contractors use C/DM. Survey responses also provide the team with data needed to help select candidates for the case studies and shape associated protocols and selection of the array of individuals with whom the team should meet. Given the current lack of information about how MA plans use C/DM programs to improve member health and manage financial risk, the survey was intended to establish a benchmark against which to chart the use of such programs as they evolve over time.

Organizations, Contracts and Plans

In this report, we refer to contracts, plans and organizations. The term "contract" refers to a contract between a Medicare Advantage Organization ("organization") and CMS to provide Medicare beneficiaries with medical services in a defined geographic area. The term "plan" refers to a specific benefit package and premium offered by an organization. Several plans may be offered by the same contract (and organization). For example, a contract may include a plan with a zero premium, and no out of pocket maximum, one with a fixed premium and an out of pocket maximum, and one that is a special needs plan (SNP). The survey was conducted at the contract level, but only if the organization reported that it could answer all of the questions regarding its care and disease management programs at the contract level.

These terms and relationships can be explained in this scenario using fictional organization and plan names.

> Birchwood Health is a private health *organization* offering Medicare Advantage (MA) products. CMS has a *contract* with Birchwood Health that Birchwood Health will offer medical services in the form of Medicare Advantage plans to central New York State and western Massachusetts. Under their MA *contract* this *organization*, Birchwood Health, offers three MA *plans*: Birchwood Medicare Secure with a fixed $200 monthly premium and an out of pocket maximum of $3,000, Birchwood Medicare Prime with no premium and no out of pocket maximum, and Birchwood Diabetes Care Plus with a condition-specific SNP with a $50 monthly premium, no out of pocket maximum, and a comprehensive Part D plan.

> A beneficiary with diabetes might contact this MA *contract* holding *organization* because he is interested in eligibility in their affordable *plan* for Medicare beneficiaries with diabetes.

Questionnaire Development

Instrument development for the survey began in the fall of 2007. The questionnaire was designed to gather information from MA contracts about the C/DM programs offered through their plans. Specifically, the instrument addressed characteristics of C/DM programs, physician intervention,

provider arrangements and electronic data systems, differences between regular MA plans and Special Needs Plans (SNPs), and evidence of effectiveness and assessment of costs. Pre-testing was completed with nine health organizations, after which the questionnaire was reduced in consultation with CMS to achieve a more reasonable respondent burden. The final version of the questionnaire continued to address the primary research goals, without any changes to the intent and purpose of the survey. Additionally, the final questionnaire, at the shorter length, was in keeping with the original project assumptions, which would enable us to minimize respondent burden and maximize response rates. The survey questionnaire is included in Appendix C.

Sampling Frame

The universe of MA contracts was drawn from a February 2008 extract of contract characteristics and contact information housed in CMS' Health Plan Management System (HPMS). After removing contracts that were considered ineligible (those not currently active, pilots, demonstrations, Medical Savings Accounts, and Cost or Health Prepayment Plans that either do not include financial risk as MA plans normally do or are unlikely to have C/DM programs), a total sample of 483 contracts remained and served as the sample frame for the survey. These 483 contracts were held by 156 different health organizations, holding as few as one MA contract and as many as 54.

Data Collection

The data collection procedure for the survey utilized a mixed-mode approach consisting of mail and telephone contacts. Data collection began in August 2008 and ended in October 2008. Respondents were contacted initially by mail, with a telephone follow-up call shortly thereafter. The contacts consisted of, in chronological order, (1) an advance letter, (2) an initial call, (3) a questionnaire mailing, and (4) a reminder call/telephone interview. Because many health organizations held multiple MA contracts, sometimes one person was a contact for multiple contracts. In these cases, only one letter referencing all MA contracts was mailed. During the initial call, all respondents were probed sufficiently to determine if each MA contract (1) was currently operating, (2) offered care or disease management through its plans, and (3) showed any meaningful difference in the C/DM offered through plans under a contract or across contracts. The initial calls were made between August 20, 2008 and September 12, 2008. During this time, we successfully completed an initial call to health organizations holding 444 of the 483 MA contracts. During these calls, we discovered that two contracts were no longer operating and three contracts offered neither care nor disease management. These five contracts were not contacted again. From these calls, we determined that 211 questionnaires were needed to gather accurate data regarding the C/DM programs offered through the remaining 478 MA contracts.

File Preparation

Data entry was performed at the MA contract level, so that questionnaire data was entered as many times as the number of MA contracts for which it was reporting. To further clarify, if an organization has 10 MA plans all with the same C/DM program in place, the details from that C/DM program were recorded 10 times. However, if the organization has ten MA plans, of which nine have one C/DM program (A) and one plan has another program (B), these were

entered accordingly, i.e. program A would be entered nine times, and program B only once. In doing this, we were able to capture any differences either across MA contracts within a health organization, or across plans within an MA contract as noted by the respondent in the questionnaire.

Following data entry, the data file was reviewed and edited by project staff. During this phase, all questions with verbatim responses (either the "other specify" option or open-ended questions) were reviewed to determine if responses could be fit into an existing response category. If an "other specify" response clearly could have been coded under one of the listed response categories, instructions were provided to the programmer to back code the response to the appropriate response category and to remove the response from the "other specify" option. Data was also reviewed to build new codes for the questions. For sufficient numbers of verbatim responses, a number of new codes were added.

Response Rate

The overall response rate was 84.1 percent and was calculated based on the 483 MA contracts in the survey sample.[8] Eleven of the 483 contracts were ineligible for the survey for various reasons: they offered no C/DM, had no members enrolled, or the contract was no longer in operation. In total there were 149 completed questionnaires from 119 organizations reflecting 397 contracts. Of these contracts, 391 questionnaires were completed by mail and 6 by telephone for a response rate of 84.1 percent.[9] Overall, only 5.3 percent of the MA contracts overtly refused to participate. We were not able to complete the remaining 10.6 percent; for example, respondents said they would complete the questionnaire but did not do so before the end of the field period and did not respond to our telephone requests.

Non-Response Weights

As discussed, our survey resulted in 397 legitimate respondents, 75 non-respondents, and 11 who were considered ineligible. Ineligible cases involved contracts that had no members, were sold to a new health organization, did not offer care or disease management, or were no longer operating. Because non-respondents could be ineligible for the survey, this information was used in our calculations.

Non-response weights were generated by using logistic regression with the weighting class definitions and other variables used as covariates. The non-response weight is then determined by grouping the predicted probabilities of response from the logistic model into weighting classes based on quantiles of p and taking the inverse of the class weighted response rate. This ensures that we do not place undue emphasis on correctness of the model, which would be the case if we simply used the inverse of the predicted probability of response as the weighting adjustment. For the sake of maintaining a stable adjustment, a weighting class should have at least 20 respondents in it.

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[8] See http://www.aapor.org/responseratesanoverview for the American Association of Public Opinion Research Response Rate 1 guidelines for calculating response rates.
[9] 397 completed interviews/(483 contacts in sample-11 ineligible contracts)

A logistic model was determined using backward and forward selection, using a careful model-fitting process. The final model included the following set of variables:

1. a binary variable identifying contracts with BCBS as the parent organization,
2. a binary variable identifying Coventry Health Care as the parent organization,
3. a binary variable indicating whether the address of the contract contact individual was in the northeastern United States,
4. a binary variable indicating whether the contract was an HMO or HMO POS, and
5. number of special needs Medicare Advantage plans offered under the contract, where 4 or more special needs plans were collapsed into a single category.

In order to proceed with our study of C/DM programs under Medicare Advantage it is crucial to know what the peer reviewed literature says about trends in C/DM design and effectiveness. This literature review seeks to inform the team's final report by providing a sense of the C/DM landscape, both generally and those programs specific to a managed care setting. Additionally, the team looked for any published or publicly accessible studies of C/DM demonstrations or pilot programs to provide context and questions for the later stages of our research. This chapter summarizes the findings we will consider in our later writing.

The Need for Care and Disease Management Programs

Rising life expectancy and medical advances have accompanied an increase in both the prevalence and relative burden of chronic conditions, such as diabetes, hypertension, asthma, and coronary artery disease. This shift in disease burden poses significant medical and economic challenges for both the public and the private health care delivery systems; interest in health care delivery approaches to better manage chronic conditions is of paramount concern to stakeholders across the public and private sectors. Individuals with these conditions, especially those with multiple conditions, typically require more frequent and more expensive health care from a wider array of providers than other segments of the population. This often results in fragmented, duplicative care. The projected financial burden of paying for chronic disease treatment is enormous, particularly so within the Medicare population where 75 percent of those over age 65 report having at least one chronic condition and nearly half of those report having two or more conditions (Congressional Budget Office 2005). Despite the prevalence of chronic conditions that decrease health and functional status among Medicare beneficiaries, the Medicare program is largely directed toward the treatment of acute, episodic illnesses (Daaleman 2006), though it has launched several demonstrations of care and disease management programs in both fee-for-service and managed care settings.

To address the disconnect between consumer needs and effective and efficient health care delivery, providers are increasingly utilizing C/DM programs. These C/DM programs aim to minimize costs while improving the care delivery and health outcomes of participants. Currently, there is much general literature describing the different approaches to care and disease management, and the overall past effectiveness of these approaches. There are also a number of empirical studies analyzing overall C/DM program outcomes. These studies are primarily assessments of the C/DM program's effectiveness, investigating the C/DM program's impact without consideration of the setting. There are significantly fewer studies of C/DM programs operating within a managed care setting, where the program and outcome as well as the managed care organization's delivery of the product, is being assessed.

This review expands upon the 2000 "Best Practices in Coordinated Care" report from Mathematica Policy Research (MPR), a review of best practices and policy recommendations regarding the coordinated care/managed care literature. The report included a comprehensive bibliography of relevant literature up to the year 2000 and will serve as the point of departure for this review. MPR's report also detailed the best practices of 29 coordinated care programs and

found that each successful program participated in three distinct activities: assessment and planning, implementation and delivery, and reassessment and adjustment.

In 2007, MPR produced the report "The Evaluation of the Medicare Coordinated Care Demonstration: Findings of the First Two Years" in which they examined outcomes among Medicare sponsored demonstration projects in coordinated care. They found that these demonstrations yielded modest effects on overall satisfaction with care and an increase of patients reporting they received health education. However, researchers also reported unclear effects on patients' adherence or self-care, reduced number of hospitalizations for only 1 of 15 of the programs over the first 25 months of operation, and no reduction in expenditures for Medicare Parts A and B.[10] Finally, the study did find a small, but statistically significant, reduction in subsequent hospitalizations after enrollment for all 15 coordinated care programs combined. While the evidence for C/DM being a useful tool in producing savings or improved health outcomes remains unclear, particularly in fee-for-service settings, the literature on how well these programs work under managed care is promising but not extensively documented. Managed care organizations do not always publish the results of these efforts and external researchers do not often have access to enrollees to implement evaluation studies.

We will first describe the range of different models of care and disease management programs to provide the broader context in which these programs are situated. Second, we discuss the general effectiveness of (C/DM) programs in improving quality of care, patient health, and cost. Third, we review studies of C/DM programs specific to managed care settings, focusing on key aspects of and effective strategies for program implementation. We conclude with a summary of C/DM program metrics suggested through the literature and also utilized in the evaluation of C/DM programs. A table summarizing each of the studies included in this review is included in Appendix B.

Care and Disease Management Programs

Within the realm of C/DM programs there appear to be three main goals that C/DM program providers agree upon: 1) to improve quality of care for patients with a specific condition, 2) to produce an increase in patient satisfaction, and 3) to reduce costs of treating patients with a given condition or set of conditions (Whellan, Gaulden et al. 2001). C/DM programs are typically implemented in patient populations characterized by high prevalence, chronic, high cost conditions. The most common C/DM programs implemented are for management of diabetes mellitus, asthma, hypertension, and high cholesterol (Geyman 2007). There are, however, C/DM programs that address many additional conditions including congestive heart failure (CHF), arthritis, depression, and others (Goetzel, Ozminkowski et al. 2005).

There are two broad settings in which C/DM programs are likely to be found. The first type is a C/DM program that is integrated into a patient's existing primary care system. This approach utilizes specific teams in a primary care practice to support patient self-management of a condition. A second, increasingly common, approach uses commercial vendors that health care

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[10] It is important to note that while no savings were generated for Medicare Parts A and B from the demonstrations, cost of operation of the programs was not factored into this assessment, and therefore the demonstrations referenced were operated at a loss.

organizations contract with to run their C/DM programs. Vendors also promote patient self-management, but market programs to managed care providers primarily as cost containment strategies, as well as methods to improve patient satisfaction and health outcomes. In this second approach there is the sometimes-limited contact between the C/DM team and the primary care provider (Geyman 2007). Most C/DM programs use some or all of the following techniques: face to face clinician-based interventions, health plan or employer sponsored mailings, Internet and telephone outreach, self-management programs, and a process to prompt physician action (Goetzel, Ozminkowski et al. 2005).

Some C/DM programs have unique strengths. They can incorporate sophisticated information technology systems, powerful modeling software, data collected from multiple sources, and specific staff and processes in place for the sole purpose of disease management. This specialization may allow for improved delivery of C/DM services, though the extent to which managed care organizations exhibit these strengths is undetermined (Casalino 2005).

Care and Disease Management Program Effectiveness

In recent years, several articles have suggested that C/DM programs are highly effective at reducing care costs while improving health outcomes, though these findings are often controversial (Linden and Roberts 2005). While some researchers have found that commercial C/DM program providers are unlikely to be successful at cutting costs or significantly improving health outcomes (Geyman 2007), others found that C/DM programs can be cost effective for treatment of certain conditions, particularly heart failure (McAlister 2001; Goetzel, Ozminkowski et al. 2005). Some C/DM programs have been shown to improve health outcomes and quality of care, again for specific conditions or using specific management techniques (Goetzel, Ozminkowski et al. 2005; Geyman 2007). However, evaluations of C/DM programs do not currently utilize uniform indicators that would allow for direct comparisons. Until C/DM programs can be directly compared either by uniform outcome metrics or consistent intervention methods, or the literature is sufficiently dense to support comparisons, it remains difficult to demonstrate any broad C/DM program effectiveness (Linden and Roberts 2005).

While overall effectiveness remains unclear, there are two sets of characteristics often referenced in discussions of C/DM program success. First, the Disease Management Association of America lists eight essential facets of any effective disease management program:

1. An identified population with specific health and disease conditions
2. The application of evidence-based practice guidelines to treat those patients
3. A process that encourages collaboration among physicians and other providers
4. Risk stratification, matching interventions with needs
5. Patient self-management education
6. Process and outcomes measurement, evaluation, and management
7. Routine reporting and feedback loops that include communication with the patient, physician, health plan, and ancillary providers
8. Appropriate use of information technology. (Goetzel, Ozminkowski et al. 2005)

Additionally, it has been suggested that C/DM programs are highly effective at improving quality of care in areas with significant health disparities- geographic regions with large concentrations of minorities, older adults, and/or people with lower socio-economic status, and areas with limited access to health care. Older adults, particularly minorities, have been shown to receive poorer quality diabetes care, regardless of their Medicare status (Coberley, Puckrein et al. 2007). C/DM programs aimed at reaching these populations or underserved areas may be more successful than those with a general, or broad, aim (Coberley, Puckrein et al. 2007).

Effectiveness from a cost perspective varies from program to program, but some factors have been shown to impact cost efficiency and return on investment. One factor is the severity of the condition- mild cases of a given condition may be less likely to respond to C/DM than more severe cases. Another factor is the quality of local usual care, as strong community-based networks of care might make the effects of C/DM negligible. Lastly, the design of the C/DM program may affect ROI. For example, while telephone outreach may be less costly than in-person communication, it is less likely to impact a change in patient health and thus may ultimately result in higher health care costs (Sidorov 2006). Only a case-by-case analysis can show the particular ways these factors affect any given plan.

Care and Disease Management in a Managed Care Setting

Implementation, Models, and Techniques within Managed Care

As this project will ultimately serve to inform CMS on the potential of Medicare Advantage C/DM programs, it is important to identify how C/DM programs are implemented in managed care settings: their forms, methods, strengths, and weaknesses. As utilization of C/DM programs in a managed care setting is a relatively recent, although widespread, trend, the literature analyzing the form and effectiveness of these programs under managed care is particularly sparse. However, the literature found for this review did provide some useful insight into the nature of C/DM programs in a managed care setting.

The literature documents that C/DM programs are being widely used in managed care programs. In a survey of 47 healthcare systems and managed care organizations, 89 percent have, or are developing, C/DM programs. However, this widespread implementation of C/DM programs is a relatively recent trend. A 2001 study showed that half of all programs at that time had been implemented in the two years prior (Whellan, Gaulden et al. 2001).

Plans typically undertake three steps in deciding which diseases to target with C/DM programs. First, patient data are analyzed to determine which conditions are associated with health care expenses that can be reduced by a program. Next, an external analysis is run to analyze current standards of care and to assess what techniques have been successful. This may include analyses of published data and defined standards of care, public health records for the region, and visitation or consultation with managers of existing C/DM programs. Finally, a managed care organization will likely also run an organizational analysis to assess costs of program implementation in comparison to the expected savings in care costs. Health plans will often move forward in implementing a program if these three minimum criteria are found to favor implementation (Whellan, Gaulden et al. 2001). The most common C/DM programs that

managed care organizations in the above mentioned survey chose to implement were: diabetes, asthma, congestive heart failure, prenatal care, and cardiac ailment prevention programs (Whellan, Gaulden et al. 2001).

While specific C/DM methods will differ based on target population, intervention aims, condition to be managed, and funding, 90% of these surveyed managed care organizations' C/DM programs relied on periodic telephone calls to patients to keep them on track with intervention measures. By comparison, only 32% of surveyed managed care organizations and health systems used Internet-based outreach (Whellan, Gaulden et al. 2001); one plan did find that internet-based chronic care programs could have a positive impact on health outcomes. (Lorig, Ritter et al. 2006).

Overall, two major factors appear to increase the likelihood of C/DM success for managed care patients. First, the involvement of informed, self-managing, engaged patients must be encouraged, and support for self-managing techniques provided. Examples of this support might include education to help patients and their families feel confident and prepared for home management of the condition, condition related informational materials, psychosocial support, and education regarding when the patient needs to seek medical care (Casalino 2005; Tsai, Morton et al. 2005). Second, an effective, well organized C/DM delivery system must be designed to include care coordination, proactive follow-up care, distinct care management roles, case management for the sickest patients, and multi-disciplinary teams when appropriate (Casalino 2005; Tsai, Morton et al. 2005).

Summary of Study Findings

General Studies of C/DM Programs

A total of seven empirical studies of C/DM programs were analyzed. Of these studies, three focused on DM programs for management of heart failure, two on CM programs used for multiple conditions (including lung disease, heart disease, diabetes, congestive heart failure, chronic obstructive pulmonary disease, coronary artery disease, stroke, back conditions, hip fracture, peripheral vascular disease, and cardiac arrhythmias), one CM program for management of patients who underwent mechanical ventilation for more than three days and were discharged, and one DM program for management of type 2 diabetes. Given the small numbers of studies for each of these diseases and conditions, we have considered these studies together.

The most common goal of these programs (addressed in five of these studies) was to reduce medical service use, particularly in preventing hospital re-admissions or reducing in-patient bed days and ER visits (Akosah, Schaper et al. 2002; Coleman, Smith et al. 2004; DeBusk 2004; Daly, Douglas et al. 2005; Lorig, Ritter et al. 2006). Another common focus was on improving quality of life and health outcomes (Akosah, Schaper et al. 2002; DeBusk 2004; Galbreath 2004; Bray, Thompson et al. 2005; Lorig, Ritter et al. 2006). All but one of the studies (DeBusk 2004) indicated some degree of success in one or more of their stated goal categories. Two notable successes included a program assisting in discharge and end of life management for patients who had received inpatient mechanical ventilation wherein reduced re-admission rates among the intervention group lowered patient costs by an average of $5,180 (Daly, Douglas et al. 2005),

and a multi-condition C/DM program that found patients who received C/DM intervention were half as likely to return to the hospital as those who did not (Coleman, Smith et al. 2004).[11]

All of the C/DM programs assessed here used different combinations of intervention techniques to achieve their specific goals for the managed condition. While side-by-side comparisons are not feasible, some techniques and approaches emerge as more popular than others. First, all studies place an emphasis on improving patient self-management of their condition. This was accomplished though patient education about the general condition and self-management techniques. When appropriate, self-monitoring tools such as pulse oximeters, blood pressure cuffs, or bathroom scales were provided (Galbreath 2004). Telephone outreach was common for condition counseling (Coleman, Smith et al. 2004; DeBusk 2004; Galbreath 2004; Daly, Douglas et al. 2005). One DM program for diabetes used Internet-based education and management with equal success as the more commonly used in-person or telephone management (Lorig, Ritter et al. 2006). Another technique was to assign a nurse or other trained professional to specific cases to provide management consistency. Some case management tasks included caregiver support, monitoring of medication regimen and patient condition (Daly, Douglas et al. 2005) and telephone counseling (DeBusk 2004). The most common role of nurses or other trained professionals was to act as an advocate for patient care, ensuring patients' health needs were met and primary care physicians were informed of status change or patient concerns (Coleman, Smith et al. 2004; DeBusk 2004; Bray, Thompson et al. 2005; Daly, Douglas et al. 2005).

Results

Medical service use was reduced in three of the seven reviewed studies. First, a DM program aiming to improve overall care for heart failure resulted in shorter time to first outpatient visit, a 77% relative risk reduction for 30-day hospital readmission and statistically significant lower rates at 90 days and one year (Akosah, Schaper et al. 2002). Second, a DM program aiming to reduce hospital re-admissions among the chronically critically ill resulted in recipients of DM intervention having an average of 11.4 days of re-hospitalization, compared with 16.7 days for the control group (Daly, Douglas et al. 2005). Third, a C/DM program providing similar management programs for nine different conditions found that patients receiving C/DM intervention were half as likely to be re-hospitalized (Coleman, Smith et al. 2004). Cost savings were assumed (Akosah, Schaper et al. 2002; Coleman, Smith et al. 2004) or confirmed (Daly, Douglas et al. 2005) by the reduction in health care utilization.

Health outcomes based on clinical measures or life expectancy were improved in three cases. First, the CHF management program increased life expectancy by 76 days (Galbreath 2004). Two diabetes management programs succeeded in improving HbA_{1c} levels among participants (Bray, Thompson et al. 2005; Lorig, Ritter et al. 2006).

Studies of Care and Disease Management Programs in Managed Care

Five studies of C/DM programs operated by managed care organizations were reviewed. Of these, two were DM programs focused on the management of type 2 diabetes (Ibrahim 2002;

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[11] Details on all studies referenced, including intervention specifics, can be found in a table in the appendix.

Villagra and Ahmed 2004), two for heart failure (Berg, Wadhwa et al. 2004; Sidorov 2006), and one CM program for the management of five conditions (Afifi, Morisky et al. 2007).

Because these C/DM programs were implemented within a managed care setting, their stated goals vary slightly. Three of these five C/DM programs sought to reduce medical services use (Berg, Wadhwa et al. 2004; Villagra and Ahmed 2004; Afifi, Morisky et al. 2007). Two of these studies focused primarily on cost reduction, independent of any assumed cost reductions associated with reduced health care utilization (Berg, Wadhwa et al. 2004; Sidorov 2006). Two of these C/DM programs also sought to improve quality of care, as indicated by frequency of clinical testing and use and management of appropriate prescription medications (Berg, Wadhwa et al. 2004; Sidorov 2006). Only one of the five studies directly aimed to improve health outcomes (Ibrahim 2002).

These C/DM programs also emphasized self-management. The two diabetes programs provided self-monitoring tools such as glucose monitors and test strips to enrolled individuals (Ibrahim 2002; Villagra and Ahmed 2004). Nurses or DM professionals were involved in the management of all programs either by leading education sessions (Ibrahim 2002; Berg, Wadhwa et al. 2004; Sidorov 2006) or providing outreach, management, and support (Berg, Wadhwa et al. 2004; Villagra and Ahmed 2004; Afifi, Morisky et al. 2007). Two DM programs implemented 24-hour nurse triage lines (Berg, Wadhwa et al. 2004; Afifi, Morisky et al. 2007). Three programs used individualized, condition-specific educational mailings or reminders (Berg, Wadhwa et al. 2004; Villagra and Ahmed 2004; Afifi, Morisky et al. 2007). Only one program provided Web-based education (Villagra and Ahmed 2004).

Results

Medical service use was significantly decreased in three studies. One DM program for management of heart failure among the elderly resulted in a 23% reduction in hospitalizations, 26% fewer inpatient bed-days, 22% fewer ER visits, 44% fewer hospitalizations for heart failure, 70% fewer 30-day readmissions, and 45% fewer skilled nursing facility days in patients who received intervention, compared with rates before DM was introduced as part of treatment. (Berg, Wadhwa et al. 2004). A diabetes management program resulted in a 22-30% decrease in hospitalizations (Villagra and Ahmed 2004). The multi-condition CM program reduced ER visits and inpatient admissions for care of diabetes, asthma, and CHF, but not for hypertension (Afifi, Morisky et al. 2007). Cost savings were confirmed in three cases, two for heart failure and one for diabetes (Berg, Wadhwa et al. 2004; Villagra and Ahmed 2004; Sidorov 2006). Cost savings were expected, but not confirmed, in the multi-condition program (Afifi, Morisky et al. 2007). The fifth study focused on clinical indicators of condition improvement and did not address cost issues (Ibrahim 2002).

Quality of care was improved in one CHF program and one diabetes program through increased use of appropriate prescription medications and increased clinical testing frequency, respectively (Villagra and Ahmed 2004; Sidorov 2006). The one study seeking direct health outcome improvement among diabetics achieved this, with significantly improved clinical indicators including HbA$_{1c}$, high density lipoprotein (HDL) cholesterol, low-density lipoprotein (LDL)

cholesterol, total cholesterol, diastolic blood pressure, and body mass index (BMI) (Ibrahim 2002).

Metrics for Care and Disease Management Success

Side by side comparisons of C/DM programs is difficult, given the variation in metrics and diseases/conditions in the literature, as well as the relative paucity of the literature both within and across conditions. As there are no studies that assess C/DM success using a randomized controlled approach, changes in clinical indicators of health status are the most comparable way to examine findings (Linden and Roberts 2005; Sidorov 2006). The literature is too spare to fully validate specific program evaluation metrics. However, it is instructive to highlight those that are present in the literature and have been used in studies to date. The following table provides a listing of these metrics.

Table 2-1: Example of Evaluation Metrics Drawn from the Literature

Condition managed	Health Outcome/ Quality of Life	Quality of Care	Use	Costs
Diabetes	▪HbA1c levels ▪LDL and HDL Cholesterol Levels ▪Diastolic and Systolic blood pressure ▪Body Mass Index ▪Occurrence of Hypoglycemia	▪Use of clinical testing ▪Tobacco cessation	▪Days in hospital ▪ER visits ▪Physician visits ▪Hospital Admissions	▪cost per diabetic per month for all services
CHF/Heart Failure	▪Assessment of left ventricular ejection ▪All-cause mortality ▪6 minute walk-test score ▪Improvement in NYHA functional class ▪One year outcome and mortality	▪Rx of ACE inhibitors and Beta-blockers ▪Monitoring of adherence to Rx plan ▪Annual Rx days supply/person ▪Rx program periods by Rx type ▪Health interventions performed (clinical testing and immunizations)	▪CHF-related hospital re-admissions ▪Outpatient visits ▪Patient initiated contact ▪Re-hospitalization for any reason ▪ER visits ▪SNF days ▪Inpatient bed-days ▪Time to first re-hospitalization for any cause	▪$/member/month for all services ▪Annual medical and pharmacy costs/patient
Post-Mechanical Ventilation	▪Mortality during re-hospitalization	N/A	▪Re-hospitalization rate ▪Days of re-hospitalization ▪Time to first re-hospitalization	▪All associated costs
Multiple Conditions	▪Pain, discomfort, shortness of breath, and fatigue on VNS ▪Illness Intrusion Scale	N/A	▪Inpatient stays ▪ER visits ▪Re-hospitalization rates at 30, 90, 180 days ▪ER or Observation Unit visit at 30, 90, 180 days ▪Time to first re-hospitalization ▪Time to first ER or Observation Unit visit ▪Outpatient visits	N/A

Discussion

Overall, C/DM programs have potential for decreasing costs in health care by reducing medical service use. It is also evident that many C/DM programs have been able to improve health outcomes and/or quality of health care, with the literature reporting the most success in programs focused on diabetes and congestive heart failure.

The implication for managed care is that C/DM programs can be beneficial in several key ways. Studies of general C/DM programs (i.e., those not restricted to managed care settings) sought to establish the usefulness of C/DM programs at keeping people more satisfied and healthier, by preventing hospital re-admission, improving health outcomes, and improving quality of life. These studies consistently showed at least some level of success where the C/DM program yielded positive outcomes along these dimensions. Managed care organizations (MCOs) seem well positioned to explore ways the programs can be mutually beneficial to the health plan and the patient. The metrics of success used in the studies of managed care C/DM programs reflect this. Having established patient benefits, the focus is on reducing costs, reducing medical service use, and providing patients with a better quality of care. The studies on MCO C/DM programs indicated potential in these areas as well. The current state of the literature on C/DM in managed care settings is heavily focused on cost-reduction. While improving patient-level outcomes may be implied, or a corollary aspect of these programs, the published studies do not necessarily frame the programs in this way. This does not imply necessarily that C/DM programs under managed care are not concerned with these outcomes, simply that the literature does not contain examples of these to date.

In sum, the C/DM programs seem to benefit both managed care providers and patients. In addition to the programs discussed above, a recent Blue Cross Blue Shield report describes C/DM successes within their organization in management of CHF, osteoporosis, diabetes, kidney failure, and overall elder-care (2007). While these overarching results may in fact be an artifact of a skewed literature base of managed care-related studies, there is sufficient evidence to suggest that C/DM approaches can result in positive patient and cost outcomes. In addition to further enriching the literature base in this area, it will be important to also explore what particular features and characteristics are associated with the relative success of managed care driven C/DM programs over those in other settings. These factors may range from the broad structural differences in care delivery and management between managed care and non-managed care settings, differences in populations enrolled in these programs, or variations in how the features of the programs are implemented.

CHAPTER 3:
KEY INFORMANT INTERVIEWS

The following section summarizes findings from interviews conducted from late March 2008 through early May 2008 with care and disease management (C/DM) stakeholders, including organizations, contractors, vendors, policy and academic experts, and advocates. The purpose of conducting these interviews was to solicit contextual details that are otherwise difficult to capture through a survey or a literature review, and to identify themes and other nuances about these programs. Findings from these interviews have been organized by the key project aims of characterizing these programs, describing the populations enrolled in these programs, describing the role of health plans in C/DM and documenting any evidence of program effectiveness.

Findings from interviews with patients enrolled in C/DM programs are also provided at the end of this section. A total of 10 telephone interviews were conducted from mid-August to early September 2008. The purpose of these interviews was to assess patients' overall experiences with the plans and the services offered to the patients.

Key Stakeholder Interview Findings

In total, 38 interviews were conducted with the following individuals:

Managed Care Organizations
- Robert Pope-MD/CMO, Humana
- John Mach-MD/CEO, UHC Evercare
- Beverly Everett-MD/Medical Director, CIGNA
- Lonny Reisman-MD/CEO, Active Health & Randy Krakauer-MD, Medical Director, Aetna
- Paul Wallace-MD/Medical Director, Kaiser
- Cheryl Phillips-MD/Geriatrician/CM Expert, On-Lok
- Tim Schwab-MD/Medical Director, SCAN
- Judith Black-MD/Medical Director, Sr. VP, BCBS/Highpoint
- Joy Luque- BSN/PHN/RN, UHC Pacificare
- Esther Nash-MD/Sr. Medical Director, BCBS/IBC
- Joan Kennedy-MBA/CEO, HSC & Sr. VP, BCBS/Wellpoint
    - (Subtotal: 11)

State Operated Managed Care Programs
- Melanie Brown-Woofter-Nurse/Administrator, Florida
- Pam Parker-Nurse/Dual Eligible Program, Minnesota
- Diane Flanders-Nurse/Dual Eligible Program, Massachusetts
- Sandeep Wadwha-MD/Medicaid Director, Colorado (recently with McKesson)
    - (Subtotal: 4)

C/DM Company/Vendors
- Jim O'Leary-PhD/Administrator, APS
- Sara Parkerson-Nurse/Administrator, Matria (has since left)

- Jim Pope-MD/CMO, Healthways
- Gordon Norman-MD,MBA/EVP, Chief Science Officer, Alere Medical
- David Wennberg- MD,MPH/CEO, Health Dialog
- Chris Selecky- CEO/Immediate past pres. Of DMAA, LifeMasters
  - (Subtotal: 6)

Academic/Policy/Advocacy
- Stu Guterman, Commonwealth Fund
- Joyce Dubow- Policy expert/advocate, AARP
- Don Fetterolf- MD/Matria, DMAA
- Al Lewis- Employer/Purchaser perspective, DM Purchasing Consortium
- Ken Thorpe- Policy expert/advocate, Emory
- Sooren Matke- MD/DSc/Policy Expert, RAND
  - (Subtotal: 6)

Caregiver/Patients
- Kate Lorig- Advocate/academic/policy/patient, Stanford Patient Education
- Confidential Interviews, Medicare Advantage Patients (10)
  - (Subtotal: 11)

Total Approved and Completed: 38

The overwhelming theme that emerged from these interviews is that C/DM programs share the same goals of fostering appropriate health care utilization and improving and maintaining member health, and have some broad similarities from a macro-level perspective. For example, interviews with stakeholders suggest that C/DM programs are largely data driven (via claims, utilization, lab results, staff assessments), patient-directed, and focused on reaching segments of the member population who can most benefit from intervention. These segments tend to comprise members with multiple and complex chronic conditions or are otherwise at higher risk for intensive medical care use.

Despite some consistency in these general features, examining C/DM programs at a more detailed level reveals wide variation in program focus, approach (including amount of financial and other resources dedicated to these functions), operations, staffing, and data systems. It is difficult to draw generalizations across plans, given the diversity in populations served, market share, geography and organization and plan structure. Each of these areas of variation is described in more depth below. However, repeatedly and across nearly all interviews, it was clear that if "you have seen one program, you have seen one program."

Characterizing C/DM Programs in MA Plans

The research team interviewed representatives from 11 different commercial managed care organizations with Medicare contracts[12] and six vendor representatives around the country that offer C/DM services to MA members to learn more about the C/DM programs they offer to MA

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[12]These interviews included one SNP and one PACE plan.

members. These organizations serve members in multiple regions, with approaches varying by region, individual contractor or plan, in addition to which services were provided by employed staff and/or outside vendors. Though these interviews represented only a sampling of the overall universe of health organizations, Medicare contractors and C/DM vendors, it was clear that no single approach dominated. Nonetheless, certain features such as program goals, data driven information systems and population segments targeted were largely consistent across all programs.

General Features of C/DM Programs

All managed care organizations and vendors interviewed believed in the value of C/DM programs in controlling health care costs, and centered on minimizing or eliminating unnecessary and inappropriate care. While none offered peer-reviewed studies documenting the effectiveness of their programs, many referenced internal analyses supporting the value of their approaches and the need for continuous refinement of their approach over time.[13] All managed care organizations reported offering both care and disease management services, even if their approaches and use of vendors varied significantly. Participation in C/DM programs generally ranged from three to over 20 percent of a managed care organization's population at any given time.

While most managed care organizations and vendors served the commercial (employer-based) population as well as MA beneficiaries, they consistently indicated the focus of services provided to MA patients was different. Interviewees spoke of the relative prevalence of multiple chronic conditions in the elderly population and the varied functional, social and environmental issues for many of these members affecting their ability to obtain needed health care. Several managed care organizations reported having staff trained specifically to serve older enrollees and developed tailored programs to address the needs of the frail elderly. Many of these organizations and vendors offered Special Needs Plans (SNPs) or Medicare Health Support (MHS) demonstration projects and chose to incorporate lessons learned from these programs into their MA programs serving the broader population.

Care Management

Care management programs were consistently described by interviewees as those that do not focus exclusively on a specific disease or condition, but rather on identifying certain participants from the total population in question that are most likely to benefit from specialized intervention. The most common tool reported was the use of predictive modeling to identify those at risk for negative outcomes such as avoidable hospital admissions, emergency room visits, and inappropriate utilization. Many programs also reported using health risk assessments completed by members including questions about a patient's level of functioning as well as social and environmental support, to help determine if connecting members with other resources or prescribing medications would be beneficial. Care managers (also frequently referred to as case managers) were reported as spending their time on acute situations that are expected to resolve and, as a result, have patients "graduate" from the program following short-term intervention.

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[13] One plan did mention that one of its vendors not interviewed as part of this study, Accordant, had published a peer-reviewed article about its programs' effectiveness.

Managed care organizations and vendors reported that participation in these programs could be relatively short (from 45 days to seven months), or indefinite, depending on frailty and the number of comorbidities being addressed. With complex cases, it was reported as not unusual for patients to go in and out of different care and disease management programs over time. As one managed care organization executive noted, the greater the number of comorbidities, the more likely a member will be in a care management rather than a DM program.

<u>Disease Management</u>

Disease management programs were also offered by all interviewed managed care organizations. The nature of the programs and numbers of conditions covered ranged from the "top 5" diseases (diabetes, COPD, CHF, asthma and CAD) to 22 different conditions and diseases (sometimes including less prevalent conditions such as sickle cell anemia or Crohn's disease). Several managed care organizations and vendors mentioned focusing more on identifying elderly patients who were isolated or showing signs of depression, in combination with other conditions, given the higher likelihood that these patients would become high resource users in the near future. Organizations selected the conditions and diseases to be included in their program for varying reasons, but generally with the intent that intervening would help control costs, address gaps in existing care regimens, and/or improve the overall quality of care delivered.

As with other features, the structure and focus of disease management approaches varied across managed care organizations and vendors. While all began with population-based predictive modeling, some of those interviewed emphasized having disease-specific targets versus larger utilization trends. One SNP segregates members upon enrollment into categories, such as those with multiple comorbidities, those with functional issues, those who are especially frail, and those facing end of life issues. They then have different approaches to developing an advanced care plan, with coordination efforts depending on the issues identified through claims data, predictive modeling, and information collected/confirmed at intake. These individual care plans would generally not be condition-specific, but rather patient-centered. Others interviewed reported offering both care and disease-specific programs that follow an established hierarchy of intensity for patients with multiple comorbidities. These may include coordinated communications with patients by different staff members depending on the combination of conditions and concerns identified for a specific patient. Oftentimes, these managed care organizations would hire vendors to tackle patients with certain conditions, generally disease specific, and either identify the required interventions or look to the vendor to determine the appropriate approach.

A few of the national managed care organizations interviewed described programs that differed by state and region, rather than structuring programs that utilized consistent approaches across the country and individual contractors and plans. These C/DM program designs appeared dependent upon whether the managed care organization had purchased smaller plans with many risk arrangements in a particular region, their penetration in a certain market, and their existing relationships with C/DM vendors and local provider groups. Thus, with these organizations, in one region or state the focus would be on certain targeted diseases, while in another area another set of patient conditions or gaps in care might be identified for intervention.

Managed care organizations also reported variation in their approaches to using vendors and communications with physicians, with some focusing on coaching patients in decision-making (patient-sensitive conditions) and others taking a more traditional approach to motivate changes in patient behavior. Managed care organization representatives interviewed reported most vendor arrangements included some form of risk sharing and incentives to encourage cost savings.

Role of Managed Care Organizations

Care and disease management programs are offered to patients through their benefit plan. The implementation varies from contractor to contractor, with some using vendors and others relying on their own internal operation. The sophistication of data availability, sharing, and systems as well as program operations appear to be quite different depending on the managed care organization and their priorities and philosophy. Because managed care organizations control the delivery of C/DM to their patients, understanding the nuances of delivery options is important to understand the reach, potential, and capabilities of these C/DM programs.

All managed care organization representatives interviewed reported structuring their C/DM programs either internally, through a dedicated division, externally, through a commercial vendor who will operate the program for them to their specifications, or through some combination of the two. A managed care organization with a combination approach may operate certain programs internally, typically reported to be the care management programs, with the disease management programs contracted to vendors. In some instances, which disease management programs were kept internally rather than contracted out would vary depending on historic relationships with vendors in a given region or the priorities set by the organization in terms of targeted diseases in previous years.

All the managed care organization interviewed reported operating some, if not all, care management programs internally. Few plans focused on sole disease management programs for the MA population, noting that the high rate of comorbid conditions among targeted disease management populations often make overall care management programs more effective than disease management programs which only address one concern. All organizations mentioned offering specific DM programs (five in total), contracting some or all of these programs to commercial vendors.

Of the managed care organization outsourcing their C/DM programs, patient information was shared with vendors in one of two ways: 1) the managed care organization identifies potential patients for C/DM eligibility and provide these members' names and contact information to the vendor and/or, 2) the managed care organization prescribes the criteria for identifying members for C/DM, and then provides the vendor with an "information dump", usually including data such as patient records, claims data, pharmacy information, health history, clinical, or lab data. (These managed care organizations then delegate the responsibility of actual selection members to be recruited to the vendor.) A few vendors indicated that the extent to which managed care organizations rely on vendors for assistance in targeting the populations varies considerably depending on the plans own internal operations, staffing and systems expertise.

Managed care organizations consistently reported that they are very prescriptive at the outset, specifying how the vendor will update them on activities and clinical information collected, as well as reporting frequency. These agreements tend to define the staffing credentials expected from the vendors outreach staff, and in what manner and how often patient status and program success will be evaluated. One managed care organization reported using an 80-page manual that describes the expected integration between the managed care organization and the vendor, and vendor standards. Once these processes are in place, however, the methods by which the vendors conduct their outreach is apparently not as closely monitored.

Population Management and Patient Interaction

<u>Patient Identification and Stratification</u>

All representatives interviewed at both managed care organizations and vendors reported having developed methods for identifying and stratifying those members requiring some level of C/DM based on specific selection criteria and plan or vendor-assigned acuity levels or risk scores. These methods generally include some predictive modeling based on a review of claims data to identify certain diagnoses, procedures performed, emergency room visits, hospitalizations, lab data and medications. This modeling was generally driven by internally developed algorithms (or those developed in conjunction with a given vendor) designed to predict the likelihood of high resource use. Referrals from managed care organization and/or provider staff also play an important role in identifying patients to enroll in C/DM programs. Each managed care organization or vendor reviews specific combinations of claims data elements and utilization patterns to identify those patients most likely to benefit from C/DM intervention. Considerations could include the patient's age, degree of frailty, diagnoses, readmission rates, number of transitions in care required, and total claims costs. One large national managed care organization reported having a real-time system (with information as current as the prior week) that includes lab values, prescriptions filled, and claims information from physician offices. Several vendors indicated they work hard to collect as much current information from the managed care organizations (clients) as possible, preferably on-line, so that the data are readily available to program staff.

The degree to which laboratory values and pharmacy/prescription information are available and/or timely to managed care organizations and/or their vendors as reported was not uniform. Availability depends on the capacity of the data management systems as well as the nature of the provider contracts. For instance, information on lab values and prescriptions filled was more frequently available to those managed care organizations that have reference labs or participating pharmacies sending this information directly and regularly as part of their contracting arrangements. Some managed care organizations have systems to relay this information on a timely basis to their vendors (albeit not necessarily in a readily usable format), while other vendors and managed care organizations interviewed consistently operate without this degree of detailed information.

Reported patient enrollment rates in C/DM programs also varied by managed care organization and vendor, as did their recruitment, targeting and stratification approaches. The length of time patients were involved in a program depended on their condition and the reason for their

enrollment. Thus, patients who had recently been discharged from a hospital might be followed until the acute condition was resolved, whereas a diabetic patient or one with multiple chronic conditions might be followed indefinitely, depending on their needs and the participation criteria established by that managed care organization for that region and patient population. One large managed care organization reported that an average of 30 percent of MA members moved in and out of C/DM programs. One of the reported goals of such programs is to help the patients better manage their disease or condition and become more independent so that over time, less intervention by the C/DM would be needed.

<u>Patients in C/DM Programs</u>

As with administrative systems designed to track claims and utilization, the majority of managed care organizations and vendors interviewed characterize the populations they serve by health need. Despite acknowledgement that details on other population characteristics were important, and that it is useful to understand whether certain segments of their population were better served than others, few plans reported using sociodemographic data or looking at health disparities. This was generally appeared to be because these data were secondary to the health and patient environmental issues most central to shaping C/DM interventions and therefore not the focus of their C/DM efforts.

Of the 19 state Medicaid programs, managed care organizations or vendors interviewed for this project, only three interviewees reported that their organizations track patient sociodemographic information in a readily accessible format. None of the managed care organizations operating programs under MA reported collecting sociodemographic information. One used its collected demographic information to determine if the majority of patients they were having trouble reaching or enrolling were of lower socioeconomic status. Another had used demographic information to support an effort to increase clinical testing frequency among African-Americans enrolled in the program. Only managed care organization specifically mentioned that their approach was very focused on cultural differences and diversity. While some managed care organizations stated that it might be possible to ascertain this information from their files, it was not being collected or reviewed in any meaningful manner. One managed care organization noted that patients were enrolled in C/DM based on clinical condition and predictive modeling, and therefore maintaining or analyzing demographic information *"seemed irrelevant"*. This sentiment - that demographic information was not relevant to the primary goal of reaching the right patients and therefore not analyzed - seemed to be echoed by most organizations.

The majority of care and disease management program representatives reported that many of their MA patients enrolled in a C/DM program for management of a specific condition have multiple, often inter-related, comorbidities, and are thus targeted for more than one disease, condition or concern. In addition to specific conditions or disability, several organizations noted that a large portion of their managed population have cognitive, visual, or hearing impairment. These organizations reported tailoring their C/DM approaches to ensure their enrollees are properly reached, for example: ensuring materials are printed largely and clearly, patients are not given too much complex information at once, or speaking to caregivers when appropriate. Some noted that they have a significant population of Spanish speaking patients who require culturally

relevant outreach, such as outreach staff trained in Spanish, and special attention given to address Hispanic-American dietary trends.

Recruitment

Interviewees reported several different "identification gateways" through which a managed care organization or its vendor might identify and begin to recruit a member to participate beyond predictive modeling and internal referrals from other staff and or physicians.[14] One managed care organization reported placing calls to every new member within six weeks of enrollment, during which they would collect information and determine potential eligibility for various programs. Others attempt multiple contacts with members via introductory letters or calls requesting completion of their health risk assessment, and then follow-up upon receipt of that information. The level of priority assigned to all members identified for participation in the various C/DM programs varies by organization, and depends on the nature of the member's needs and assigned risk score following the predictive modeling, referrals and internal analyses. As one vendor executive put it

> "...not everyone enrolled will necessarily get a call. The biggest challenge we face is how to efficiently and effectively make those calls... this is the one of the biggest hurdles DM companies are facing."

Potential participants/recruits may then be assigned to an individualized care plan and vendor staff member who makes an initial contact, or instead may be sent an introductory letter, inviting the member to participate in the program, before an intake call is placed.

Managed care organizations and vendors reported different methods of collecting health risk assessment information. Two managed care organization representatives reported that initial "intake" calls occur only after written assessments are completed, but that reminders encouraging the member to complete and return the assessment or call for assistance in completing it are sent out. In these instances, if the claims or other predictive modeling information suggest a higher risk level assignment, the staff takes a more proactive role in reaching out to the member.

Retention and Attrition

None of the managed care organization or vendor respondents indicated that attrition was a significant concern, with most noting that seniors are typically pleased to be contacted and rarely refuse invitation to participate in C/DM programs. While none of the interviewees reported tracking reasons patients chose not to participate, several hypothesized that those patients did not feel like they needed help, had privacy concerns, or already had a good support network in place.

One vendor executive indicated that the length of time a member stays in a program

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[14] One managed care organization reported having developed a formal system to encourage internal referrals from member services as well as utilization management and other staff in regular communication with members, including the provision for a warm transfer to C/DM staff.

"speaks to the efficiency of the program itself. You would think after a while, the need to communicate and educate would taper off. There are three elements that determine whether calls will go out less frequently – when the care is adhering to evidence based guidelines, when medications are well-managed, and when the patient can recognize signs and symptoms of disease and know what to do. If all three are in place, and there is no acute event, then we will taper off the calls. Only a small amount drop out, and it usually occurs up front."

Nature of Patient Contact

In terms of their program orientation and philosophy, organization reports varied, with some focusing on having a single point of contact from their program, and others involving a web of staff communications unique to a patients' condition(s). Staff training and focus also varied among managed care organizations and vendors – some encourage critical thinking among staff members, with less reliance on scripts and/or case management certification, while others facilitate health coaching, teaching self-management techniques and behavior change motivation to patients. Several managed care organizations reported developing dedicated geriatric case management teams that include nurses, social workers, and/or behavioral health specialists, pharmacists and dieticians. Almost all organizations reported nurse telephone contact as the primary means of communication, outside of direct mailings to patients targeted for education and care/screening reminders. Most often, the initial contact reported comprises a telephone review of an already completed health risk assessment or an effort to complete an assessment confirming the patient's status and needs.

The nature of the calls made to a given patient and the individual staff person calling would depend on the reason they were identified as a C/DM participant and the information the participant provided. The combination of this information with the managed care organization or vendor's approach and staffing ratios would generally result in the development of a care or action plan consistent with the goals established for the patient and the organization.[15] The frequency of calls and extent to which the nurse might become more actively involved in communicating with that patient and/or their providers would also be dictated by these factors.

Outside of special programs such as SNPs, other demonstrations, and staff model case management programs, managed care organizations and vendors reported that home visits occur infrequently for MA members.[16] While a few discussed the value of home visits for certain frail elderly patients, these visits were considered too costly for the marginal benefits accrued unless the patients are selected very carefully. One managed care organization executive estimated that approximately five percent of the MA population would be eligible for home visits, but they

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[15] Several vendors emphasized the need to discuss end-of-life patients' goals prior to helping them develop an advanced care plan, which influences how to proceed. One managed care organization executive said they always ask the participating member: *"Do they want to focus on longevity, function or comfort?"*

[16] One national managed care organization has recently incorporated some "on-site management" for the top three percent of its population in certain metro areas where there are enough patients to warrant this approach. Another large national managed care organization recently completed a pilot program for transitional care in which a vendor made post discharge home visits resulting in a 33% reduction in readmissions after 3 months. This organization intends to expand this program beyond the test city to other areas where their market share is significant enough to make it worth the investment.

always expect that some will turn down the offer. Home visits are especially cost prohibitive in rural areas where skilled nurses spend much of their time driving from one home to another. One managed care organization that conducts home visits reported considering sending non-clinical staff to conduct the initial health risk assessments and identify medications, for example, before determining whether a visit from an RN would be of value.

The internal data systems developed by managed care organizations and vendors offer varying degrees of guidance and prompting for the nursing staff, and include recommended questions and approaches or care plan elements based on internally developed guidelines and corresponding care algorithms. This kind of program software was typically developed early on to be disease specific. Many organizations' internal systems were then modified to offer guidance for patients with multiple co-morbidities or other challenges, sorted into a hierarchy. This guidance provides nurses direction on the most critical issues to tackle first with a patient. Each system has its own branching logic based on patients' responses to screening questions and other information provided which appear to vary widely in terms of sophistication and ease of use. If a patient gives a positive response to a depression screening, for instance, some systems will trigger more questions with varying degrees of specificity or suggest potential appropriate responses.[17] Some systems also include reminders for staff to conduct follow-up calls at the appropriate time. A managed care organizations' and vendors' software systems actually identify actionable gaps in care and areas where care needs to be carefully coordinated for the staff, already prioritized. However, depending on the organization's approach, these system-driven suggestions are used as a guide and can be modified by the nursing staff involved. All vendors reported using national guidelines and evidenced-based medicine in developing and at least annually updating their clinical support software. At least two mentioned the use of scientific advisory committees to update and continuously refine their software and the corresponding prompts and guides.[18]

All managed care organizations indicated they regularly surveyed both patients and providers on program satisfaction, and that patients largely reported being very satisfied (plans reported an 85% or higher satisfaction rate) with the services provided. Managed care organizations noted that low attrition rates enjoyed by the programs are another indicator of satisfaction. Managed care organizations and vendors did not report difficulties in getting MA members to participate, once they were recruited. Many indicated this was a more frequent challenge with the younger working population as well as dual-eligibles or Medicaid-only populations. Of the three managed care organizations reporting on how often members declined participation in C/DM programs, the percentage ranged from six to 11 percent. Two noted that provider response rates on satisfaction surveys were generally very low with varied levels of satisfaction; no percentages were provided by interviewees.

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[17] One vendor actually has a series of screening questions used to determine how motivated the patient is and whether they are likely to be amenable to making changes. The vendor is experimenting with this "patient activation screen" as a method of determining what the nurse should try and address. So far they have found a high correlation with this screen and their ability to get good results.

[18] When speaking of quality assurance initiatives and the importance of adhering to nationally recognized clinical guidelines, several managed care organizations also mentioned the importance of meeting NCQA's and URAC's quality and utilization management standards in order to maintain accreditation standards.

Communications with Physicians

All managed care organizations and vendors acknowledged the importance and inherent challenges of involving patients' physicians in the care planning for these programs. Some also indicated that their focus was on filling in the gaps and assisting physicians by providing the necessary support to ensure patients receive the care they need. A few managed care organizations reflected the sentiment that the current system seems to depend on C/DM programs to address these gaps rather than a more integrated model where the care managers and physicians work as part of the same team. Most of the communication in C/DM programs was described as a focus on working with the patients rather than with the physicians and their practices.

Most managed care organizations send notices to physicians when certain concerns/risks were identified, but do not regularly contact physicians directly unless an immediate change in care plans appeared to be necessary, such as a potential change in medication, additional medical examinations and assessments, etc. Such communications often takes place between the C/DM nurse and an office staff person rather than the patient's primary care physician. Some managed care organizations and vendors have developed more intense communications systems with physicians that include contacting their offices via fax to confirm a patient's diagnosis, disease state, and current treatment plan and indicate the program's plan to support this plan with the participant.[19]

Outside of staff model managed care organizations, or those where physicians are at financial risk, organizations did not generally report using approaches that were physician-centered. Two large regional managed care organizations, however, both with significant market share, regularly work with physicians in areas where they have high penetration by using provider relations representatives. Designated nurses visit primary care physician offices, providing feedback reports, discussing those patients enrolled in the organization's C/DM programs and how to best assist the physicians in coordinating their patient's care as well as offer educational and other support.[20]

More typically, engaging providers in C/DM programs is a challenge for managed care organizations when a provider may have very few patients enrolled. One medical director commented, *"We have difficulty getting providers to cooperate. They may have only one or two of our patients in the program, and we are not on their radar."* Physician engagement was reported to be directly proportional to the number of patients a physician had enrolled in a managed care organization's C/DM program.

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[19] One vendor mentioned they always notify physicians that they would like a patient to participate in their C/DM program. They reported only occasionally hearing back from the physicians and then modifying specifics for those patients.

[20] One of these managed care organizations also provides a report to each physician showing each patient in that plan cared for by that physician that has one of the top five chronic conditions, whether the evidenced based care recommendations have been followed for each, and comparative reports to their same specialty peers. They also provide an individual page on each patient designed to be pulled out and put in the patient's chart, identifying the patient's conditions, gaps in care, tests needed, dates, etc.

Advances in Technology

Many of the managed care organizations and vendors believe their reporting, data, and software support systems distinguish their C/DM programs and allow them to be more sophisticated in targeting, recruitment and follow-up with patients. Some managed care organizations acknowledge that because they are not information systems companies, their systems have not always been designed in an organized fashion and, as with any system, are constantly being refined. The degree of sophistication in systems available to managed care organizations is difficult to ascertain based on telephone interviews. However, it became apparent that most systems were developed internally over a period of years with varying degrees of interoperability within different departments and/or with their vendors. All of the vendor interviews suggested that much of a vendor's ability to differentiate itself in the C/DM market is related to the distinguishing features of its predictive modeling and systems support, in addition to its approach to working with members. The most sophisticated organizations are beginning to offer provider and patient registries and portals that allow internal staff, patients and providers to access significant information via the web. Physicians with access to these portals are then able to review eligibility and claims electronically, check on health gaps identified by the plan, and identify screenings that should occur.

Several managed care organizations mentioned using IVR technology, sometimes called automated telephony, to increase their contact rate with patients and connect using a "warm transfer" to a health coach or DM nurse. One managed care organization reported developing enhancements that will be sophisticated enough to recognize the person's identity through his/her voice and voice pattern, and then efficiently provide tailored information on preventive screenings or other patient details.

Trends in C/DM

Nearly all managed care organizations and vendors emphasized the importance of recognizing the special challenges of working with an elderly population with very heterogeneous needs, from simple help with a transition from hospital to home, to complex combinations of chronic conditions as well as special needs related to activities of daily living and social and economic supports. As one medical director put it: *"Over-focusing on clinical measures and improving them can cause ignoring social and environmental aspects that are really involved in the clinical measure, such as giving the patient a medication dispensing box or arranging for transportation to medical appointments."*

The challenges are apparently in identifying the interventions most likely to be helpful to the patient, and the patients who are willing and/or able to make the changes necessary to obtain the appropriate services and level of health care. A number of those interviewed emphasized the importance of finding a way moving forward, to combine the benefits of true medical homes that are patient-centered and led by primary care physicians, with the added support they need to manage a population and offer coaching by individuals trained in behavior change motivation. One medical officer said:

"There is a big risk in placing all the responsibility for failure [in care management] on a physician or medical home because the primary care physician does not have all the resources of a C/DM program... this involves thinking about managing a population as opposed to patients as they present."

Evidence of Effectiveness

Reflecting the state of debate on C/DM effectiveness in the literature, interviews with experts representing health plans, states, vendors, patient advocates and policy experts revealed both disagreement and uncertainty about the effectiveness of C/DM programs, while underscoring consistent themes. The first generally agreed upon principle was that since no C/DM program is the same, it is difficult to demonstrate effectiveness of C/DM as a universal concept. Care and disease management programs vary not only in approach used (including focus on disease vs. patient, data systems and outreach focus), but also in targeted population(s). While some vendors and managed care organizations offered evidence of a return on their investment, several vendors and policy experts pointed out that the best "proof" that C/DM was effective is the willingness of employers and managed care organizations to continue paying for internal or vendor run C/DM programs.

Several vice presidents at vendor firms, as well as some managed care organization executives and policy experts, pointed out that it was impossible to know if C/DM programs are effective without a randomized controlled trial. While some interviewed believed that the Disease Management Association of America (DMAA) actuarial methods showed that the programs were cost effective, there was much dissent on this point. However, there was some agreement on areas where there was more opportunity to demonstrate financial benefits, such as in taking care of the frail elderly. Several argued, further, that many studies fail to capture all the benefits of the programs that may not accrue to the health company itself. These unmeasured benefits often include items like improved social opportunities for the elderly, higher productivity within the working population, and overall improvements to the quality of life. As some pointed out, many health benefits are so distal, that they would be difficult to capture.

Overview of Measurement Metrics

When stakeholders were asked to assess their overall ability to measure C/DM program effectiveness, one-quarter gave specific examples of cost savings either in dollars or in percent of savings. Roughly half confirmed unspecified savings. The remainder was uncertain of plan ability to measure effectiveness.[21]

The interviews highlighted a variety of ways the industry attempts to capture the effectiveness of C/DM programs. Reported examples include:

- Use of hospice
- Pharmacy and appropriate use of medication
- Emergency room visits

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[21] Policy experts and health advocates responses reflect their personal assessment of the C/DM industry rather than a specific plan.

- Hospitalizations and readmissions
- HEDIS measures
- Patient satisfaction measures
- Provider satisfaction measures
- Pain and fatigue
- Overall care costs
- SF-12 instrument results
- Patient understanding of disease

As some policy experts pointed out, the evidence that the programs are working is that managed care organizations continue to utilize them, *"They are not willing to score it (ROI) and say they don't see any real savings. So my guess is what plans do must save them some real money, but there is not consistently documented evidence for saving money."*

Areas of Success

While most interviewees, including representatives from states, managed care organizations, vendors and the policy analysts could not point to overall proof of C/DM effectiveness, many offered examples of specific program successes. These successes included overall internal demonstration of effectiveness, non-market-based senses of success, and successes in some program subcomponents.

Examples of comments regarding overall internal metrics of success (from managed care organizations) included:

"Using pragmatic data – looking at risk scores and matching patients before and after treatment, we track cost impact. On average, our care coordination model saved $600 per member per month. Factoring the cost of the program, the total savings is about $100 per member per month."

"I know from my work here and the third party evaluation of our results that we have strong ROI of our DM programs, using a rigorous methodology conforming to DMAA standard methodology. We cannot show ROI for each condition, but across all conditions (diabetes, COPD, Asthma, CHF, top 5), we know we are getting results."

For non-market-based programmatic success, typical comments included this comment from a state representative:

"There is a big difference between engaged and non-engaged members – health indicators and SF-12 scores are higher."

One of the vendors interviewed commented:

"We all know that people with complex clinical conditions need a better system that coordinates their care, and that providing that better coordinated care in the long run will have impact on lessening the severity of these co-morbidities. You can look at program, and

say the better it coordinates care, and the more touch points it has to bring information around multiple providers to central place to people who can act on it, the better that system will be able to serve these people. So you look at what are touch points, how frequently they occur, who they reach out to - operational metrics. You compare those across programs. You can't compare ROI, but if we are operationally reaching out to more people, we are having greater impact."

Another managed care organization interviewee said:

"For the population-based thing, we feel like we are getting people more educated about heart-failure, diabetes, and it's more long-term."

Several individuals interviewed noted savings in particular types of programs or trial. One policy expert opined that:

"It is a physical impossibility to save five percent in DM... I think it possible to save a little bit of money in heart failure (one or two percent) and almost break even on everything else...and do quite well keeping frail elderly out of the hospital - that is probably worth a seven to eight percent - all the rest of it is not even break even except for heart failure."

Another vendor executive commented:

"Cost saving comes out in shared decision-making and self-management for chronic care translating into lower care needs. For full population methods we use actuarial estimates of results. We have also done some large randomized trials, and have good cause and effect research. The biggest trial reduced overall costs by 5.5 percent and 65 percent of that was in reduced admissions. They spent more on drugs in intervention than control, but that was by design."

One managed care organization executive described what they viewed as significant success in their fitness oriented health program for the elderly.

"We have 18 percent enrolled in the program [a fitness program that is free to members]. We have shown reduction in care costs, an eight percent reduction. Also survey members are reporting less pain, weight loss, and improved health."

Finally, while short on cost-benefit analyses, almost all of the managed care organization and vendor interviewees noted high patient satisfaction.

Difficulty in Measuring Effectiveness

Many interviewees noted multiple difficulties in capturing high quality evidence of effectiveness because of data limitations. These included problems in measuring quality criteria, identifying the treatment group and the treatment itself. For example, two interviewees raised the issue of the inappropriateness of quality measurement criteria often used and their relevance to the Medicare population.

"Typically [evidence-based medicine] tops off at age 70 and 75. Our average age is 81. The criteria are not designed for older patients."

"Looking at HbA1cs for very old seniors with multiple conditions may not be a very important measure."

One managed care organization expert noted that they were trying to advance the industry by improving the metrics that clinics or hospitals use to serve high-risk populations.

Further, those interviewed noted that the data to identify success is often difficult to find, both in identifying the treatment group, successes, and evidence of appropriate care. In addition to the data limitations, several vendors and policy experts also pointed out that much larger sample sizes would be needed to show effectiveness, given the relatively small estimated impact of individual programs.

Unmeasured Benefits and Uncaptured Positive Externalities

Across the interviews there was general consensus that there may be benefits to programs that are not captured in savings to the C/DM program or organization itself. In other words, there might be societal or patient benefits that would not result in an immediate and measurable return on investment for the organization, but make the program was nonetheless worthwhile. As one policy expert put it,

"I would like to add that we need to look at ROI as not only spending but value – if you end up with better outcomes, even if you don't save money, or even better patient satisfaction, you are accomplishing more by making life better for these beneficiaries."

Benefits do not always translate into savings, for example, one managed care organization medical director noted,

"People consistently have improved self-management behaviors (exercise, communication with health providers, lower HbA1cs, lessened health care utilization), fewer symptoms (pain, shortness of breath, degree of disability). We don't evaluate cost savings."

Some also noted that an area that is often affected and not measured is workplace productivity. Others noted that some issues were missed in standard evaluations,

"[We need to be] creating a culture of better health... get them excited about a movement or campaign...[focus on] the social aspects."

C/DM Patient Interviews

To gain perspective on patients' views of their care and disease management program, the project team recruited potential respondents via chronic disease listservs as described in the

Methods section above. The project team conducted ten 15-minute interviews with patients meeting the screening criteria. The team interviewed two men and eight women in Medicare advantage plans from five different health plans. The beneficiaries interviewed had at least one chronic condition, with heart disease as the most commonly reported condition. Six respondents confirmed their participation in a C/DM program. Three were unsure, and one reported no C/DM program enrollment. Table 3-2, located in the appendix, displays this information.

There were two main themes that emerged from the interviews with patients. First, similar to the findings with key stakeholders about patients in C/DM programs, the interviewees believed that they were targeted for more than one disease or condition. Second, and perhaps most important, many of the interviewees discussed being a part of a "program," but after more in-depth probing, were uncertain if the "program" was the result of being enrolled in a C/DM program offered through their Medicare Advantage plan. Findings with respect to the outreach conducted by the managed care organization(s) and in some cases, the vendor, the type of services offered and according the interviewee, the overall impact of the C/DM has had on health behaviors are described below.

Outreach

Of the participants interviewed, most received a letter in the mail and/or phone call from someone about a program to help manage their condition. However, most of the interviewees were not sure what entity generated the communication (e.g. MA plan, vendor, other). One interviewee reported *"[I] remember getting a letter in the mail, but I did not enroll because no one called me about it."* Other interviewees could not recall how they became aware of and/or involved with the program discussed, but talked about receiving targeted information in the mail and a phone call from a nurse every once in awhile.

Range of Services Received

Overall, the C/DM services and experiences varied by the individuals and the organization ore vendor contacting them. Patients reported receiving services ranging from access to a simple web-based information portal to an on-site program held at a community-based organization designed for people with COPD. The on-site program involved interaction with nurses who helped take vital signs, manage medications and provide overall teaching about COPD management. The on-site program also included a social component, since patients were able to interact with others dealing with the same chronic condition.

One interviewee with Parkinson's disease described his program as overly simplistic; he received an educational newsletter and a period telephone call from a health professional *"checking-in with me to find out how I am feeling."* He noted that he was generally not impressed with the program since he is already actively involved with other Parkinson's groups and receives more up to date information about managing his condition through those resources. Other interviewees described receiving personalized support services from nurses over the phone. There was one interviewee that described getting health monitoring equipment for their condition.

Impact on health

In general, most of the individuals interviewed did not report that their involvement in the C/DM program had an impact on their health behavior. One interviewee did note that she learned how to adjust her eating and exercise habits to better manage her COPD. While not directly related to health behaviors, another interviewee noted that the opportunity to socialize with others who had the same condition had an impact on her mental health; she reported an improvement in overall self-esteem and greater confidence in effectively managing her health.

Reports from patients, despite confusion over who was offering the program, mirrored themes heard in discussions with managed care organizations and vendors. Specifically, patients who were paired up with a group or a designated individual (e.g. nurse practitioner) reported positively on the program versus those who were offered telephone or web-based outreach. As with some managed care organizations and vendors, it was sometimes difficult for patients to determine whether the programs had a noticeable impact on health outcomes. Some reported an increase in knowledge about their conditions, which is often a pre-cursor to behavior change, but few reported actual behavior change or improvements in health outcomes as a direct result of the programs.

CHAPTER 4:
MEDICARE ADVANTAGE PLAN SURVEY

This chapter summarizes the findings from the survey of Medicare Advantage (MA) health plans regarding their care and disease management (C/DM) programs. It begins with a summary of the analytic approach, followed by general survey results and overall findings, and discussion of the findings by plan type, whether or not the plan utilized vendors, and whether or not the plan contract included a special needs plan when these factors aid in understanding the MA C/DM landscape. [22]

Data Analysis

The data analysis focused on descriptive statistics to characterize contract holders' assessments of their care and disease management programs. Frequencies of categorical variables and distributions of continuous variables were examined for all contracts, and by whether or not the contract utilized vendors for C/DM (asked in questions B2 and C2)[23], and by whether the contract included a Special Needs Plan (SNP) using the HPMS database to ascertain whether the contract had one or more SNP. These categories were selected for focus due to CMS' interest for policy considerations and because the literature and stakeholder interviews documented that use of vendors was a key variable in C/DM program design and the team hypothesized that if a managed care organization also offered a SNP, it might impact how C/DM programs in that organization were also structured.[24] Percentages reported in this report are weighted using the non-response weights. Pearson chi-squared tests were conducted to test for differences in the distributions of categorical variables among the groups. T-tests for differences in means were performed for continuous variables.

In addition to bivariate analyses, the team performed logistic regressions for survey responses that had binary (Yes/No) responses, and linear regressions for continuous variable responses. While some results in the bivariate analyses showed significant differences between survey responses by individual characteristics, it is important to also control for the other characteristics of the contract to see, holding all else equal, if that factor can explain variation in the survey responses. The model was determined using forward and backward selection and a model fitting process. Independent variables included in the regressions were:

- Whether the contract included a SNP
- The plan type – this included HMO, PFFS with the omitted variables being Local and Regional PPOs and PSOs.

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[22] Analysis of all permutations of findings by plan type, vendors use, and SNP inclusion would be extremely long, burdensome, and not always useful to the reader. Therefore, the research team has summarized only the findings in these categories when we determined reporting them to be useful to overall plan understanding or when the results seemed particularly statistically significant.

[23] For questions regarding care management, or disease management, the variable used to determine vendor status were questions B2 and C2 respectively. For sections A, D, E and F, a variable was created to represent contracts that used vendors for either disease or care management.

[24] The team also conducted analyses by plan type, but these proved less significant in explaining differences in response rates.

- Region of the contract address, with Northeast, Midwest, and West included with Puerto Rico and the South omitted.
- Organization size – whether the contract was held by an organization with ten or more contracts.

Regressions were performed for binary variables where between 20 to 80 percent of contracts were in one category, in order to allow for stability. In the body of the text, where differences are noted by plan type, SNP status or vendor status, they are significant both in the regression and in the bivariate analysis ($p < .05$), unless otherwise noted.

Results

Plan Context for Care and Disease Management

Confirming literature that suggests the use of care and disease management is prevalent and growing among organizations that pay or provide for health care, most Medicare Advantage organizations reported offering C/DM programs to their members.[25] Based on our estimates, approximately 97% of all MA contracts have care and/or disease management programs.[26] Most contracts with either a care or disease management program had both, with 98% reporting a care management program and 97% reporting a disease management program. Of all the contracts contacted for the survey, only 3 contracts were excluded because they did not offer a C/DM program.

Member-level electronic data

MCOs may rely on electronic data to support the activities of their C/DM programs. What data is maintained, and how it may be accessed may be particularly important in identifying patients for care or disease management.[27] Overall, plans reported they maintained a range of member-level electronic data, with the vast majority (90% or higher) of plans including enrollment/disenrollment dates, service use or charges, prescription drug use or charges, procedure codes (e.g. CPTs), quality-related process of care information and health assessments or care plans as part of their systems. About three-quarters of all plans also reported maintaining clinical indicators, such as lab test results, with fewer plans reporting that they keep other types of electronic data, such as clinical guidelines, member contact activities and electronic health records as seen in Table 4-1.

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[25] Mays, G, M Au and G Claxton. November/December 2007. Convergence and dissonance: evolution in private-sector approaches to disease management and care coordination. Health Affairs; Vol. 26, No. 6, p1683-1691.

[26] The survey respondents included only contracts that had care and/or disease management programs. Overall, the weighted ineligible (for the survey) cases numbered 470.5. Therefore, we estimate that approximately 3% of the universe of contracts does not have a care management or disease management program.

[27] Chen A, R Brown, N Archibald, S Aliotta, and P Fox. Best Practices in Coordinated Care. March 22, 2000. Mathematica, Inc. report to HCFA under contract HCFA 500-95-0048 (04).

Table 4-1. Which of the following types of electronic data are directly maintained by your organization?

Electronic Data Type	Percent maintaining	Percent not maintaining
Enrollment or disenrollment dates	99%	1%
Service use or charges	99%	1%
Prescription drug use or charges	92%	8%
Procedure codes, such as CPTs	99%	1%
Clinical indicators, such as lab test results	74%	25%
Quality-related process of care information, such as receipt of prevention screening or immunizations	91%	9%
Assessments or care plans	93%	7%
Other types of member-level electronic data your plan maintains	37%	63%
(Other) Health Risk Assessments	14%	86%

Source: Evaluation of Care and Disease Management under Medicare Advantage Survey. Survey completed by health organizations (for their contracts) August through October of 2008.

Note: Responses are weighted by non-response weights. Rows may not sum to 100% due to item non-response.

The following sections describe the C/DM program characteristics across MA contracts, the role of physicians in these programs, differences between these programs in organizations with Special Needs Plans versus Medicare Advantage-only plans, differences in characteristics of these programs as they are provided by vendors, and evidence of effectiveness.

Characteristics of Care Management Programs

Typically, care management involves direct intervention with members. However, it may also involve working with members' physicians (for example, by promoting adherence to evidence-based care guidelines). None of the organizations indicated that their contract(s) utilized physician-oriented intervention only. Almost all (94%) used both physician- and member-oriented intervention. A small number utilized member-oriented intervention only (5%).

Staffing

Care management is generally provided by a combination of different types of staff, including contract holder staff, vendors, plan network providers and other non-contract holder staff. Depending on the size of the contract (or of the organization of the contract), such arrangements with non-contract holder staff may allow the contract to offer more services, or reduce duplication of administration costs. Conversely, contracts may achieve these results better in-house, where they can more closely monitor the results of their programs. Nearly all contracts reported using contract holder staff to provide care management, with close to a third of contracts using vendors, and more than a third using plan network providers as seen in Table 4-2 below.

Table 4-2. Is care management provided by staff employed by the contract holder, a vendor, network providers (such as primary care physicians), or others not directly employed by the contract holder? Mark all that apply.

Provider Type	Percent marking this provider type	Percent not marking this provider type
Contract holder	98%	2%
Vendor	31%	69%
Network providers	35%	65%
Other non-contract holders	12%	88%

Source: Evaluation of Care and Disease Management under Medicare Advantage Survey. Survey completed by health organizations (for their contracts) August through October of 2008.
Note: Responses are weighted by non-response weights. Rows may not sum to 100% due to item non-response.

A recent review of the heart failure literature revealed that programs delivered in multi-disciplinary teams were most effective in improving outcomes.[28] Nurses were a central component of staffing in all cases, and the literature suggests that nurses with more training and experience are likely to provide more effective care management.[27] Close to all of the contracts indicated that among their professional staff providing care management, registered nurses were the mostly widely used, with. About half indicated that they employed advanced practice nurses or licensed practical or vocational nurses in addition to registered nurses (Table 4-3). In addition to nursing staff, the majority of contracts also utilized social workers, behavioral specialists or therapists, pharmacy staff and primary care physicians. Fewer used physical, occupational, speech or respiratory therapists, registered dieticians, or other types of staff.

Table 4-3 Please indicate the types of professional staff providing care management under this contract.

Types of staff	Percent utilizing this type of staff	Percent not utilizing this type of staff
Nursing Staff		
Advance practice nurses	52%	48%
Registered nurses	99%	1%
Licensed practical or vocational nurses	46%	54%
Staff other than nurses		
Social workers	83%	17%
Physical, occupational, speech, or respiratory therapists	24%	76%
Behavioral health specialists or therapists	73%	27%
Pharmacy staff	65%	35%
Registered dietician	26%	73%
Primary care physicians	61%	39%
Other types of staff providing care management	11%	87%
(Other) Medical director	6%	93%
(Other) Health educator	11%	88%

Source: Evaluation of Care and Disease Management under Medicare Advantage Survey. Survey completed by health organizations (for their contracts) August through October of 2008.

Note: Responses are weighted by non-response weights. Rows may not sum to 100% due to item non-response.

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[28] Sochalski J, T Jaarsma, H Krumholz, A Laramee, J McMurray, M Naylor, M Rich, B Riegel and S Stewart. January/February 2009. What works in chronic care management: the case of heart failure. Health Affairs;28(1) 179-189.

Enrollment

On average, contracts reported that 19% of enrolled members used care management.

Eligibility

Given the costs of chronic and complex conditions, almost all contracts used high cost care or high services use (past or expected in the future) to determine eligibility for care management. Additionally, almost all contracts indicated that they used specific health events or procedures (such as surgeries) or specific diagnoses, conditions or medical complexity to make this determination. Nearly three-quarters of contracts indicated that they used gaps in care (such as lack of needed diagnostic testing) to determine eligibility. Other widely used criterion that contracts indicated they used included: high prescription drug use, functional limitations, or specific lab values or clinical indicators out of range. Approximately half of contracts indicated that they used some other criteria to determine eligibility, and one-quarter used scores from health risk assessments as a means of identification as shown in Table 4-4 below.

Table 4-4. Please indicate the criteria used to determine member eligibility for care management.

Criteria to determine eligibility	Percent using	Percent not using
High cost of care or high service use (past or expected in the future)	97%	3%
Specific health events or procedures (such as surgeries)	96%	4%
Gaps in care (such as the lack of needed diagnostic testing)	74%	26%
High prescription drug use	88%	12%
Functional limitations	88%	12%
Specific diagnoses or conditions, or medical complexity	99%	1%
Specific lab values or clinical indicators out of range	60%	40%
Need for palliative or end-of-life care	16%	84%
Other criteria used to determine eligibility for car	49%	51%
Score on health risk assessment	25%	75%

Source: Evaluation of Care and Disease Management under Medicare Advantage Survey. Survey completed by health organizations (for their contracts) August through October of 2008.

Note: Responses are weighted by non-response weights. Rows may not sum to 100% due to item non-response.

Identification Approaches

Contracts indicated a variety of approaches used to identify members for care management. Almost all contracts indicated that they used the following approaches: claims review or predictive model, clinical or diagnostic data review, provider referral, nonclinical staff referral, member self-referral, and administration of a health risk assessment. Only 4% used clinical staff referral to identify members as shown in Table 4-5 below.

Table 4-5. Please indicate the approaches used to identify members for care management.

Approach used to identify members	Percent of contracts using	Percent of contracts not using
Claims review or predictive model (based on service or prescription drug use, costs, diagnoses, or procedures)	98%	2%

Clinical or diagnostic data review (including review of Medicare Advantage risk scores)	94%	6%
Provider referral	99%	1%
Nonclinical staff referral (including customer service or pre certification staff)	96%	4%
Member self-referral	96%	4%
Administration of a health risk assessment	97%	3%
Other approaches used to identify members for care management	30%	70%
(Other) Clinical staff referral	4%	96%

Source: Evaluation of Care and Disease Management under Medicare Advantage Survey. Survey completed by health organizations (for their contracts) August through October of 2008.

Note: Responses are weighted by non-response weights. Rows may not sum to 100% due to item non-response.

About three-quarters (76%) of contracts said that they assigned members of care management to different levels depending on the complexity of the members' problems.

Exclusion Criteria

The majority of contracts (74%) indicated they had no exclusion criteria for use of care management of enrollees. A limited number of contracts used terminal illness or participation in hospice, dementia, or end stage renal disease. Small numbers indicated they had another way of excluding members than listed, that the member declined care management, or the member was in or admitted to a long-term care facility as see in Table 4-6 below.

Table 4-6. Please indicate the criteria your organization uses to exclude members from care management

Criteria used to exclude members from care management	Percent using	Percent not using
Terminal illness or participation in hospice	13%	86%
Dementia	6%	94%
End Stage Renal Disease (ESRD)	5%	95%
Other criteria used to exclude members from care management	17%	83%
(Other) Member declines CM	10%	90%
(Other) Admission to /member in long term care facility	3%	97%
No exclusion criteria used	74%	26%

Source: Evaluation of Care and Disease Management under Medicare Advantage Survey. Survey completed by health organizations (for their contracts) August through October of 2008.

Note: Responses are weighted by non-response weights. Rows may not sum to 100% due to item non-response.

Comprehensive Assessments

Almost all (97%) contracts included a comprehensive assessment of member health and health-related needs as a part of care management. Of contracts that indicated they conducted a comprehensive assessment, 99% indicated that they utilized clinical staff directly employed or contracted with their organization. Only 19% indicated that they used non-clinical staff, and 2% indicated that the assessments were self-administered.

Outreach Approaches

Over three-quarters (78%) of the contracts indicated that they used the telephone as their usual mode of contact with individual members in care management, though research suggests that in-person communication produces better outcomes.[28] Four percent indicated their usual mode of contact was in person, and 1% indicated it was by mail as seen in Figure 4-1 below.[29]

Figure 4-1. What is the usual mode of contact with individual members in care management?
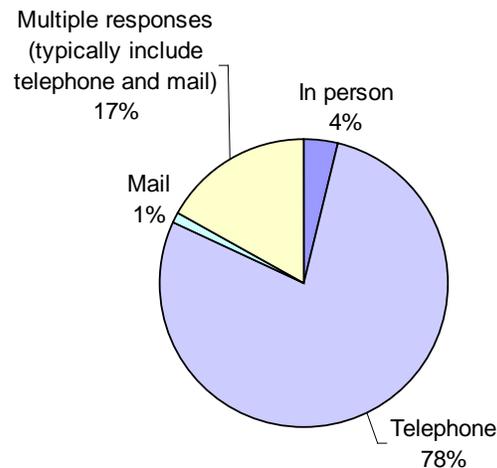
Note: Responses are weighted by non-response weights. Categories may not sum to 100% due to item non-response.

Care Management Education

As one of the primary components of programs that improve care for persons with chronic conditions is patient education and self-management support[30], the survey sought to determine whether care management programs provided education, and how they provided it. Almost all contracts surveyed indicated that enrollees in care management received education about how to better manage chronic conditions or disabilities (96%).

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[29] Several respondents incorrectly responded to this question by selecting more than one response to the question (17%), and their response could not be categorized. Therefore, more than 78% may use this mode as their "usual mode of contact."

[30] Bodenheimer, T, E Wagner and K Grumbach. 2002. Improving primary care for patients with chronic illness. JAMA; 288(14:175-1779.

Education about how to better manage chronic conditions or disabilities was provided in different ways, with almost all contracts indicating that they provided such education through teachable moments. Over three-quarters of contracts indicated that the staff provided written materials to members or had care management staff follow curriculum with individual members. A majority also said that staff used checklists or scripts provided by computer algorithm. Less common approaches included using a group-oriented curriculum, providing videos or DVDs to members, or referring members to community resources as shown in Table 4-7 below.

Table 4-7. How is education provided to members in care management?

Method of providing education	Percent using	Percent not using
Staff follow curriculum with individual members	83%	17%
Staff follow curriculum addressing groups of members	28%	72%
Staff follow checklists	67%	33%
Staff use scripts provided by computer algorithm	55%	45%
Staff use teachable moments	98%	2%
Staff provide written material to members	89%	11%
Staff provide videos or DVDs to members	20%	79%
On-line education available to members	56%	44%
Other ways education is provided	27%	73%
(Other) Referral to community resource (support group or classes)	18%	82%

Source: Evaluation of Care and Disease Management under Medicare Advantage Survey. Survey completed by health organizations (for their contracts) August through October of 2008.

Note: Responses are weighted by non-response weights. Rows may not sum to 100% due to item non-response.

Care Transitions and Discharge

Care transitions refer to patients' movement from one care setting to another. Deficiencies in these transitions can create compromised quality of care and risk patient safety due to medication error, incomplete or inaccurate information transfers.[31] Almost all contracts indicated that they provided management or assistance to members with care setting transitions (98%).

Identification of Care Transitions

Most contracts indicated that they identified care transitions by having hospitals routinely notify the contract holder of all members admitted or discharged. The majority of contracts reported that their staff received information based on pre-admission screening or benefit advisory review or that their staff routinely reviewed facility admissions logs. Smaller percentages said that their staff relies on primary physicians to report transitions or members or caregivers to report transitions. About one-third of contracts indicated that they identified care transitions in another way than listed. Only 3% indicated they identified transitions by having staff on site at selected hospitals as shown in Table 4-8 below.

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[31] Coleman E and S Chalmers. 2006. The care transitions intervention: results of a randomized controlled trial. Archives of Internal Medicine; 166:1822-1828.

Table 4-8. How do care managers identify care setting transitions?

Method of identifying	Percent using	Percent not using
Staff receive information based on pre-admission screening or benefit advisory review	73%	27%
Staff routinely review facility admissions logs	62%	38%
Hospitals routinely notify contract holder of all members admitted or discharged	93%	6%
Staff relies on primary physicians to report transition	14%	86%
Staff relies on members or caregivers to report transition	40%	60%
Other ways care transitions are identified	36%	64%
(Other) Staff on site at selected hospitals	3%	97%

Source: Evaluation of Care and Disease Management under Medicare Advantage Survey. Survey completed by health organizations (for their contracts) August through October of 2008.

Note: Responses are weighted by non-response weights. Rows may not sum to 100% due to item non-response.

Response to Transitions

Contracts reported that they used various methods to respond to setting transitions such as a facility discharge. Almost all contracts indicated that they telephoned members to follow-up on discharge arrangements. Large numbers also assisted with implementing the facility discharge plan, and working with facility staff throughout the member's stay. Less than half said that they only worked with facility staff in advance of discharge, or visited with members to follow-up on discharge arrangements. Just 4% indicated that they worked with concurrent review staff, and 3% indicated that they worked with family or informal caregiver as shown in Table 4-9 below.

Table 4-9. How do care managers respond to setting transitions such as facility discharges?

Method of responding	Percent using	Percent not using
Work with facility staff throughout stay	89%	11%
Work with facility staff only in advance of discharge	42%	58%
Assist with implementing facility discharge plan	91%	9%
Make arrangements with providers identified in discharge plan	91%	8%
Telephone members to follow up on discharge arrangements	96%	4%
Visit members to follow up on discharge arrangements	41%	59%
Review member medications either by telephone or visit	93%	7%
Other ways your staff help with a facility discharge	24%	76%
(Other) Work with concurrent review staff	4%	96%
(Other) Work with family/ informal caregiver	3%	97%

Source: Evaluation of Care and Disease Management under Medicare Advantage Survey. Survey completed by health organizations (for their contracts) August through October of 2008.

Note: Responses are weighted by non-response weights. Rows may not sum to 100% due to item non-response.

Medication Management

Medication management is an important aspect of many patients' conditions in care management.[30] Almost all contracts indicated that care management included identifying and resolving member problems related to medication (97%).

Identification of Problems with Medication

Nearly all contracts indicated that they addressed problems with medications when members discussed medications and problems with care managers during routine contacts. A large majority of contracts also indicated that care managers, pharmacists or other staff reviewed reports on prescription drug claims. Seventy percent or more also had a Pharmacy Benefit Manger (PBM) identify problems, had care managers administer a screening instrument, or had primary care physicians and other providers report medications and related problems to care managers as shown in Table 4-10 below.

Table 4-10. How are member problems with medications identified?

Method of Identifying Medication Problem	Percent of contracts using	Percent of contracts not using
Pharmacy Benefit Manager (PBM) identifies problems	70%	30%
Care managers, pharmacists, or other staff review reports on prescription drug claims (possibly using software that identifies potential problems)	90%	10%
Care managers administer screening instrument to members concerning medications taken	78%	22%
Members discuss medications and problems with care managers during routine contacts	98%	2%
Primary care physicians or other providers report medications and related problems to care managers	74%	26%
Other ways problems with medications are identified	15%	84%
(Other) Medication therapy management program	5%	94%

Source: Evaluation of Care and Disease Management under Medicare Advantage Survey.   Survey completed by health organizations (for their contracts) August through October of 2008.

Note: Responses are weighted by non-response weights. Rows may not sum to 100% due to item non-response.

Response to Medication Problems

Most contracts indicated that in the case of member problems with medications, care managers notified primary care physicians to resolve them. Almost all also provided member education or referred member to a Medication Therapy Management Program or notified member of the problem and suggested a solution. Around three-quarters of contracts indicated that they asked pharmacist to review medications and identify a solution, or notified all relevant physicians to resolve. A small percentage indicated that a disease manager (or pharmacist) could adjust some medications using standard protocols as shown in Table 4-11 below.

Table 4-11. How do care managers respond to member problems with medications?

Method of responding	Percent of contracts using	Percent of contracts not using
Ask pharmacist to review medications to identify solution	75%	24%
Notify primary care physician to resolve	96%	4%
Notify all relevant physicians to resolve	76%	23%
Disease manager (or pharmacist) can adjust some medications using standing protocols	6%	94%
Provide member education or refer member to Medication Therapy	94%	6%

Management Program (MTMP)		
Notify member of problem and suggested solution	95%	4%
Other ways care managers respond to problems w/ medications	23%	76%
(Other) Encourage members to question providers	7%	93%

Source: Evaluation of Care and Disease Management under Medicare Advantage Survey. Survey completed by health organizations (for their contracts) August through October of 2008.
Note: Responses are weighted by non-response weights. Rows may not sum to 100% due to item non-response.

Assistance with Support Services

Another key element of supporting patients with chronic illnesses is linking patients to community resources.[30] Almost all contracts indicated that care management included assisting members with access to support services such as personal care, transportation to medical appointments, assistance with applying for Medicaid or financial assistance programs (97%).

Almost all contracts indicated that the need for support services was identified by periodic assessments. Almost all also indicated that they identified the need for support services through physician or other provider referrals. A little less than a quarter indicated that they used some other method to identify members needs. Smaller numbers indicated that used member/caregiver referrals, health risk assessment (HRA) scores, Customer service/Member services, and members nearing coverage gap as shown in Table 4-12 below.

Table 4-12. How do care managers identify member need for support services?

Method of Identifying Need for Support Services	Percent of contracts using	Percent of contracts not using
Periodically assess need for support services of members receiving care management	97%	3%
Physicians or other providers refer members requiring support services	92%	8%
Other ID need for support	23%	77%
(Other) Member/Caregiver referral	20%	80%
(Other) HRA scores	7%	93%
(Other) Customer services/Member services	5%	95%
(Other) Members nearing coverage gap	21%	79%

Source: Evaluation of Care and Disease Management under Medicare Advantage Survey. Survey completed by health organizations (for their contracts) August through October of 2008.

Note: Responses are weighted by non-response weights. Rows may not sum to 100% due to item non-response.

Unpaid Helpers

Family members or other unpaid helpers are often important parts of patients' care.[27] Almost all contracts (99%) responded that they did assess the availability of care from family members, health care decision makers, friends or other unpaid helpers.

Care Management Duration and Discharge

On average, contracts reported that the average duration of a member in care management was 131 days. Contracts reported various ways they determined whether a patient should be

discharged from care management. A little more than three-quarters of contracts indicated that members were discharged from care management when needs or goals were met. Other reasons for discharge included member refusal or non-compliance, or the presence of a caregiver or the ability of individual to provide care, be independent or stable. Remaining reasons given included: patients were discharged when the member enrolled in a different Medicare plan, or member enrolled in hospice or higher level of care as seen in Table 4-13 below.

Table 4-13. Please describe one or two main criteria for discharge from your care management program.

Criteria for discharge	Percent of contracts using	Percent of contracts not using
Needs/Goals met	77%	23%
Member refusal/non-compliance	27%	73%
Caregiver or self able to provide care/ patient independent or stable	25%	75%
Member enrolls in different Medicare plan	18%	82%
Hospice/higher level of care	7%	93%
Other	16%	84%

Source: Evaluation of Care and Disease Management under Medicare Advantage Survey. Survey completed by health organizations (for their contracts) August through October of 2008.

Note: Responses are weighted by non-response weights. Rows may not sum to 100% due to item non-response.

Among all contracts, the average percentage of members that were discharged within one year of starting care management during 2007 was 73%.

Characteristics of Disease Management Programs

Disease management encompasses many of the same activities as care management. Typically, however, the focus of disease management is on a particular condition. However, the focus can vary both in the severity of the illness, and the intensity of the interventions (for example, mailings and pre-recorded calls vs. face-to-face encounters).[32]

Programs Offered

As in the case of care management, typically, disease management (DM) involves direct intervention with members. However, it may also involve working with member's physicians (for example, by promoting adherence to evidence-based care guidelines). None of the contracts indicated that their contract(s) utilized physician-oriented intervention only. Almost all (93%) used both physician- and member-oriented intervention. A small number utilized member-oriented intervention only (7%).

Type of Program: Opt-in or Population-Based

In the literature, the evidence is that the majority of disease management programs are population based: they identify and target patients with a specific condition.[32] The same seems to

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[32] Mattke S. 2007. Evidence for the effect of disease management: is $1 billion a year a good investment? The American Journal of Managed Care; 13(12):670-676.

be true in the plans held by MA contracts. The vast majority (80%) of disease management programs are population based with opt-out provisions for members who do not wish to participate. A much smaller percentage (15%) of contracts report that they target members with particular diagnoses or conditions and invite them to participate. Just 6% of contracts have population-based disease management programs that include all members meeting the inclusion criteria as shown in below.

Figure 4-2. Is disease management under this contract a population-based or opt-in program?
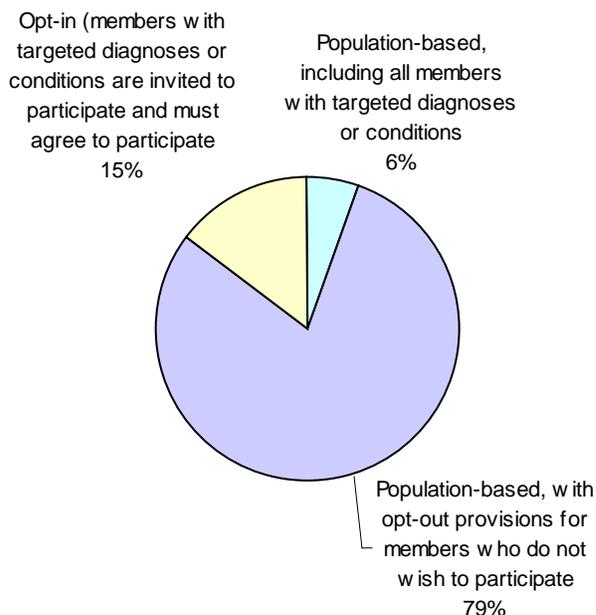
Source: Evaluation of Care and Disease Management under Medicare Advantage Survey. Survey completed by health organizations (for their contracts) August through October of 2008.

Note: Responses are weighted by non-response weights. Categories may not sum to 100% due to item non-response.

Diagnoses

Disease management programs have traditionally focused on common chronic conditions such as diabetes, congestive heart failure (CHF), coronary artery disease (CAD), asthma, chronic obstructive pulmonary disease (COPD) and depression with fewer programs for cancer and dementia.[32] Programs for these conditions were also offered in MA contracts. Most contracts offered programs for CHF and diabetes. More than three-quarters offered programs for other chronic cardiac conditions such as CAD. A majority also offered programs for high blood pressure and other chronic respiratory illnesses such as asthma. Half of surveyed contracts also reported a focus on high cholesterol. Less than half had programs for chronic kidney disease, depression, smoking cessation or HIV/AIDS as seen in Table 4-14 below.

Table 4-14. For what diagnoses is disease management offered?

Diagnosis	Percent of contracts offering	Percent of contracts not offering
Congestive Heart Failure (CHF)	93%	7%
Other chronic cardiac diagnoses such as Coronary Artery Disease (CAD)	80%	20%
Diabetes	98%	2%
Chronic Obstructive Pulmonary Disease (COPD)	69%	31%
Other chronic respiratory diagnoses (such as asthma)	58%	42%
Chronic kidney disease	47%	53%
High cholesterol	50%	50%
High blood pressure	61%	39%
Other diagnoses	40%	60%
(Other) Depression	10%	90%
(Other) Smoking cessation	5%	95%
(Other) HIV/AIDS	14%	86%

Source: Evaluation of Care and Disease Management under Medicare Advantage Survey. Survey completed by health organizations (for their contracts) August through October of 2008.

Note: Responses are weighted by non-response weights. Rows may not sum to 100% due to item non-response.

Staffing

Most contracts (77%) provide DM through plan staff, though more than one-third of contracts also report using a vendor as seen in Table 4-15 below.

Table 4-15. Is disease management provided by staff employed by the contract holder, a vendor, network providers (such as primary care physicians), or others not directly employed by the contract holder?

Provider Type	Percent marking this provider type	Percent not marking this provider type
Contract holder	77%	23%
Vendor	41%	59%
Network providers	18%	82%
Other non-contract holders	15%	85%

Source: Evaluation of Care and Disease Management under Medicare Advantage Survey. Survey completed by health organizations (for their contracts) August through October of 2008.

Note: Responses are weighted by non-response weights. Rows may not sum to 100% due to item non-response.

As in care management, contracts overwhelmingly relied on registered nurses (98%) to provide DM. They were less likely to utilize advance practice nurses or licensed practical or vocational nurses as seen in Table 4-16.

In addition to nursing staff, the majority of contracts also utilized social workers, pharmacy staff and registered dieticians. Half used behavior health specialists or therapists for their DM programs. Less than half reported using physical, occupational, speech or respiratory therapists, or primary care physicians as seen Table 4-16 below.

Table 4-16. Please indicate the types of professional staff providing disease management under this contract.

Type of staff	Percent utilizing this type of staff	Percent not utilizing this type of staff
Nursing Staff		
Advance practice nurses	29%	71%
Registered nurses	98%	2%
Licensed practical or vocational nurses	55%	45%
Staff other than nurses		
Social workers	62%	38%
Physical, occupational, speech, or respiratory therapists	35%	65%
Behavioral health specialists or therapists	50%	50%
Pharmacy staff	54%	46%
Registered dietician	51%	48%
Primary care physicians	35%	65%
Other types of staff providing care management	13%	87%
(Other) Medical director	6%	94%
(Other) Health educator	5%	95%

Source: Evaluation of Care and Disease Management under Medicare Advantage Survey. Survey completed by health organizations (for their contracts) August through October of 2008.
Note: Responses are weighted by non-response weights. Rows may not sum to 100% due to item non-response.

Enrollment

Across contracts, on average, 26% of members used disease management in 2007.

Eligibility

In addition to the diagnoses for which DM is offered, contracts reported additional criteria used to determine member eligibility for DM. Most contracts used specific diagnoses or conditions in addition to the diagnoses mentioned earlier. Over three quarters used specific health events or procedures (such as surgeries). Many also used gaps in care (such as the lack of needed diagnostic testing) to determine eligibility. Over half used high prescription drug use or specific lab values or clinical indicators out of range. Smaller numbers indicated that the used a score on a health assessment, member referral or physician referral as seen in Table 4-17 below.

Table 4-17. Please indicate the criteria used to determine member eligibility for disease management, in addition to medical diagnosis.

Criteria to determine eligibility	Percent using criteria	Percent not using criteria
High cost of care or high service use (past or expected in the future)	69%	31%
Specific health events or procedures (such as surgeries)	78%	22%
Gaps in care (such as the lack of needed diagnostic testing)	71%	29%

High prescription drug use	54%	45%
Specific diagnoses or conditions (in addition to those mentioned in C3) or medical complexity	90%	10%
Specific lab values or clinical indicators out of range	55%	45%
Other criteria used to determine eligibility for disease management	23%	77%
(Other) Score on health risk assessment	12%	88%
(Other) Member referral	4%	96%
(Other) Physician referral	5%	95%

Source: Evaluation of Care and Disease Management under Medicare Advantage Survey. Survey completed by health organizations (for their contracts) August through October of 2008.

Note: Responses are weighted by non-response weights. Rows may not sum to 100% due to item non-response.

Identification Approaches

Almost all (98%) contracts used claims review or predictive models (based on service or prescription drug use, costs, diagnoses or procedures) to identify members for DM. Most also identified members for DM through member self-referral, or provider referral. Many plans also used nonclinical staff referral, clinical or diagnostic data review (including review of Medicare Advantage risk scores), or administered a health risk assessment as seen in Table 4-18 below.

Table 4-18. Please indicate the approaches used to identify members for disease management.

Approach used to identify members	Percent of contracts using	Percent of contracts not using
Claims review or predictive model (based on service or prescription drug use, costs, diagnoses, or procedures)	98%	2%
Clinical or diagnostic data review (including review of Medicare Advantage risk scores)	73%	27%
Provider referral	90%	10%
Nonclinical staff referral (including customer service or pre- certification staff)	83%	17%
Member self-referral	95%	5%
Administration of a health risk assessment	72%	28%
Other approaches used to identify members for care management	20%	79%
(Other) Clinical staff referral	19%	81%

Source: Evaluation of Care and Disease Management under Medicare Advantage Survey. Survey completed by health organizations (for their contracts) August through October of 2008.

Note: Responses are weighted by non-response weights. Rows may not sum to 100% due to item non-response.

Almost all (95%) of contracts assigned members receiving DM to levels, depending, for example, on the severity of the members' condition.

Exclusion Criteria

Several criteria were used by contracts to exclude some members from DM. The majority of contracts excluded members from DM in the case of terminal illness or participation in hospice. A majority also excluded members with End Stage Renal Disease (ESRD). Less than one-third

excluded members with dementia, HIV/AIDS, the member opting out, or cancer. Nineteen percent indicated that no exclusion criteria were used as shown in Table 4-19 below.

Table 4-19. Please indicate the criteria your organization uses to exclude members from disease management.

Criteria used to exclude members	Percent of contracts using criteria	Percent of contracts not using criteria
Terminal illness or participation in hospice	71%	29%
Dementia	32%	68%
End Stage Renal Disease (ESRD)	59%	40%
Other criteria used to exclude members from care management	40%	60%
(Other) HIV/AIDS	24%	76%
(Other) Member opts out	13%	86%
(Other) Cancer	11%	88%
No exclusion criteria used	19%	81%

Source: Evaluation of Care and Disease Management under Medicare Advantage Survey. Survey completed by health organizations (for their contracts) August through October of 2008.

Note: Responses are weighted by non-response weights. Rows may not sum to 100% due to item non-response.

Comprehensive Assessments

An assessment of the patient is critical to targeting the most appropriate interventions. Due to the focus on specific conditions, DM programs often utilize evidence-based guidelines in determining the patient's status and gaps in care.[27] According to the survey, 92% of contracts included a comprehensive assessment of member health and health related needs as part of disease management. For those contracts including a comprehensive assessment, all of them indicated that they were performed by clinical staff directly employed by or contracted with the organization (such as nurses, social workers or physicians) and 22% also indicated non-clinical staff employed by or contracted with the organization performed the assessment. No contracts indicated that assessments were self-administered.

Outreach Approaches

Some of the assumptions of disease management include that exacerbations of chronic conditions can be avoided by better day-to-day management, and that periodic contact with members with these conditions can improve self-management.[33] Understanding how the programs contact, educate and interact with members therefore is crucial. Almost three-quarters (73%) of the contracts indicated that they used the telephone as their usual mode of contact with individual members in disease management. Another 2% indicated their usual mode of contact was in-person, and 4% indicated it was by mail as seen in Figure 4-3 below.[34]

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[33] Bott D, M Kapp, L Johnson and L Magno. 2009. Disease management for chronically ill beneficiaries in traditional Medicare. Health Affairs 28(1):86-98.

[34] Several respondents incorrectly responded to this question by selecting more than one response to the question (21%), and their response could not be categorized. Therefore, more than 73% may use the telephone as their "usual mode of contact".

Figure 4-3. What is the usual mode of contact with individual members in disease management?
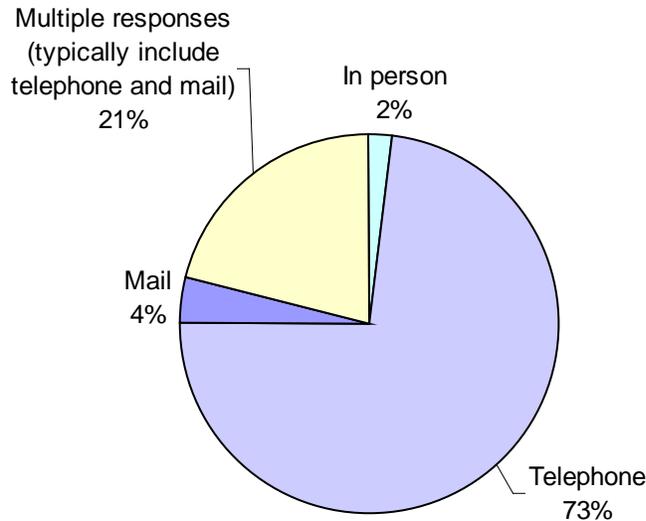
Multiple responses (typically include telephone and mail) 21%

In person 2%

Mail 4%

Telephone 73%

Source: Evaluation of Care and Disease Management under Medicare Advantage Survey. Survey completed by health organizations (for their contracts) August through October of 2008.

Note: Responses are weighted by non-response weights. Categories may not sum to 100% due to item non-response.

Disease Management Education

As patients with chronic conditions may live with these conditions for many years, self-management and teaching self-management are important tools for DM programs.[39] It is therefore not surprising that all contracts providing DM provided education to members about how to better manage chronic conditions.

Almost all contracts indicated that their staff provided written material to members, and used teachable moments. Many indicated that staff followed curriculum with individual members or followed checklists. About half used scripts provided by computer algorithm, or provided on-line education to members. Fewer said that they followed curriculum addressing groups of members, provided videos or DVDs to members, used mail or newsletter or referral to community resources as shown in Table 4-20 below.

Table 4-20. How is education provided to members in disease management?

Method of providing education	Percent of contracts using	Percent of contracts not using
Staff follow curriculum with individual members	89%	10%
Staff follow curriculum addressing groups of members	30%	69%

Staff follow checklists	79%	20%
Staff use scripts provided by computer algorithm	51%	48%
Staff use teachable moments	96%	4%
Staff provide written material to members	99%	1%
Staff provide videos or DVDs to members	24%	76%
On-line education available to members	52%	48%
Other ways education is provided	22%	77%
(Other) Mail/Newsletter	12%	86%
(Other) Referral to community resource (support group or classes)	11%	89%

Source: Evaluation of Care and Disease Management under Medicare Advantage Survey. Survey completed by health organizations (for their contracts) August through October of 2008.

Note: Responses are weighted by non-response weights. Rows may not sum to 100% due to item non-response.

Care Transitions and Facility Discharges

Perhaps because the focus of DM programs is on specific conditions or diagnoses, and is generally less intensive than care management, only about half of contracts (55%) reported assisting members with care transitions.

Identification of Care Transitions

For DM programs, care setting transitions (such as hospital or nursing home dischrages) are identified in a variety of ways, but a little more than half of contracts said they relied on review of facility admission logs and hospital notifications, and are less likely to rely on pre-admission screening results or other sources. A small number (13%) used utilization reports as seen in Table 4-21 below.

Table 4-21. How do disease managers identify care setting transitions?

Method of identifying transitions	Percent of contracts using	Percent of contracts not using
Staff receive information based on pre-admission screening or benefit advisory review	39%	61%
Staff routinely review facility admissions logs	56%	44%
Hospitals routinely notify contract holder of all members admitted or discharged	51%	49%
Staff relies on primary physicians to report transition	6%	94%
Staff relies on members or caregivers to report transition	11%	89%
Other ways care transitions are identified	37%	63%
(Other) Utilization reports	13%	86%

Source: Evaluation of Care and Disease Management under Medicare Advantage Survey. Survey completed by health organizations (for their contracts) August through October of 2008.

Note: Responses are weighted by non-response weights. Rows may not sum to 100% due to item non-response.

Response to Transitions

With respect to care setting transitions such as facility discharges, contracts overwhelmingly reported reaching out to members via telephone to follow up on discharge arrangements (96%).

The majority of contracts also reported reviewing medications via telephone or in-person and making arrangmenets with providers identified in the discharge contracts as well as visiting members to follow up on discharge arrangements. A little more than one-third reported working with facility staff throughout the member's stay. Far fewer contracts reported only working with staff prior to discharge, or with other partners such as care/case managers as seen in Table 4-22.

Table 4-22. How do disease managers respond to setting transitions such as facility discharges?

Method of responding	Percent of contracts using	Percent of contracts not using
Work with facility staff throughout stay	38%	62%
Work with facility staff only in advance of discharge	11%	89%
Assist with implementing facility discharge plan	44%	55%
Make arrangements with providers identified in discharge plan	69%	31%
Telephone members to follow up on discharge arrangements	96%	4%
Visit members to follow up on discharge arrangements	54%	46%
Review member medications either by telephone or visit	71%	29%
Other ways your staff help with a facility discharge	26%	73%
(Other) Work with care/case manager	29%	71%

Source: Evaluation of Care and Disease Management under Medicare Advantage Survey. Survey completed by health organizations (for their contracts) August through October of 2008.

Note: Responses are weighted by non-response weights. Rows may not sum to 100% due to item non-response.

Medication Management

Most contracts indicated that disease management included identifying and resolving member problems related to medications (93%).

Identification of Problems with Medication

Nearly all (99%) of contracts looked to members to discuss problems with disease managers and 84% of contracts relied on disease managers to administer screening instruments on the medications the member is taking. Close to three quarters of contracts indicated that disease managers, pharamacists or other staff reviwed reports on prescription drug claims. More than half of contractgs indicated that a PBM identified the problem, or that they identified problems with medications through primary care physicians or other providers reporting to disease managers as seen in Table 4-23 below.

Table 4-23. How are member problems with medication identified?

Method of Identifying	Percent of contracts using	Percent of contracts not using
Pharmacy Benefit Manager (PBM) identifies problems	58%	42%
Disease managers, pharmacists, or other staff review reports on prescription drug claims (possibly using software that identifies potential problems)	73%	26%
Disease managers administer screening instrument to members concerning medications taken	84%	16%

Members discuss medications and problems with disease managers during routine contacts	99%	1%
Primary care physicians or other providers report medications and related problems to disease managers	51%	49%
Other ways problems with medications are identified	9%	90%
(Other) Communicate medication problem to physician in writing/by phone	19%	81%

Source: Evaluation of Care and Disease Management under Medicare Advantage Survey. Survey completed by health organizations (for their contracts) August through October of 2008.

Note: Responses are weighted by non-response weights. Rows may not sum to 100% due to item non-response.

Response to Medication Problems

When members have medication problems, almost all of the contracts contact the member directly with a proposed solution, and most also report notifying the PCP to resolve the issue, or making a broader notification to all relevant physicians. About three-quarters provide member education or make a referral to a medication therapy management program. A little more than half indicated that they asked a pharmacist to identify a solution. Many fewer contracts indicated that a disease manager could adjust some medications using standing protocols, notify or referred member to care management or coordination, or referred members to social services, registered nurses or some other form of advocacy and assistance as shown in Table 4-24 below.

Table 4-24. How do disease managers respond to member problems with medications?

Method of Responding	Percent of contracts using	Percent of contracts not using
Ask pharmacist to review medications to identify solution	54%	45%
Notify primary care physician to resolve	87%	12%
Notify all relevant physicians to resolve	82%	17%
Disease manager (or pharmacist) can adjust some medications using standing protocols	8%	91%
Provide member education or refer member to Medication Therapy Management Program (MTMP)	76%	23%
Notify member of problem and suggested solution	94%	5%
Other ways care managers respond to problems w/ medications	7%	93%
(Other) Notify or refer member to care management/coordination	4%	96%
(Other) Social services registered nurses advocacy and assistance	15%	85%

Source: Evaluation of Care and Disease Management under Medicare Advantage Survey. Survey completed by health organizations (for their contracts) August through October of 2008.

Note: Responses are weighted by non-response weights. Rows may not sum to 100% due to item non-response.

Disease Management Duration and Discharge

Members can leave DM for a variety of reasons, including improvements, or worsening of condition. Many DM programs are of unlimited duration as many conditions are life-long and behavior change may not be permanent.[27] Contracts reported an average duration of 201 days in DM programs, though 67% indicated that duration was not limited.

Among those with limited program duration, 60% indicated that they used the ability to self-manage as a criterion for discharge. A little less than half used the closure of clinical gaps as a criterion for discharge and 31% indicated meeting or achieving goals was a criterion. Smaller percentages reported member refusal, opt-out or non-compliance was a criterion for discharge as seen in Table 4-25 below.

Table 4-25. Please describe the one or two main criteria for discharge used by your disease management program

Criteria for Discharge	Percent indicating use	Percent not indicating use
Able to self-manage	60%	40%
Member refusal/opt-out/non-compliance	17%	83%
Meet/achieve goals	31%	69%
Closure of key clinical gaps	46%	54%
Other	22%	78%

Source: Evaluation of Care and Disease Management under Medicare Advantage Survey. Survey completed by health organizations (for their contracts) August through October of 2008.

Note: Responses are weighted by non-response weights. Rows may not sum to 100% due to item non-response.

The average percentage of program users discharged from DM during 2007 across contracts was 47%.

Physician Interventions under Care or Disease Management

The physician is an important partner in the care of chronically ill patients.[27,30] While the survey could not allow us characterize the nature or intensity of the physician-plan interactions, there was strong evidence that contracts view themselves as a support system to physicians and rely on them as a partner in C/DM activities. While very few contracts reported requiring contractual collaboration (5%), a large majority of contracts encourage physicians to collaborate with care and disease managers. Only 15% of contracts do not expect physicians to collaborate with care and disease managers as shown in below.

Figure 4-4. Are physicians expected to collaborate with your care or disease managers?
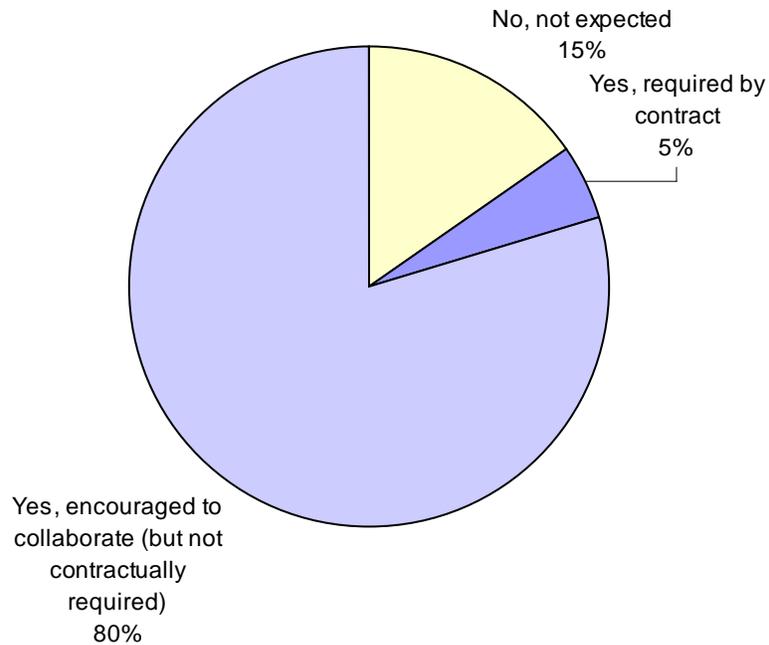
Source: Evaluation of Care and Disease Management under Medicare Advantage Survey. Survey completed by health organizations (for their contracts) August through October of 2008.

Note: Responses are weighted by non-response weights. Categories may not sum to 100% due to item non-response.

While contracts largely did not use contractual tools to encourage interactions, most supported physicians by making decision support tools, feedback and case-specific information available. Almost all provided decision support tools such as evidence-based practice guidelines or patient-specific reports (93%). Almost three-quarters (73%) offered feedback on provider performance concerning patients receiving care or disease management services.

Evidence of Effectiveness and Assessment of Costs

Criteria to Determine Success

The survey documented that large majorities of contracts utilize a variety of criteria to determine effectiveness. Almost universally, contracts looked at improved member satisfaction, and monitored the use of specific care such as immunizations to determine the success of C/DM services. Most contracts also reported that they determine success by reduced rates of preventable admissions, by specific health outcomes, by reduced costs of care, and where care and disease managers are meeting operational performance standards.

Table 4-26. Does your organization determine the success of its care and disease management services using any of the following criteria?

Criteria to Determine Success of Services	Percent of contracts using	Percent of contracts not using
Reduced costs of care	87%	12%
Reduced rates of preventable admissions	90%	10%
By whether specific care is received, such as diagnosis-specific screenings or immunizations	93%	7%
By specific health outcomes, such as improved clinical indicators for levels of blood pressure, cholesterol, or blood glucose	88%	11%
Improved member satisfaction	96%	4%
By meeting operational performance standards, such as care or disease manager frequency of contact with members	80%	19%
Other ways your plan may define success	23%	76%

Source: Evaluation of Care and Disease Management under Medicare Advantage Survey.   Survey completed by health organizations (for their contracts) August through October of 2008.

Note: Responses are weighted by non-response weights. Rows may not sum to 100% due to item non-response.

Information Used to Determine Success

Contracts use a variety of information sources to determine the success of the C/DM programs. Contracts almost universally used claims for covered services and self-reported (member) health or satisfaction. Most also utilized clinical data collected directly, and some used data obtained from providers. A small number used HEDIS scores to measure success as shown below in Table 4-27.

Table 4-27. What data (or other information) does your organization use to determine the success of care and disease management?

Data/Information used to determine success	Percent using	Percent not using
Claims for covered services	95%	4%
Clinical data collected directly	85%	15%
Clinical data providers report to the plan	46%	54%
Self-reported (member) health or satisfaction	97%	3%
Other ways your plan measures success	24%	75%
(Other) HEDIS scores	15%	84%
Does not formally determine success	1%	99%

Source: Evaluation of Care and Disease Management under Medicare Advantage Survey.   Survey completed by health organizations (for their contracts) August through October of 2008.
Note: Responses are weighted by non-response weights. Rows may not sum to 100% due to item non-response.

Basis for Comparison

When determing success, contracts compare success measures to a variety of values. A large majority of contracts utilize members' basline values and national or local managed care benchmarks. Almost half use national or local fee for service benchmarks. Small percentages of plans use regional level comparisons and HEDIS scores as seen in Table 4-28 below.

Table 4-28. To determine success, do you compare these measures to the following values?

Values	Percent of contracts comparing	Percent of contracts not comparing
National or local managed care benchmarks	87%	11%
National or local fee-for-service benchmarks	47%	51%
Members' baseline values	86%	11%
Other bases for comparisons	15%	83%
Does not formally determine success	1%	98%
(Other) HEDIS scores	7%	93%

Source: Evaluation of Care and Disease Management under Medicare Advantage Survey. Survey completed by health organizations (for their contracts) August through October of 2008.

Note: Responses are weighted by non-response weights. Rows may not sum to 100% due to item non-response.

Perceptions of Value of CDM Programs

A large majority of contracts view their C/DM programs as a quality management tool or as a utilization and risk management tool. Almost half view their programs as a separate marketable plan benefit. Only 9% viewed their care and disease management program as a way to improve member clinical outcomes, as seen in Table 4-29 below.

Table 4-29. Is your care or disease management program viewed as a separate marketable plan benefit, a management tool, or both?

Program viewed as:	Percent of contracts indicating	Percent of contracts not indicating
Separate marketable plan benefit	48%	52%
Utilization and risk management tool	84%	16%
Quality management tool	86%	14%
Other purposes for care and disease management under this contract	10%	90%
Improve member clinical outcomes	9%	91%

Source: Evaluation of Care and Disease Management under Medicare Advantage Survey. Survey completed by health organizations (for their contracts) August through October of 2008.

Note: Responses are weighted by non-response weights. Rows may not sum to 100% due to item non-response.

Differences Between Regular Medicare Advantage Plans and Special Needs Plans (SNPs)

There is reason to believe that SNP plans and regular MA plans might have different C/DM programs. SNPs can target three types of beneficiaries, dually eligible enrollees, residents of institutions, or residents with severe or disabling chronic conditions. These populations are likely to have more unmet needs, and to present more challenges in meeting the needs.[35] Therefore, contracts that have SNPs may have different types of programs for members and the programs they have may be utilized by non-SNP members. Of the contracts that indicated that they had a

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[35] Grabowski, D. 2009. Special needs plans and the coordination of benefits and services for dual eligibles. Health Affairs; 28(1):136-146.

SNP under their contract[36], 63% indicated that there were some differences between C/DM programs under the SNP compared to the contracts' regular MA plans.

Contracts reported some differences between C/DM programs under MA and their SNP contracts. Large majorities of contracts say that higher proportions of SNP members use C/DM services, and many indicated that services are of longer duration under the SNP. Other differences included: staff have smaller caseloads under the SNP, services are more structured under the SNP, or there are additional benefits or services as seen in Table 4-30 below.

Table 4-30. Please indicate the main differences between your care or disease management under SNP and under the contract's regular Medicare Advantage plans

Differences Between SNP and regular MA plans	Percent of contracts indicating difference	Percent of contracts not indicating difference
Higher proportions of SNP members use services (or use services at higher levels of complexity, if use of such levels reported above)	86%	12%
Services are of longer duration under the SNP	71%	26%
Staff have smaller caseloads under the SNP	16%	82%
Services are more structured under the SNP (for example, staff rely more on written protocols)	21%	78%
(Specify) Additional benefits/services	41%	59%
Other differences with your SNP (please specify)	15%	84%

Source: Evaluation of Care and Disease Management under Medicare Advantage Survey. Survey completed by health organizations (for their contracts) August through October of 2008.

Note: Responses are weighted by non-response weights. Rows may not sum to 100% due to item non-response.

Care Management

When we looked at the responses to the overall survey by contracts that had one or more SNP plans in their contract, some of these observations were confirmed. Contracts with SNPs on average had more enrollees utilizing care management than contracts without SNPs (27% vs. 13%). On average, contracts with SNPs discharged fewer of their members from care management within a year than did contracts without SNPs (76% vs. 67%).

If higher complexity or additional benefits or services require additional staffing for care management, this was confirmed by some of the survey questions. Contracts with SNPs were more likely to use advance practice nurses in their care management program than contracts without SNPs and were also more likely to use licensed practical or vocational nurses. They were less likely, however, to use pharmacy staff as shown in Figure 4-5 below.

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[36] Surveyed contracts responded to the question asking them if their contract offered an MA plan and a SNP. Alternatively, they could respond that they just had an MA o r a SNP. 66% responded that their contract included both an MA plan and a SNP, and 33% responded that they contained only MA or only SNP plans. The contract identification fields, however, indicated that only 43% contained a SNP. The discrepancy may arise as some organizations with multiple contracts responded to multiple questionnaires and may have assumed that the question referred to whether the organization had any contracts with SNPs.

Figure 4-5. Selected types of professional staff providing care management under this contract by SNP status
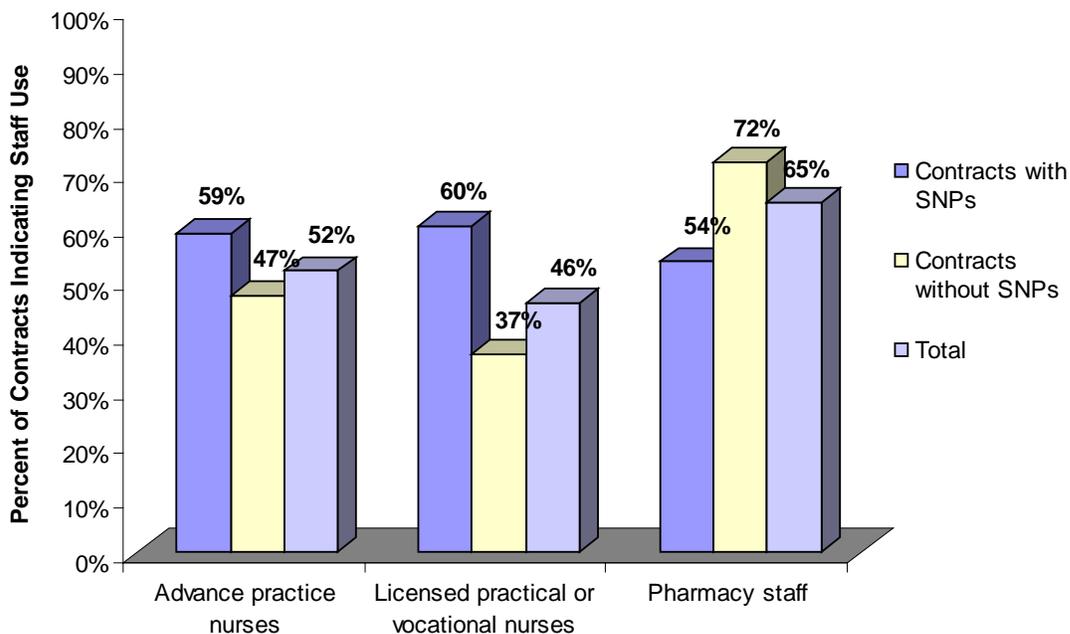
Source: Evaluation of Care and Disease Management under Medicare Advantage Survey. Survey completed by health organizations (for their contracts) August through October of 2008.

Note: Responses are weighted by non-response weights. Rows may not sum to 100% due to item non-response.. Categories may not sum to 100% due to item non-response.

In order to support special needs populations with transitions in care management, contracts that had SNPs were more likely than plans without SNPs to indicate that their staff routinely reviews facility admissions logs to identify care transitions in care management (77% vs. 52%). They were also more likely to receive information based on pre-admission screening or benefit advisory review about transitions than contracts without SNPs (78% vs. 69%). Contracts with SNPs were also more likely to indicate that they identified transitions through members or caregivers than contracts without SNPs (46% vs. 36%).

In working with the transitions, contracts with SNPs were more likely to indicate that they visited with members to follow up on discharge arrangements than contracts without SNPs (49% vs. 35%). Seemingly in contradiction for the need for more involvement, contracts with SNPs were more likely to indicate that they worked with facility staff only in advance of discharge than contracts without SNPs (57% vs. 32%).

Disease Management

There were also some smaller differences in DM programs for contracts with and without SNPs. Surprisingly, the average duration of DM was lower among contracts with SNPs, with the average duration being 168 days compred to an average of 241 days for contracts without SNPs.

Contracts with SNPs were more likely to employ behavioral therapists than those without (59% vs. 44%) in their DM programs. They were less likely to cite high cost of care as a criteria to determine eligibility for DM than those contracts without SNPs (55% vs. 79%).

Supporting the claim of the survey respondents that the programs under the SNP are more structured, contracts with SNPs were more likely to use computer algorithms (59% vs. 40%) to educate members about chronic conditions in their DM programs.

However, contracts with SNPs were less likely to indicate that they reviewed member medications for DM either by telephone or visit than plans without SNPs (57% vs. 82%), or to review reports on prescription drug claims than contracts without SNPs (63% vs. 81%) as part of their DM offerings..

Contracts with SNPs were less likely to include meeting or acheiving goals as a criterion for discharge from DM than contracts without SNPs (19% vs. 45%). They were more likely to use the members' ability to self-manage as a criterion for discharge (71% vs. 48% for contracts without SNPs).

Differences Between Private Fee for Service Medicare Advantage Plans and Other Plan Types

There is reason to believe that Private Fee for Services (PFFS) plans might have different C/DM programs than other Medicare Advantage Plans. Because PFFS plans are not required to create a service network, they may be less likely to coordinate care effectively.[37] Therefore, PFFS contracts may have different types of programs for members than contracts offered under other Medicare Advantage Plans. Of those surveyed, 13.5% of the contracts were PFFS contracts. While their numbers are relatively small, these plans have experienced tremendous growth in the last few years.[38]

<u>Care Management</u>

When we looked at the responses to the overall survey by PFFS contracts we found some differences in staffing, educational outreach and in responding and identifying transitions or medication problems. Overall, staffing for care management was less likely to utilize behavioral health specialists or dieticians as shown in Figure 4-6 below.

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[37] Biles B, E Adrion, and S Guterman. October 2008. Medicare Advantage's Private Fee-for-Service Plans: Paying for Coordinated Care Without the Coordination. Washington D.C.: Commonwealth Fund, Publication 1138, Volume 48.

[38] Blum J, R Brown, and M Frieder. March 2007. An Examination of Medicare Private Fee-for-Service Plans. Washington D.C.: Kaiser Family Foundation Medicare Issue Brief.

Figure 4-6. Selected types of professional staff providing care management under this contract by plan type
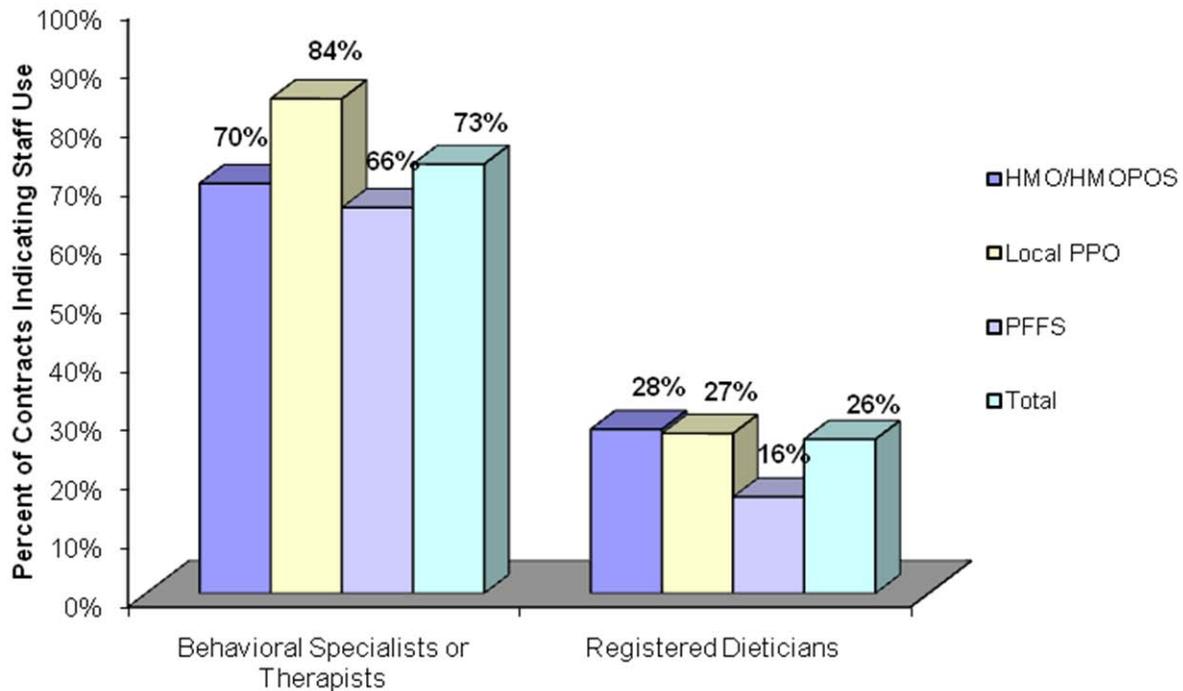
Source: Evaluation of Care and Disease Management under Medicare Advantage Survey. Survey completed by health organizations (for their contracts) August through October of 2008.

Note: Responses are weighted by non-response weights. Rows may not sum to 100% due to item non-response.. Categories may not sum to 100% due to item non-response.

PFFS contracts seemed less likely to utilize structured or computerized checks to provide information or identify problems. For example, in terms of providing education to members, PFFS contracts were less likely to use scripts provided by computer algorithm than other contract types (39% vs. 53% of HMO/HMOPOS contracts and 72% of Local PPO contracts). They were also less likely to have care managers administer screening instruments concerning problems with medication (68% of PFFS contracts, vs. 76% of HMO contracts and 86% of Local PPO contracts).

Perhaps highlighting less of a reliance on established networks, PFFS contracts were also less likely to rely on primary care physicians to report problems with medications to care managers (65% of PFFS contracts vs 68% of HMO/HMOPOS contracts and 88% of Local PPO contracts). In terms of transitions, they were more likely to rely on members or caregivers to report transitions (49% vs. 41% of HMO/HMOPOS contracts and 33% of Local PPO contracts). They were less likely than other contract types to visit members to follow up on transitions (20% of PFFS contracts vs 45% of HMO/HMOPOS contracts and 44% of Local PPO contracts).

Overall, members enrolled in care management in a PFFS contract were less likely to be discharged within a year than members in a HMO/HMOPOS or Local PPO contract (65% were

discharged within a year on average for PFFS contracts vs. 70% for HMO/HMOPOS contracts and 81% for local PPO contracts).

Disease Management

There were also some differences in DM programs for PFFS contracts vs. other contract types. First, in overall structure, PFFS plans were more likely to be either opt-in or population based with no option of opting out (68% of PFFS contracts were population-based with option of opting out, vs. 79% of HMO/HMOPOS contracts and 87% of Local PPO contracts).

PFFS contracts were less likely to determine eligibility by gaps in care (61% of PFFS contracts determined eligibility in this manner, vs. 71% of HMO/HMOPOS contracts and 82% of Local PPO contracts).

Similar to care management, under disease management, disease managers were less likely to visit members after facility discharge (28% of PFFS contracts vs. 55% of HMO/HMOPOS contracts and 64% of Local PPO contracts).

Physician Interventions

Underscoring the lack of provider networks, PFFS contracts were less likely to provide provider feedback to physicians on their performance than were HMO/HMOPOS or Local PPO contracts (53% of PFFS contracts provided feedback vs. 77% of HMO/HMOPOS and Local PPO contracts).

Differences Between Contracts with Vendors and Contracts without Vendors

We analyzed the responses to the survey by whether or not the contractor indicated that they used a vendor (questions b2 and c2 of the survey). We were interested in how, and if the way in which care and disease management differs when provided by a vendor or provided by the contractors. Our hypothesis was that we would see differences, as vendors not only provide services to MA plans, but offer a broad spectrum of service to broader spectrum of clients. Vendor programs have often evolved from specific functions (for example, cardiovascular disease), to take on new client demands. However, they may still have an orientation toward their original focus or expertise. Other vendors may have a particular focus towards health coaching. Vendors may have expertise in predictive modeling and special information systems for identifying patients, where health organizations are more likely to have information systems that have evolved from membership and claims orientation. Finally, vendors must offer their client, the contractor, some sort of evidence for the value of their services.[39]

While care management programs almost always involved contract holder staff, 31% of contracts also used a vendor to provide care management. In contrast, for DM programs, 77% of contracts indicated that contract holder staff provided DM, and 41% utilized a vendor.

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[39] Bodenheimer, T. February 2000. Disease management in the American Market. BMJ; Volume 320:26, p. 563-566.

In terms of whether the vendors served a broader market, the results were mixed. For care management programs, contracts with vendors were less likely to also serve younger members covered under commercial contracts than contracts without vendors (38% vs. 61%). Contracts with vendors were more likely to serve younger members (85% vs. 57% of contracts without vendors).

Care Management

Contracts with vendors tended to offer a richer set of staff to members. Contracts that utilized vendors were more likely to use advanced practice nurses, pharmacy staff and primary care physicians as shown in Figure 4-7 below.

Figure 4-7. Selected types of professional staff providing care management under this contract by vendor status
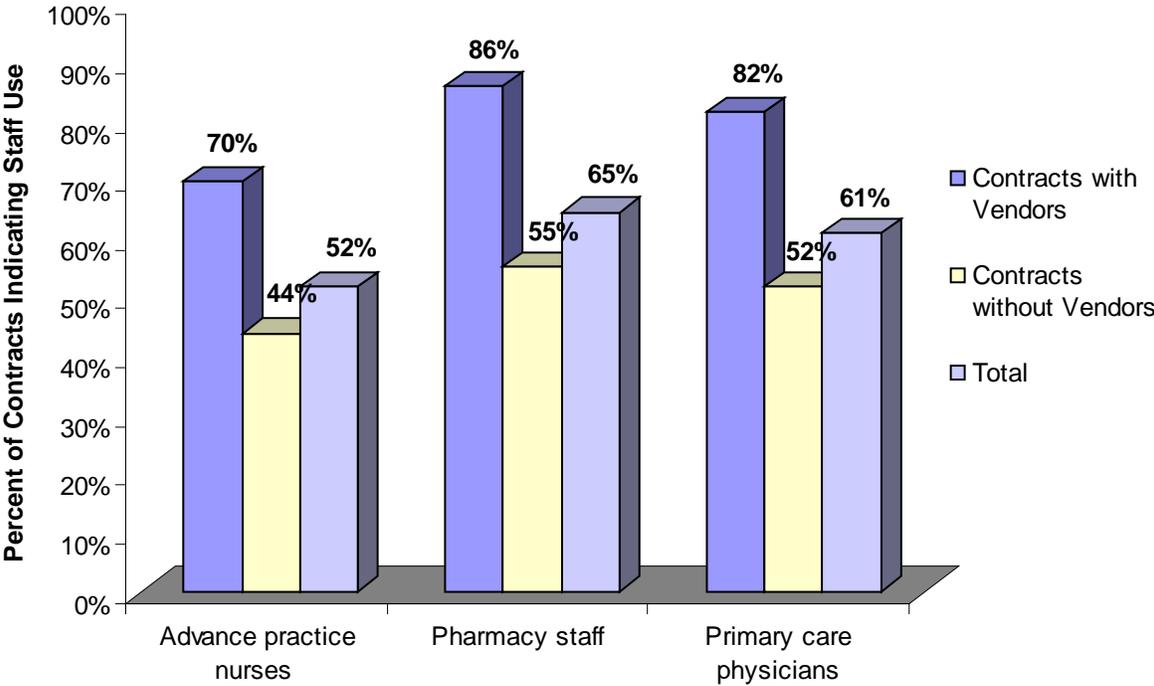
Source: Evaluation of Care and Disease Management under Medicare Advantage Survey. Survey completed by health organizations (for their contracts) August through October of 2008.

Note: Responses are weighted by non-response weights. Categories may not sum to 100% due to item non-response.. Rows may not sum to 100% due to item non-response.

However, this service was available to fewer members. On average, 19% of enrolled members used care management. Contracts that used vendors had lower percentages of enrolled members using care management (8% vs. 23% for contracts without vendor use).

Vendors tended to have more structured approaches to education in care management. They relied more on checklists than in contracts that did not use vendors (84% vs. 59%). Contracts

that utilized vendors were also more likely to have on-line education available than plans who did not contract with vendors (76% vs. 46.8%).

While about half of contracts (55%) reported assisting members with care transitions, those contracting with vendors were more likely to report this type of assistance compared to those that did not use vendors (60% vs. 40%).

There were differences in how contracts with vendors identified care transitions in care management. Contracts with vendors were less likely to indicate that staff routinely reviewed facility admissions logs than contracts without vendors (30% vs. 76%). They were also more likely to indicate that staff received information based on pre-admission screening or benefit advisory review about transitions than contracts without vendors (81% vs. 70%).

In responding to transitions in care management, contracts with vendors were more likely to indicate that they visited with members to follow up on discharge arrangements (48% vs. 38% of contracts without vendors, p-value of .08 for the bivariate analysis, p< .001 for logit analysis).

In terms of problems with medication, there was also more emphasis on higher level staff and structured approaches. Contracts with vendors were more likely to indicate that they had a PBM identify problems (89% vs. 62% of contracts without vendors). Contracts with vendors were more likely to indicate that they adminstered a screening instrument to identify problems with medications (92% vs. 72% of contracts without vendors).

Disease Management

There were some differences in program offerings by vendor status, where contracts with vendors were more likely to offer programs for COPD than for those contracts without vendors (88% vs. 56%). However, they were less likely to offer programs for high blood pressure (44% vs. 72% of contracts without vendors).

Staffing tended to be richer for DM programs for contracts with vendors. Contracts with vendors were more likely to indicate that they utilized advanced practice nurses, licensed practical or vocational nurses, physical, occupational, speech, or respiratory therapists, and registered dieticians (74% vs. 36%) compared to those without vendors as shown in Figure 4-8 below.[40]

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[40] The regression also indicated significant differences in the use of behavioral health specialists, with contracts vendors more likely to use this kind of staff.

Figure 4-8. Selected types of professional staff providing disease management under this contract
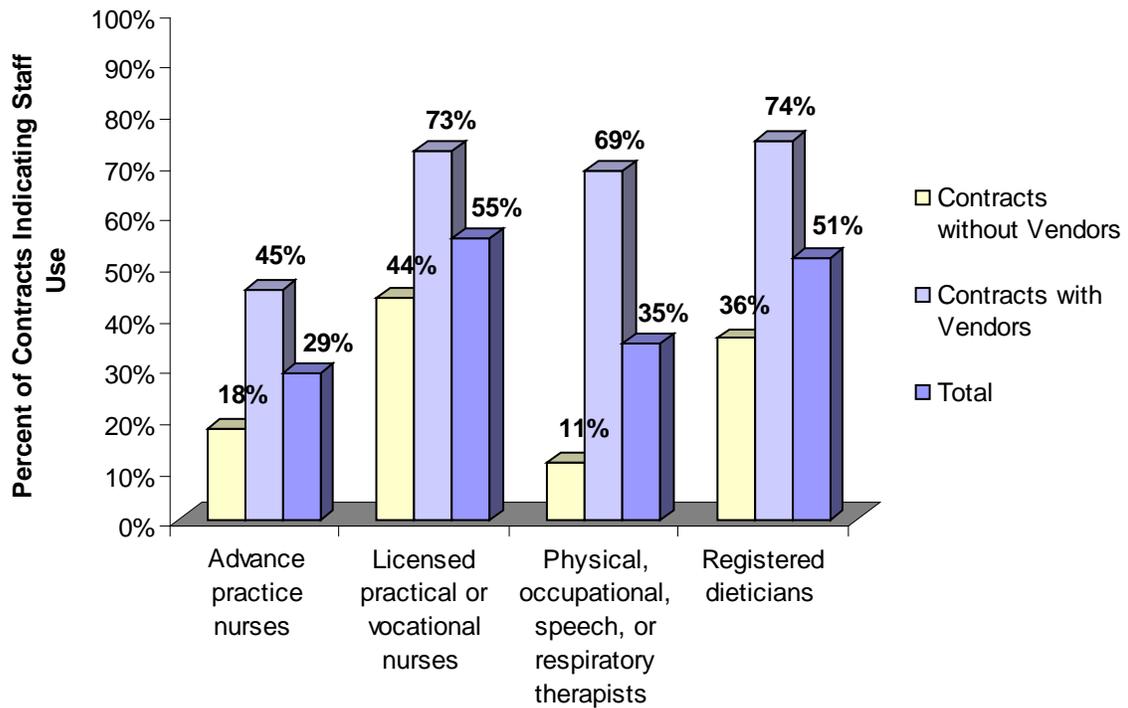
Source: Evaluation of Care and Disease Management under Medicare Advantage Survey. Survey completed by health organizations (for their contracts) August through October of 2008.

Note: Responses are weighted by non-response weights. Categories may not sum to 100% due to item non-response.

These services, however, were less likely to be available for members in contracts with vendors. Smaller percentages of members used disease management programs for contracts with vendors (17% vs 30% for contracts without vendors).

Eligbility was more likely to be connected to high cost of care. High cost of care was more likely to be cited by contracts with a vendor than without a vendor (92% vs. 53%). Possibly because vendors may be off site, ontracts with vendors were less likely to utilize clinical or diagnostic data review to identify members (64% vs. 79% of contracts without vendors).

Contracts with vendors were more likely to use certain educational methods than those without. For example, contracts with vendors were more likely to use scripts provided by computer algorithm (64% vs. 43%), or to provide videos or DVDs to members (42% vs. 11%).

While about half of contracts (55%) reported assisting members with care transitions, those contracting with vendors were more likely to report this type of assistance compared to those that did not use vendors (60% vs. 40%). Contracts with vendors were much less likely to indicate that staff routinely review facility admissions logs than contracts without vendors (20% vs. 87%). They were, however, more likely to indicate that hospitals routinely notify the contract holder of all members admitted or discharged (60% vs. 43%).

If members have problems with medications, contracts with vendors were more likely to refer members to Medication Therapy Management Programs than were contracts without vendors (96% vs. 61%).

None of the contracts with vendors indicated that they used the closure of key clinical gaps as a criterion for discharge (with 58% of contracts without vendors indicating this was a criterion).

Effectiveness

In order to measure their effectiveness, contracts with vendors were less likely to use clinical data reported by providers than contracts not using vendors (29% vs. 53%). Contracts with vendors were also less likely to indicate that they viewed their C/DM programs as a separate marketable plan benefit (28% vs. 56%).

CHAPTER 5:
SYNTHESIZED FINDINGS

Care and disease management programs in managed care settings can take many forms, varying in their overarching infrastructure and design to the implementation of myriad activities. While there can be great variation, the vast majority of Medicare Advantage contracts are still in formative stages of developing their respective C/DM programs. Nearly every MA contract offers both care management and disease management programs, and these programs share core similarities that help paint a picture of what C/DM programs under MA in 2008 look like. We used the MA plan survey as the starting point for identifying those characteristics that were overwhelmingly represented across contracts[41] and integrated these findings with those from the literature review and stakeholder interviews to provide characteristics that nearly every plan is likely to have. We would remind the reader that our study was limited to Medicare Advantage plans. Therefore, our findings should only be considered as indicative of MA C/DM trends and not for all managed care, or health plans in general.

Care Management Program Features

CM programs are predominantly staffed by health plan staff and are directed at both members and physicians. Contracts focus on members with high costs and high utilization, significant health events, and specific procedures and diagnoses to determine eligibility, relying on claims and clinical data reviews as well as referrals from providers, plan staff and members to identify potentially eligible members for enrollment. Comprehensive assessments, conducted largely by clinical staff, are also used to help identify members for CM and monitor their needs. Nearly every plan reported working with registered nurses as the primary professional staff.

Telephone is a primary means of contact for communicating with CM members, reviewing care details such as discharge planning and medication management. Plans also overwhelmingly work directly with providers and facilities as part of the CM program. For education, CM programs utilize teachable moments and written materials delivered by CM staff, though the nature and intensity of these education efforts are not clear from the data collection conducted thus far.

Nearly every CM program included assistance with care transitions, such as movement from a skilled nursing facility to a hospital, or from a hospital to home. In these cases the CM programs largely rely on hospitals to notify the plan of the upcoming changes. The vast majority of CM plans also offer medication management, where members report medication concerns and staff conduct claims reviews. Plans reported that the most common course of action to remedy a medication-related issue was to notify the member's physician to resolve the problem or refer the member to a formal medication therapy management program. CM programs also include support services, with needs assessed from members and their doctors to determine what is needed.

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[41]Characteristics presented here were selected based on results of the univariate analyses, where at least 90% of plans reported the presence/absence of a particular characteristic.

Disease Management Program Features

Nearly every plan offers DM for diabetes and congestive heart failure, and utilizes diagnoses- in most cases from insurance claims- as the primary means for determining eligibility for DM program enrollment. Similar to CM, plans use claims review as well as member and physician referrals to help identify individuals for DM. Once identified, plans conduct comprehensive assessments by clinical staff and assign the member to a needs-based hierarchy that determines what type of intervention is provided (e.g. vendor-initiated reminder phone calls or mailings, one-on-one home-based monitoring visits.

DM programs employ similar outreach approaches as CM, using the telephone as a primary (or sole) means of member contact and teachable moments and written materials for member education. Registered nurses are overwhelmingly employed to run and staff DM programs. When DM programs include assistance with care transitions, which is far less likely than with CM, it is provided via telephone directly with members.

MA Plan Electronic System Features

There is little variation among the types of member-level electronic data directly maintained by MCOs. They maintain enrollment or disenrollment dates, service use or charges, procedure codes, assessment or care plans, prescription drug use or charges and quality related process of care information, such as prevention screening or immunizations. Moreover, a large majority of organizations maintain data on clinical indicators, while only a few maintain health risk assessment data.

Although the collection and maintenance of this type of member-level information is widely embraced by contract holders, these data do not measure the quality of the data collected or the manner in which contractors utilize these data. From the stakeholder interviews, respondents acknowledged that because health plan organizations do not specialize in information systems *per se*, their systems have evolved over time in fits and starts. This produces a system with interoperability issues among different departments within health plan organizations and vendors. Despite these significant limitations, some contract holders continue to improve their electronic data systems with the latest information management strategies, including web portals to help providers access patient health information, and interactive voice response technology to improve contact rates with patients.

Plan-Provider Roles

On the whole, MCOs in this study communicate regularly with physicians working with care and disease management programs, but this contact is not universal. Collaboration is best characterized as C/DM programs asserting themselves to fill gaps, rather than a model where care managers and physicians work together as a team. Evidence from stakeholder interviews suggests that this communication is often a one sided conversation initiated by contractors hired to provide C/DM services for the health plan, either as employees of the plan's C/DM program or from a third party vendor. In these instances, physicians do not commonly respond. This is likely a result of the fact that most contractor communication occurs between the C/DM staff and

office staff at the physician's practice rather than directly with the physicians. In many instances, however, only a few patients per physician are enrolled in any given C/DM program, leaving physicians little incentive to engage fully with each and every C/DM staff member that approaches them.

A large majority of contractors encourage physicians to collaborate with care and disease managers, but only a very small number of physicians are contractually required to do so. Furthermore, physicians are nearly universally provided with decision support tools such as evidence-based practice guidelines or patient specific reports showing gaps in care, though it is unclear how and to what extent physicians actively leverage this information. Despite some reported disconnects between the MCO and its providers, nearly three quarters of contractors offer feedback on provider performance.

Special Needs Plans

The majority of contractors indicate that they have both regular MA plans and SNPs and that there are some differences between the care and disease management programs under each of these plans. Large majorities of contractors reported that SNP members in C/DM programs use program services with greater frequency or intensity and that services are generally provided for a longer period of time. However, one might expect that SNP enrollees are likely to be more frail and have greater health needs than their non-SNP counterparts. Only a few contractors report that their SNP services are more structured or that they give staff smaller caseloads. This suggests that the differences between SNPs and MA plans are externally driven by the types of patients enrolled in the C/DM programs, rather than being internally driven by plan management style or protocols.

Measuring Effectiveness

In the stakeholder interviews, many managed care organizations noted the multiple difficulties in capturing high quality evidence of effectiveness due to data limitations imposed by their information systems. These included problems in measuring quality criteria, identifying the treatment group (e.g. C/DM program participants) and what C/DM programs activities have been administered to program enrollees.

Most contractors report determining the success of their care and disease management services using a similar range of criteria including, but not limited to: improved member satisfaction, whether specific care is received, reduced rates of preventable admissions, reduced costs of care, specific health outcomes, and meeting operational performance standards.

For the most part, contractors use self-reported (member) health or satisfaction, claims for covered services, and clinical data collected directly by contract holder staff to determine the success of C/DM programs. Less than half of contractors use clinical data providers report and very few use HEDIS scores to track success. Overall, the vast majority of contractors compare these data to national or local managed care benchmarks and members baseline values, but less than half use national fee-for service benchmarks and almost no contractors use HEDIS scores in this fashion.

Although the vast majority of contractors use formal criteria, it is impossible to tell what standards contract holders are setting to define effectiveness and whether these standards are in-line with best practices in C/DM. Furthermore, the data collection activities conducted to date do not document how organizations actually use the data they gather, and whether or not they are accurately collecting and correctly interpreting this evidence of success or failure of their C/DM programs.

Almost all contractors view their C/DM programs as quality management and utilization/risk management tools, but less than half view them as a separate marketable plan benefit and very few see these programs as a way to improve member clinical outcomes. This suggests that contractors currently view C/DM programs primarily as an advanced cost management tool, though interviews suggest that they are striving to shape these programs into clinical tools and member benefits.

Preliminary Conclusions

While many details on how MCOs make decisions about their C/DM programs, and how staff implement different facets of the program will come from the case studies, it is possible to draw some preliminary ideas from the data collected to date. These preliminary themes are presented below by key characteristics identified in the literature and by the Chronic Care Model as core aspects of successful programs. The literature, interviews and survey suggest that C/DM programs under MA today fare in the following ways:

1. **Strong self-management support** – We expect to collect this detail through the case studies, though the stakeholder interviews suggest that while contract staff can be highly involved in CM programs, particularly for members transitioning care settings, there is fairly low-level support (e.g. telephone and mail) to members encouraging self-management in DM programs.

2. **Involvement of non-physician members on the care team** – As noted in the survey, the vast majority of programs are staffed by registered nurses and many also used LPNs, NPs, advanced practice, or vocational nurses. CM programs in particular leverage social workers and other types of non-clinical staff to round out care teams. Managed care organizations reported great difficulty engaging network physicians unless they had staff that were willing to 'round' the physician offices to discuss particular member cases.

3. **Planned interactions and proactive follow-up** – it is unclear the extent to which C/DM programs involve planned interactions, though the team plans to collect this information through the case studies. With respect to proactive follow-up, C/DM programs appear to use telephone-based follow up after discharge and in response to an identified problem. However, the survey results are variable on the extent to which C/DM program staff are very proactive in identifying problems. Most report relying on members to raise issues with their providers, though there is also evidence that C/DM programs typically involve at least some minimal utilization review.

4. **Use of guidelines and decision support systems –** MCOs report widespread use of clinical practice guidelines and other tools to help providers and other care team members deliver and monitor care. What is less clear from the data collected to date is the extent to which providers and C/DM program staff have the appropriate input data on hand when they need it to make full use of these guidelines. We anticipate collecting more detail on this, as well as the use of case-based learning and team decision-making through the case studies.

5. **Interactive education** – The degree to which C/DM programs offer interactive education is unclear. In the stakeholder interviews, managed care organizations note that interpersonal education, unless they are able to get members to attend group sessions, is not very cost-effective. Oftentimes vendors are hired to place outbound reminder and education calls. Survey responses suggest that all C/DM programs attempt to leverage 'teachable moments', but also note a reliance on written materials as a primary source of education. It is unclear from the interviews and survey results alone whether these educational approaches are one-way or interactive.

6. **Nimble clinical information systems –** The survey results suggest that a rich array of data are housed in the MCO, from administrative and billing details to claims information, pharmacy records, electronic health records and lab values. The resounding finding from the stakeholder interviews is that most of these systems were built for reimbursement and other administrative purposes, not for research or evaluation. Therefore, while these data sources may exist within the organization, they cannot be merged. One striking finding from the questionnaire development phase was that organizations were largely unable to report basic descriptive information about the members that were enrolled in their C/DM programs (e.g. age, race/ethnicity, gender), or that these reports were difficult to generate. Further, survey results suggest that contracts look at a wide variety of outcomes to determine effectiveness. However, very few of the key informant MCOs were able to report on the effectiveness of their programs beyond broad metrics such as general satisfaction levels, reductions in hospital readmission rates and HEDIS measures during and after C/DM intervention. None were able to produce these statistics for just the population enrolled in C/DM.

On average, C/DM programs offered through MA plans appear to be in the early stages of development. There is certainly strong evidence that managed care organizations are invested in C/DM and believe that these programs are important offerings to members, but are still in the process of crafting appropriate and efficient information systems to support C/DM care teams and integrate data sources across different platforms (e.g. lab data, pharmacy data, administrative data) to facilitate effective monitoring and evaluation efforts.

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Empirical Studies: C/DM Programs Implemented in Managed Care Settings

Citation	Setting	Population	Sample Size	Intervention	Independent Variables	Outcome Variables	Results/Findings
Afifi, A. A., D. E. Morisky, et al. (2007). "Impact of disease management on health care utilization: evidence from the "Florida: A Healthy State (FAHS)" Medicaid Program." Prev Med **44**(6): 547-553.	Florida: A Healthy State (FAHS) Medicaid program	Patients with one of following: diabetes, asthma, congestive heart failure, or hypertension. *Excluded: patients with dementia, sickle-cell anemia, advanced cirrhosis, active cancer, hematological malignancy, hemophilia, end stage renal disease, spinal cord injuries, or dialysis.*	DM Program: n=15,275 Usual-Care: n=32,034	Educational mailings, access to a 24/7 telephone triage line, individualized support from a disease manager available, telephone follow up calls at set intervals.	DM participation, condition managed.	**Use:** Inpatient stays,, ER visits, outpatient visits.	DM Programs were effective in reducing utilizations of hospitals' inpatient and ER visits for diabetes, asthma, and CHF. Results were suggestive of similar effect for hypertension, but not statistically significant. While not statistically analyzed, authors feel significant cost reductions can be expected.
Berg, G. D., S. Wadhwa, et al. (2004). "A matched-cohort study of health services utilization and financial outcomes for a heart failure disease-management program in elderly patients." J Am Geriatr Soc **52**(10): 1655-1661.	Medicare+ Choice recipients in Ohio, Kentucky, and Indiana	Members age 65 and older who had a hospitalization or ER visit at which heart failure (HF) was one of the diagnoses, were not involved in local formal HF program, enrolled in plan at least 12 months before study start date, and at least 3 months after. *Excluded: participants residing in a skilled nursing facility (SNF) >30 days, participating in hospice, identified with end-stage renal disease, dialysis, transplants, AIDS, claims costs >$100,000, or malignant cancer.*	n=533 DM program group matched to non-DM group by propensity score	Self-management plan including nurse-led education sessions, risk stratification, access to 24 hour nurse line, printed action plans, workbooks, individualized assessment letters, medication compliance reminders, physician alerts about signs of decompensation notice to physicians of gaps between patient reported practice and guideline recommendations	DM Participation	**Use:** Medical service utilization (inpatient admits and bed days, ER visits, Dr. visits, Rx prescriptions, 30-day readmissions, SNF days) **Quality:** Rx Drug Use: annual days supply/person (by Rx type) and drug use program periods (by Rx type); % Health interventions performed (Hemoglobin A1c, Electrocardiography, Echocardiography, Cardiac catheterization, Myocardial imaging, Influenza and Pneumococcal immunization) **Costs:** Annual medical and pharmacy costs	Intervention group had 23% fewer hospitalizations, 26% fewer inpatient bed days, 22% fewer ER visits, 44% fewer heart failure hospitalizations, 70% fewer 30-day readmissions, and 45% fewer SNF bed days. Claims costs were significant lower in intervention group: 17% overall and 10% when intervention costs were factored in. Return on investment was calculated to be 2.31.

Citation	Setting	Population	Sample Size	Intervention	Independent Variables	Outcome Variables	Results/Findings
Ibrahim, I. A. B., Jeff; Sidorov, Jaan; Gabbay, Robert; Yu, Lucy (2002). "Measuring Outcomes of Type 2 Diabetes Disease Management Program in an HMO Setting." Southern Medical Journal 95(1): 10.	Several HMO's using same DM program	Diabetes patients who completed a SF-36 health survey and had clinical data collected both before and after enrollment in Diabetes DM program.	n=252	Nurse-educators taught diabetes and self-management principles. Provided glucose meters and test strips, medication program proposed and clinical tests run	Time, i.e. comparison of pre- and post-intervention results for same patient.	**Health outcome:** HbA$_{1c}$ level, LDL and HDL cholesterol, diastolic and systolic bp, Body-mass index, occurrence of hypoglycemia. **Health Status:** Self-reported SF-36 result.	DM programs are effective in making significant clinical improvements in mixed-HMO setting, however no sig. link between improved clinical results and patient self-reported health status.
Sidorov, J. (2006). "Reduced health care costs associated with disease management for chronic heart failure: a study using three methods to examine the financial impact of a heart failure disease management program among medicare advantage enrollees." J Card Fail 12(8): 594-600.	Medicare Advantage under Geisinger Health System: many providers/ clinics/ hospitals/	Chronic Heart Failure (CHF) patients enrolled in Medicare Advantage, 12 months of continuous enrollment	n=272	RNs teach patient and family self-management, condition education, medication compliance training, monitoring of daily weights, and teach patient to watch for worsening of condition. Done 1-on-1 in clinic, by phone, or group visits.	Participation in CHF DM program	**Cost:** for total services/member/month **Quality:** assessment of left ventricular ejection fraction, prescription of ace-inhibitors, prescription of beta blockers.	Cost savings between $318 and $708 per member per month among CHF DM program group. Only notable quality measure change was a higher rate of prescription of beta-blockers in DM program enrollees.
Villagra, V. G. and T. Ahmed (2004). "Effectiveness of a disease management program for patients with diabetes." Health Aff (Millwood) 23(4): 255-266.	Identical MCO managed DM program in 10 city/state regions in U.S.	All members in fully-insured HMO or POS plans whose employers elected to cover the diabetes DM program. (DDMP)	n=43,492	Outreach calls from nurses, dieticians, or health educators; Web-based education, remote monitoring devices, reminder/ educational mailings	Participation in DDMP, Time in program (> or < 10 months), Sex and age breakdowns were same in DDMP and control groups.	**Cost:** in $/ diabetic/month for inpatient, outpatient, professional svcs, other, and Rx drugs. **Use:** days in hospital, ER visits, Dr. visits, and hospital admissions **Quality:** Use of clinical testing, tobacco use	DDMP led to significantly lower costs of care w/in one year. Esp. 22-30% decrease in hospitalization. Pharmacy costs higher in DDMP group. Overall 8.1% savings in care costs. DDMP group had higher use of clinical testing, lowered rates of tobacco use.

Empirical Studies: C/DM Programs-General

Citation	Setting	Population	Sample Size	Intervention	Independent Variables	Outcome Variables	Results/Findings
Akosah, K. O., A. M. Schaper, et al. (2002). "Improving care for patients with chronic heart failure in the community: the importance of a disease management program." Chest **122**(3): 906-912.	Integrated health-care center serving a tri-state area	Patients discharged with primary diagnosis chronic heart failure with left ventricular systolic dysfunction. These were divided into those who were discharged to aggressive intervention heart failure clinic (Intervention group) and those discharged to primary care providers (Control).	n=101 Intervention group: n=38 Control: n=63	Patients treated in a heart failure clinic (HFC). Medications monitored, lab tests frequently run. Intensive patient education and support for self management including diet, exercise, weight monitoring, emotions, and recognition of exacerbation symptomology. Co-morbidities also managed and outsourced for care when appropriate.	Treatment at HFC	**Use:** CHF related hospital readmissions, outpatient visits, patient-initiated contact **Health outcome:** One-year outcome and mortality data	Shorter time to first outpatient visit following discharge (11days v. 15 days, p=.09) more outpatient visits w/in 90 days (10 v. 2, p<.001) in intervention group compared to control. 77% relative risk reduction for 30 day hospital readmission and significantly lower rates of readmission at 90 days and one year for intervention group. Use and maintenance of medications significantly higher among group in HFC. Authors find it likely costs will be reduced based on this and similar studies.
Bray, P., D. Thompson, et al. (2005). "Confronting disparities in diabetes care: the clinical effectiveness of redesigning care management for minority patients in rural primary care practices." Journal of Rural Health **21**(4): 317-321.	Convenience sample from 2 primary care, fee-for-service practices in adjacent rural counties of North Carolina	All patients desired in intervention group were invited to participate, with particular emphasis on recruiting those with Hb_{A1c}>7%, bp> 135/85, evidence of high-risk end-organ disease inc. diabetic retinoplathy, nephropathy, and neuropathy. 90% of population was African-American	n=160 Intervention group: n=112 Control: n=48	Nurse led small group education sessions tailored to target population, nurse-led case management and health checks during sessions (vitals and finger glucose). After sessions patients met with physician for review, lab tests, and scheduling next visit.	DM Program participation	**Health Outcome:** HB_{1Ac} % as indicative of glycemic control.	Increase in % of sample with HB_{1Ac} <7% (desirable) from 32% to 45% in DM group. Implies that this model, when used in rural, primary care practices particularly among African-American patients, can significantly improve glycemic control.
Coleman, E. A., C. Parry, et al. (2006). "The care transitions intervention: results of a randomized controlled trial." Arch Intern Med 166(17): 1822-8.	Large integrated delivery system located in Colorado	Community dwelling adults 65 years or older admitted to the study hospital with 1 of 11 selected conditions (stroke, congestive heart	n=750 Intervention Group: n=379 Control	Intervention patients received encouragement to take a more active role in their care, were given tools to encourage better	Socioeconomic/demographic control variables, self-reported health status, selected	Rate of non-elective rehospitalization.	Intervention patients had lower rehospitalization rates at 30 days and a lower rehospitalization rates after 90 days for the same condition that caused the index hospitalization. The mean

Citation	Setting	Population	Sample Size	Intervention	Independent Variables	Outcome Variables	Results/Findings
		failure, coronary artery disease, diabetes mellitus, spinal stenosis, hip fracture, peripheral vascular disease, deep venous thrombosis, and pulmonary embolism).	Group: n=371	cross-site coordination and a "transition coach" to ensure continuity between care sites.	hospital discharge diagnoses, chronic disease score, index hospitalization, and index hospitalization (initial discharge destination)		hospital costs were lower for intervention patients.
Coleman, E. A., J. D. Smith, et al. (2004). "Preparing patients and caregivers to participate in care delivered across settings: the Care Transitions Intervention." J Am Geriatr Soc 52(11): 1817-1825	Large integrated delivery system in Colorado with hospital, 8 skilled nursing facilities, and one home healthcare agency	Patients hospitalized for one of the following conditions with high likelihood of SNF or home healthcare follow-up: CHF, COPD, coronary artery disease, diabetes, stroke, medical and surgical back conditons, hip fracture, peripheral vascular disease, and cardiac arrythmias. Patients needed to live in community (i.e. not in long term care institution) before and after hospitalization.	n=1393

Intervention group: n=158

Control: n=1,235 | Four "pillars": medication self-management, patient-centered record, primary care and specialist follow-up, knowledge of "red-flags" indicative of worsening condition. Transition coach (24 day involvement) facilitated movement from hospital to outpatient care, and advocated for patient's health needs. | DM program participation | Use: Re-hospitalization rates w/in 30, 90, 180 days; ER or observation unit visit w/in 30, 90, 180 days; time to first re-hospitalization, time to first ER or observation unit visit | Intervention group patients were approximately ½ as likely to return to the hospital in all time frames as were control group. Findings were less strong in other categories.
Authors did not complete a formal cost-effectiveness analysis but find savings highly likely. |
| Daly, B. J., S. L. Douglas, et al. (2005). "Trial of a disease management program to reduce hospital readmissions of the chronically critically ill." Chest 128(2): 507-517. | University Hospitals of Cleveland (UHC), extended care facilities and participant homes w/in 80 miles of UHC | Adults from UHC who underwent >3 days mechanical ventilation and survived to hospital discharge | DM: n= 231

Control: n=103 | Patients in sample received Advance-practice nurse, pulmonologist, and geriatrician case management, Hosp. discharge follow up, home care plan, patient goals and end of life counseling for families. | DM program completion (2 month study period), Clinical testing results, functional status at time of discharge | Use: Re-hospitalization rate, days of re-hospitalization, time to first re-hospitalization, mortality during re-hospitalization
Costs: associated costs. | While overall mortality rates were not affected, patients who received DM program had a lower average number of days of re-hospitalization (11.4) compared to control group (16.7). Total cost savings average $5,180/patient in DM group. |
| DeBusk, R., et al. (2004). "Care Management for | 5 Northern CA hospitals | Heart failure (HF) patients with | DM: n=228 | Initial education session, telephone | DM intervention | Use: Rate of re-hospitalization for | Intervention does not statistically reduce re- |

Citation	Setting	Population	Sample Size	Intervention	Independent Variables	Outcome Variables	Results/Findings
Low-Risk Patients with Heart Failure." <u>Ann Intern Med</u> **141**: 8.	in a large HMO	shortness of breath and one of following: corroborating clinical sign or radiologic abnormality. *Excluded: patients scheduled for coronary artery bypass or valvular surgery, undergone cardiac surgery in preceeding 8 weeks, serum creatinine value of 5 mg/dL or greater, history of severe pulmonary disease w/ home oxygen, receiving dialysis, awaiting renal transplant, or had 1 or more co-morbid conditions expecting to result in death w/in 1 year.*	Control: n=234	counseling and nurse-initiated follow up, pharmacologic management, nurse initiated coordination of care with physicians		cardiac or non-cardiac conditions **Health outcome:** time to first re-hospitalization for cardiac or other cause, time to death from cardiac or other cause.	hospitalization rate, however it is likely that between 65 and 82% of re-hospitalizations are not for HF, but co-morbid conditions. This type of intervention is not likely to be as beneficial in low-risk patients in medical settings such as HMOs as it has been in DM programs targeting the elderly, underserved, and those with advanced heart failure.
Douglas, S. L., B. J. Daly, et al. (2007). "Chronically critically ill patients: health-related quality of life and resource use after a disease management intervention." <u>Am J Crit Care</u> 16(5): 447-57.	A university medical center	335 intensive care patients received more than 3 days of mechanical ventilation.	n=335 Intervention Group: n=231 Control Group: n=103	Case management and interdisciplinary communication.	Socioeconomic/demographic control variables, Score on Chronic Health Evaluation, # of comorbid conditions before admission, length of hospital stay, duration of mechanical ventilation, stay in intensive care unit, at home before admission, reason for	Mortality, health related quality of life and resource use.	The intervention did not have a statistically significant effect on health related quality of life, but the intervention group had more physical health improvement at the end of the intervention time period. The only statistically significant difference was that the intervention group had lower lengths of stays within subsequent readmissions than the control group.

Citation	Setting	Population	Sample Size	Intervention	Independent Variables	Outcome Variables	Results/Findings
					mechanical ventilation, primary diagnosis.		
Frazee, S. G., P. Kirkpatrick, et al. (2007). "Leveraging the trusted clinician: documenting disease management program enrollment." Dis Manag 10(1): 16-29.	Large, self-insured employer with large on-site facilities and full-service pharmacy.	Pool of active and retired employees from a self-insured employer.	n=1815 Health Center Users: n=423 Proximate Non Users: n=1279 Non Proximate: n=188 CHD Meridian TDM Experience (separate sample) n=17,026	Traditional Telephone-Delivered Disease Management (TDM) led by trusted clinicians. Integrated Disease Management (IDM) Protocol Telephonic Delivered Disease Management with additional characteristics that are designed to improve coordination of care, improve enrollment, increase efficiency, etc.	N/A	Contact Rate Enroll Rate Engagement Rate	The IDM approach resulted in improved contact, enrollment and engagement rates.
Galbreath, A. D. K., Richard A.; Smith, Brad; Stajduhar, Karl C.; Kwan, Michael D.; Ellis, Robert; and Freeman, Gregory L. (2004). "Long-Term Healthcare and Cost Outcomes of Disease Management in a Large, Randomized, Community-Based Population with Heart Failure." Journal of the American Heart Associati	South Texas Congestive Heart Failure Disease Management Project: Covering 70,000 sq. m of rural, suburban, and urban South Texas.	Systolic-echocardiograph confirmed Congestive Heart Failure (CHF) patients. Study designed to be widely inclusive.	n=1,069 Control: n=359 Intervention: n=710	Telephonic intervention. Patients were given scales, bp and pulse ox. monitors, activity monitors. Smoking cessation offered to smokers, CHF self-management materials mailed.	DM program participation, Type of CHF (systolic/diastolic), NYHA Functional status %	**Health outcome/Quality of life:** All cause mortality, 6 minute walk test score, improvement in functional class. Among systolic HF patients also measured improvement of ejection fraction and adherence to medication plan. **Costs:** total healthcare costs	Increase in life expectancy by 76 days. Functional capacity was not significantly improved. No potential for cost savings through reduced health care use. Patients with systolic HF most likely to benefit from DM program, and the effect was most pronounced in patients in NYHA classes III and IV.

Citation	Setting	Population	Sample Size	Intervention	Independent Variables	Outcome Variables	Results/Findings
Lorig, K. R., P. L. Ritter, et al. (2006). "Internet-based chronic disease self-management: a randomized trial." Medical care 44(11): 964-971.	Small-group chronic disease self-management program (CDSMP) Patients recruited from established medical websites, newspaper articles and calendar announcements.	Patients were at least 18, had formal diagnosis of heart disease, lung disease, or type 2 diabetes. Subject could have other conditions but not active treatment of cancer from 1 year, not participated in CDSMP, must have access to Internet and email, agree to 1-2 hours log-in time/week, able to complete online questionnaire.	n=958 Internet-based CDSMP: n=457 Regular CDSMP: n=501	Interactive Internet based-individualized exercise programs, cognitive symptom management, emotional management techniques; info on medication and healthy lifestyle; fatigue management techniques, problem solving for daily life.	CDSMP participation, sex, age, years of education, number of logins to CDSMP, visits to health related web-sites in previous 6 months.	**Quality of life**: pain discomfort, shortness of breath, and fatigue on visual numeric scale. Illness intrusion scale measuring impact of disease on role activities. **Self-management**: stretching/strengthening exercise, aerobic exercise, use of cognitive symptom management techniques, use of techniques to improve communication w/ health care providers. **Use**: Self-reptd outpatient visits, ER visits, and nights in hospital.	Dropouts from program more likely to be male, non-Hispanic white, have a higher mean education that control dropouts. Online groups did as well or better at improving health statuses as groups exposed to same materials offline.

APPENDIX C:
MA PLAN SURVEY QUESTIONNAIRE

APPENDIX D:
REFERENCED TABLES

Table 3-2. Interviewee Characteristics (Patients)

ID#	Gender M= Male F= Female	Disease Type/Condition	Enrolled in C/DM
1	M	Parkinson's Disease	Yes
2	F	Congestive Heart Failure (CHF)	Not Sure
3	F	Chronic Obstructive Pulmonary Disease (COPD)	Yes
4	F	Heart Disease and Diabetes	Yes
5	F	COPD and Heart Disease	Yes
6	F	Lupus, Heart Disease, Diabetes, High Blood Pressure	Not Sure
7	F	Osteoporosis and Heart Disease	Yes
8	M	Heart Disease	No
9	F	Heart Disease and Diabetes	Yes
10	F	COPD	Not Sure