

# AN INTRODUCTION TO CARE MANAGEMENT INTERVENTIONS AND THEIR IMPLICATIONS FOR ACTUARIES

## Paper 1: Programs and Interventions

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### **INTRODUCTION**

Early insurance approaches to the financing of health care focused on hospital reimbursement and were characterized by two key assumptions. The first assumption was that providers would exercise reasonable professional judgment in the provision of services to patients. The second assumption was that patients would tend to be conservative regarding their use of services (since these services often involved both discomfort and uncertain outcomes).

In this model, the insurance company's role was limited to "traditional" insurance functions, such as underwriting and pricing, verification of insurance eligibility and claim payment. Cost was restrained through these means as well as through traditional insurance product features such as deductibles and coinsurance. Intervention by the insurer – either with the patient or the provider – was unthinkable in this era.

Over time, the traditional insurance model failed to contain costs and was replaced by a more interventionist model in which the entity financing the services began to try to influence the demand for and access to medical resources and services. The "insurance" model gave way to the "managed care" model.

Since managed care became commonplace in the United States in the mid-1980s, managed care organizations (MCOs) have tried a multitude of methods to influence the resource consumption behavior of health care providers and patients. Early managed care models focused on physicians and hospitals, using a variety of administrative, regulatory or legal tactics. These included a formal peer review process to reduce unnecessary hospital admissions and inappropriately long hospital stays, and a formal regulatory and planning process aimed at gradually reducing the number of unneeded hospital beds. Other tactics included a requirement that physicians obtain approval for hospital admissions prior to admitting a patient, as well as various contracting models with "preferred providers."

More recent evolutions have aimed to include the patient as well as the provider. New attempts to "manage care" continue as MCOs experiment with different interventions, try

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to determine which interventions have proven to be cost-effective, and respond to patients' and providers' complaints about their intrusiveness.

Many supporters of managed care advocate the clinical benefits of intervention. Our interest, however, is in the financial value of care management, such as whether interventions bring financial value to the organization that sponsors them and the extent to which they contain costs. The over-arching question is whether cost savings are greater than the implementation and ongoing costs of the interventions themselves.

### **Seven Care Management Methods**

The subject of managed care covers a substantial body of techniques. The interested reader can consult one of a number of textbooks, including, "*The Managed Health Care Handbook*" by Peter Kongstvedt, MD (Aspen Publishers). In addition to the references in this paper, Paper 3 includes an extensive bibliography covering each of the care management methods discussed here. The focus of this paper is those techniques commonly used in managed care plans as background to a discussion of their implications for actuaries and other financial managers.

The *raison d'être* of managed care plans is to control the utilization of their members' services through methods usually known as "utilization management." We prefer the broader phrase "care management" because the former term includes methods that focus primarily on providers and has acquired a very negative image. "Care management" is a broader term that includes recent approaches that foster more patient participation and include healthcare professionals who often are not physicians. Terminology in this field is not precise, has not been standardized, and continues to expand.

This paper describes seven methods used in care management in the order of their historical development:

1. Pre-Authorization
2. Concurrent Review
3. Case Management
4. Demand Management
5. Disease Management
6. Specialty Case Management
7. Population Health Management

### **Pre-Authorization**

Pre-authorization involves requiring a physician or hospital to obtain approval from an MCO before performing a diagnostic procedure or surgical intervention on a health plan member. Generally, pre-authorization is applied to inpatient procedures, although it has also been applied to outpatient procedures, and even prescription drugs. In cases where an admission occurs without a pre-authorization, such as an emergency admission, a retrospective "pre-authorization" may still be required because the approval is necessary for claim payment and to initiate the discharge planning process.

MCOs decided which procedures required authorization based on the price, volume, or total dollar expenditures. Researchers found that certain procedures (such as hysterectomy, prostate surgery or carotid endarterectomy<sup>3</sup>) were frequently performed on patients lacking clinical indications, and so pre-authorization reviews were performed for economic reasons, but also for patient safety/quality<sup>4</sup> (when the risks of a procedure outweighed its benefits). The classic research on supplier-induced demand for medical procedures is the work of Jack Wennberg, MD of Dartmouth University. Examples of this research include: Wennberg, J.E. “On patient need, equity, supplier-induced demand, and the need to assess the outcome of common medical practices.” *Medical Care*, May, 1985, 23 (5): 512-20) and Wennberg, D., Dickens, J. Jr., Soule, D., Kellett, M. Jr., Malenka, D., Robb, J., Ryan, T. Jr., Bradley, W., Vaitkus, P., Hearne, M., O’Connor, G., Hillman, R. “The relationship between the supply of cardiac catheterization laboratories, cardiologists and the use of invasive cardiac procedures in northern New England.” *Journal of Health Services Research Policy*, April, 1997, 2 (2): 75-80.

Physicians and managed care reviewers frequently struggled with each other in the authorization process as they discussed certain diagnoses, symptoms, and other patient characteristics. Over time, physicians and MCOs gradually reached an equilibrium in which both parties knew what to expect from each other in the pre-authorization process.

### **Concurrent Review**

*Concurrent Review* involves monitoring a health plan member’s care while the member is still receiving care in an acute hospital or nursing home. This process is most commonly performed by a utilization review nurse who may request information about a hospitalized patient and discuss the case with the responsible clinician via telephone. As the provision of services within the hospital has become more complex and multidisciplinary, services may be performed by a “hospitalist,” a physician located in the hospital (but paid by a health plan). The hospitalist’s function is to coordinate the different disciplines directed to an individual patient, eliminating overlaps or gaps in care and ensuring better outcomes and lower cost<sup>5</sup>.

Concurrent Review was initially annoying to physicians, in part because communications between nurses and physicians were awkward and threatened the autonomy of

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<sup>3</sup> An operation to remove an obstruction in the carotid artery – a main blood supply to the brain – to reduce the risk of stroke, sometimes performed with a catheter and stent.

<sup>4</sup> Quality” is a term used frequently in managed care. Several organizations, for example NCQA (National Council on Quality Assessment), URAC (Utilization Review Accreditation Commission), JCAHO (Joint Commission on Accreditation of Healthcare Organizations) and other accrediting organizations exist to set standards for managed care quality, and do so by evaluating outcomes and measures (quality indicators) within an insured population. Examples of quality indicators include tests and screening for certain conditions, rates of compliance with certain treatment protocols, etc.

<sup>5</sup> See, for example: Wachter, R.M. “Hospitalists in the United States- Mission Accomplished or Work in Progress?” *New England Journal of Medicine*, May, 2004, 350 (19).

physicians. As clinicians became more experienced with diagnosis-related groups<sup>6</sup> (DRGs) and as hospitals and MCOs developed practice guidelines and clinical pathways, this form of intervention became routine and was one factor that helped to reduce hospitals' average length of stay. An example of an analysis of the effect of DRGs on inpatient stays is: Kahn, K.L., Keeler, E.B., Sherwood, M.J., Rogers, W.H., Draper, D., Bentow, S.S., Reinisch, E.J., Rubenstein, L.V., Kosecoff, J., Brook, R.H. "Comparing outcomes of care before and after implementation of the DRG-based prospective payment system." JAMA, October 17, 1990, 264 (15): 1984-8.

### **Case Management**

*Case Management* typically involves a health care professional who coordinates the care of a patient with a serious disease or illness (such as a stroke, multiple sclerosis, AIDS, some cancers, or lupus). The complexity of diseases that involve a case manager usually results in medical care that involves multiple medical specialties, institutions, a wide array of possible diagnostic and therapeutic tools, and a significant social or community-based welfare element. Case Management often begins during an inpatient hospital stay with the planning of the patient's post-hospital care (Discharge Planning) and continues once the patient returns home.

Case Management has a number of common features. The case manager is usually a nursing professional (Registered Nurse or Licensed Practical Nurse). The work of the case manager often involves services outside the acute hospital setting. Because of the intensity of services, caseloads are small (a typical average will be 100 or fewer patients concurrently) and the duration of services will be extensive (six months on average). Case managers often have the authority to approve extra-contractual benefits for members.

Case managers have found it difficult to perform their activities consistently and uniformly. In some instances, a case manager is not empowered to control access to resources, but may only suggest alternatives to a patient or a physician. The progression of the member's condition may result in a wide range of outcomes (from recovery to death), as may a patient's response to various therapies, which makes development and strict adherence to clinical guidelines difficult. In many communities, the medical resources available to patients may vary considerably both in quantity and quality, further complicating the work of case managers. Finally, many diseases may have new, untested (and often expensive) treatments that can be difficult for MCOs to deny to determined patients and physicians.

### **Demand Management**

*Demand Management* refers to certain passive forms of informational intervention, often provided by clinical staff over the telephone. One form of Demand Management is Nurse Advice Lines, which address episodic, often acute, illnesses. One objective of these services is "triage," or the process of determining on the telephone whether a medical

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<sup>6</sup> Diagnosis Related Groups (DRGs). Under the Medicare Prospective Payment System, discharges are classified into Diagnosis Related Groups. A specific payment rate is established on a geographic basis by DRG.

condition or event requires immediate intervention, such as an emergency room visit. Another example of Demand Management is Shared Decision Making. Nurses give patients facing a significant medical decision (such as major surgery) the most current information on alternatives to surgery. In some models, nurses also provide the patient with coaching to ask physicians crucial questions, and provide a framework for informed decision-making based on the patient's personal preferences. For more information about Demand Management, see: Vickery, D.M., Kalmer, H., Lowry, D., Constantine, M., Wright, E., Loren, W. "Effect of a self-care education program on medical visits." JAMA, December 2, 1983, 250 (21): 2952-6.

### **Disease Management**

The focus of *Disease Management* (DM) is on chronic conditions with certain characteristics that make them suitable for clinical intervention. Once contracted, the disease remains with the patient for the rest of the patient's life. The disease is often manageable with a combination of pharmaceutical therapy and lifestyle change. The average annual cost of some chronic patients is sufficiently high to warrant the expenditure of resources by the health plan or employer to manage the condition.

DM is a "system of coordinated health care interventions and communications for populations with conditions in which patient self-care efforts are significant. DM supports the physician or practitioner/patient relationship and plan of care. It emphasizes prevention of exacerbations and complications utilizing evidence-based practice guidelines and patient empowerment strategies. DM evaluates clinical, humanistic and economic outcomes on an ongoing basis with the goal of improving overall health."<sup>7</sup>

Traditionally, DM has focused on the "big five" chronic diseases: ischemic heart disease, diabetes, chronic obstructive pulmonary disease, asthma, and heart failure. Some companies add other conditions to this list, particularly diseases of the kidneys and endocrine system, musculoskeletal (often lower-back) problems, and depression. (The identification of depression and related privacy issues make this a difficult condition to treat except as it occurs together with another chronic condition.) Chronic disease costs matter because they are manageable, and are often self-manageable. The greater the percentage of total expenditures represented by manageable chronic disease, the greater the savings opportunity for DM. Healthcare costs associated with health plan members who have a chronic condition can be a significant percentage of all healthcare costs of a health plan. This percentage is different in commercial and Medicare populations. Estimates of the percentage of total health expenditures accounted for by members with chronic conditions differ; some authors estimate that more than one-half of all medical expenditures are incurred by individuals with chronic conditions. There is another well-publicized estimate that this percentage is 78 percent of all medical expenditures.<sup>8</sup> Hoffman and others estimated that chronic medical expenditures were \$425 billion in

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<sup>7</sup> Disease Management Association of America. Web-site [www.dmaa.org](http://www.dmaa.org)

<sup>8</sup> Canny, J. "Innovative Care for Chronic Conditions: defining the problem and offering effective Solutions." Presentation to the 20<sup>th</sup> Annual Academy Health Research Meeting, Nashville, TN, 2003.

1990.<sup>9</sup> The National Medical Expenditure Survey estimated total medical expenditures of \$800 billion in 1996, implying that expenditure by chronic persons represents more than 50 percent of all expenditures.<sup>10</sup> Estimates of the number of individuals with chronic diseases ranged between 80 and 100 million in the earlier 1990s, (more recently we have seen estimates as high as 125 million) implying an average annual cost per chronic member of between \$4,000 and \$5,000 in 1990 dollars.

As with many issues in DM, the questions of how many individuals have a chronic condition, and what the associated claims are, are confused by a lack of a consistent definition. There is no single agreed upon list of those conditions that are “chronic,” nor are there agreed upon criteria for identifying the presence of the diseases. Some estimates may simply add the prevalence of different diseases (which double- or triple-counts some individuals with multiple conditions). Chronic prevalence may also be over-estimated if the same individual is covered by more than one study (as, for example, when an individual is dually-eligible). Similar confusion exists around the amount of medical claims, which may be reported for a single chronic condition, all chronic conditions, or as all claims for the individual.

Analysis of health plan data shows a different picture than that reported in some studies. In part, this may be because health plan (insured) populations are more likely to be younger, healthier (working individuals) and have fewer chronic conditions. (For example, the U.S. population as a whole contains more older and non-working individuals.) Our analysis of commercial health plan data shows net incurred claims of chronic condition individuals to be in the range of 20- to 25-percent of the total of all incurred claims. Medicare population expenditures amount to 50- to 55-percent of total claims. Costs associated with chronic conditions represent approximately 70 percent of these total expenditures. Although our estimates may be lower than those of other researchers, they still show the chronic condition population representing a significant source of total expenditure and savings opportunity.

DM programs are generally offered telephonically, involving interaction with a trained nursing professional, and require an extended series of interactions, including a strong educational component. Patients are expected to play an active role in the management of their disease. With the rise of the Internet in the 1990s and the access to medical information on free Web sites, many patients took greater interest in self-care and in learning about the latest available research on specific diseases. Many companies saw the Internet as providing an opportunity to reach a larger population and deliver DM services at lower cost. DM programs that rely solely on the Internet have largely been unsuccessful (although most DM companies offer ancillary Internet service) because

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<sup>9</sup> Hoffman, C., Rice, D., and Sung, H.Y. “Persons with Chronic Conditions.” *JA MA*, 1996, 276:1473-9.

<sup>10</sup> Moeller, J.F., Cohen, S.B., Hock, E., et. al. “Projecting National Medical Expenditure Survey data: a framework for MEPS projections.” Rockville, MD. Agency for Healthcare Research and Quality, 2002. MEPS Methodology Report No. 13, AHRQ Pub. No. 02-0009.

successful DM requires strong outreach efforts to contact patients and generate enrollment, and change behavior.<sup>11</sup>

Initially, DM vendors specialized in single diseases from the target list, and some vendors still do so. Because of the presence of co-morbidities or multiple conditions in most high-risk patients, this approach became operationally difficult to execute, with patients being cared for by more than one program. Over time, the industry has moved more towards a “whole person” model in which all the diseases a patient has are managed by a single DM program.

### **Specialty Case Management**

*Specialty Case Management* is performed by a care manager who has expertise in a particular area (such as mental health, organ transplantation, maternity, or oncology) and to whom the MCO has assigned primary responsibility for coordinating the patient’s care. Patients referred for specialty care management often involve difficult and potentially expensive diseases.

Typically, MCOs contract or “carve out” this intervention to a private company that has established networks of specialists or centers of excellence. Frequently, the financial responsibility is carved out of the overall plan liability and transferred, along with the service responsibility, to the Specialty Case Manager. Patients still need a case manager’s assistance to help them negotiate through multiple sites and stages of treatment, often over an extended period of time.

Because the specialty management company must deal with a variety of illnesses and a wide spectrum of disease severity, it may rely on tools from concurrent review, case management, and disease management. For example, a firm that specializes in behavioral health may use concurrent review for a patient hospitalized for a bipolar disorder, case management for an adolescent with newly diagnosed schizophrenia, and disease management for a patient with an obsessive-compulsive disorder.

### **Population Health Management**

*Population Health Management* is a recent intervention in which a broad set of medical conditions is addressed. Unlike disease management, the focus is not on patients with a specific disease. A broader approach is used in which the entire membership of a health plan is evaluated; using statistical tools such as predictive modeling or Health Risk Assessments (surveys that collect member-supplied information about health and risk-factors). Statistical models are constructed with the objective of identifying potential high-cost patients who can benefit from some kind of “softer” intervention that is voluntary for the patient, and information is provided to the member about conditions and self-care. Population Health Management programs deliver education and other information to the target population in an attempt to make members aware of and better managers of their conditions.

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<sup>11</sup> More discussion about the practical aspects of DM enrollment and outreach may be found in a later paper.

Firms specializing in population health management usually rely heavily on information technology to identify and then closely track patients using nurses or other clinical experts. The data sources used by predictive models are crucial and may differ among different population management firms. In some instances, a health risk assessment instrument is used to identify specific diseases and risky behaviors of MCO enrollees. More frequently, medical claims are the main source of diagnostic data. Prescription data from pharmacy benefit management firms are another possible source of data.

The emphasis of population health management is usually on wellness, prevention, or early detection of disease through educational services or Health Risk Appraisals. They may also include population-wide programs, such as those aimed at inoculation for various diseases, smoking cessation, weight-loss or other lifestyle-improvement. For more information about Population Health Management (and the role of predictive modeling in identifying and targeting patients) see:

Gomaa, W.H., Morrow, T., Muntendam, P., "Technology-based disease management: low-cost high-value." *Disease Management Health Outcomes*, 2001, 9 (10): 577-588;

Lynch, J.P., Forman, S.A., Graff, S., Gunby, M.C. "High-Risk Population Health Management: achieving improved patient outcomes and near-term financial results." *American Journal of Managed Care*, 2000, (6): 781-791;

Forman, S.A.. "Breakthroughs in High-Risk Population Health Management." San Francisco, CA: Jossey-Bass Publishers; 2000; and

Celebi, D. "The Power of Predictive Modeling: Rules-based tools can forecast costs and health risk for an entire population or a single patient." *Healthcare Information*, August, 2003, 20 (8): 56.

## **Conclusion**

In this paper, we have briefly surveyed common types of medical management directed at the member or patient. These programs or interventions have certain common features: all rely heavily on identification of at-risk members, all rely on clinical resources, and all rely (to some degree) on participation by the member or patient in the member's own care.

The reliance on clinical resources, as we will see in Paper 4, can be costly for the sponsoring organization. It is often possible to justify intervention programs based on the associated improvement in clinical outcomes or quality. However, as such programs become more widespread and their cost increases, purchasers are looking for solid financial evidence of the value of programs and interventions. We will return to this topic in Paper 3, when we survey existing literature on financial outcomes of intervention programs.