

Chapter 4. Complex chronic disease management models

Vignette

The case management nurse at the health centre contacted the hospital doctor to update him on the evolution of an elderly patient, Mr. Smith. He had been discharged a week earlier, having been admitted to hospital as a result of an acute episode of his chronic cardiac failure, complicating his diabetes, hypertension and chronic renal failure. He was one out of 3 patients with the same diagnosis being handled simultaneously by the nurse. Contact to hospital doctor was essential for the ongoing medication adjustment her patients required to avoid further hospital admissions. There was no suitable clinical practice guideline for them, each suffering from multiple illnesses and having multiple needs. Since the heart failure management program for patients with multiple readmissions was started, the annual readmission rate had been brought down by 40% per year, with both patients and their families registering very high levels of satisfaction. The case management nurse had played a key role in the program, from initial education of the patient in self-management to checking that treatment was being followed and handling home-help support in those cases where this was necessary. Communication between the hospital and ambulatory care, supported by carers and relatives, helped the whole system operate as a well orchestrated unit. This had thus released resources at the hospital, allowing greater capacity to deal with the new pandemic flu outbreak.

The education program for patients with low-risk heart failure had been equally successful. These patients, who did not generally suffer any major disability, were met in the health centre on a periodic basis for preventive education on vascular risk factors and lifestyles. Nicotine addiction workshops had also been organised. In accordance with their specific profile, each patient had an individual itinerary of sessions, while patients with shared problems were encouraged to form into groups. One group of patients with heart failure had, with the support of the local authority, managed to secure a space at the municipal sports hall for cardiac rehabilitation, supervised by doctors, who have been provided with information about each patient involved in the program.

Summary

The response to the needs of people living with multiple chronic illnesses represents one of the main challenges for health care systems in the 21st century.

Meaningful progress in this area demands a transformation of current conceptual frameworks to place individuals, their environment and their health-related needs at the core of the health system, rather than the illness or the needs of managers, clinicians or policy makers.

This chapter discusses the most prominent models to improve the health of those living with two or more chronic conditions. The adoption of such models, however, requires local adaptation, leadership and change management strategies to overcome the many existing obstacles that exist in most health systems.

Models for the management of people living with chronic diseases are in their relative infancy. Wagners *Chronic Care Model* (CCM), the first broadly disseminated system and the basis for subsequent approaches, has been in place for scarcely 20 years. Newer models, such as the *Expanded Chronic Care Model* employed and proposed by the government of British Columbia in Canada, and the World Health Organization (WHO)'s *Innovative Care for Chronic Conditions Framework* are in general variants on that original model, emphasizing the importance of community engagement, prevention and health promotion activities, and the need to optimize the use of resources and the formulation of health policies.

The creation of valid models for patients living with multiple chronic conditions (complex cases), who consume a disproportionately high volume of resources, remains an unmet challenge, as the focus of all existing models and most of the solid evidence and experience available relate to specific individual conditions. This is compounded by the lack of clinical practice guidelines and the limited applicability of standards for individual illnesses to cases in which multiple conditions co-exist.

There are other approaches that could be used to improve the management of people living with multiple chronic diseases. Kaiser Permanentes Pyramid-based stratification model could facilitate triage of patients to three levels of intervention according to the level of complexity. Patients at the top of the pyramid represent only 3-5% of cases, but are the most complex and consume the highest share of resources. Therefore, these patients are assigned to comprehensive care plans designed to reduce unnecessary use of specialist resources and, particularly, to avoid hospital admissions. This has inspired successful additional approaches such as the *Guided Care Model*, where trained nursing staff in coordination with a medical team, take care of the assessment, planning, care and monitoring of complex chronic cases identified by means of predictive modeling.

Although considerable progress has been made in terms of management models over the last two decades, we still have much to learn as to their application to populations of individuals with multiple conditions, in particular in heterogeneous socio-economic and ethno-cultural contexts, and their impact on health system resources.

Why is the topic important?

Improved knowledge of the life cycle of chronic diseases and of the interactions among multiple diseases, at least in theory, should lead to the development of effective management models. A model, however, is not a recipe book, but rather a multidimensional framework to guide initiatives designed to handle a complex problem.

Models specifically designed to improve the management of multiple chronic diseases are

expected to help curb the exponential increase in costs associated with them, by shifting emphasis away from acute care; by giving patients, caregivers and the community a leading role as agents of change; by diversifying functions for health professionals; by optimizing care processes and the use of new technologies; and by expanding the scope of services beyond the limits of the current health care system.

In both high- and low-income countries, models could help shift health systems from health services which are reactive, fragmented and focused on specialist care, towards more proactive coordinated community-based interventions.

Care models also promise to help improve the implementation and dissemination of effective interventions for chronic disease management ([1,2](#)), overcoming many cultural, institutional, professional and sociopolitical barriers([3,4,5](#)).

This chapter focuses on comprehensive "health management" models that could lead to an integrated response that matches the complexity of the challenges created by multiple chronic diseases([6,7](#)).

What do we know?

Generics chronic diseases management models

The most prominent approach is the *Chronic Care Model* (CCM) developed by Ed Wagner and associates at the *MacColl Institute for Healthcare Innovation* in Seattle, USA ([8, 9](#)).

This model resulted from a number of efforts to improve the management of chronic conditions within integrated provision systems such as the *Group Health Cooperative and Lovelace Health System* in the USA. The development of this model was guided by systematic reviews of the literature and input from a national panel of experts, and emphasized the importance of rethinking and redesigning clinical practice at the community level.

The CCM acknowledges that chronic disease management results from the interactions of three overlapping areas: 1) the community as a whole, with its policies and multiple public and private resources; 2) the health system, with its provider organizations and insurance systems; and 3) clinical practice. Within this framework, the *CCM* identifies essential, interdependent elements (Figure 1) that must interact effectively and efficiently to achieve optimum chronic patient care (Figure 1). The ultimate purpose of the model is that of positioning at the clinical nexus active and informed patients, along with a proactive team of professionals with the necessary skills and expertise, leading to high-quality care, high levels of satisfaction and improved results ([10,11](#)).

Various models have used CCM as the basis for subsequent expansions or adaptations. A case in point is the *Expanded Chronic Care Model* ([12](#)) of the government of British Columbia in Canada (see Figure 2), which stresses the community context as well as the importance of prevention and health promotion initiatives.

Figure 1. The Chronic Care Model. Fuente: Developed by The Mac Coll Institute for Healthcare Innovation, ACP-ASIM Journal and Books

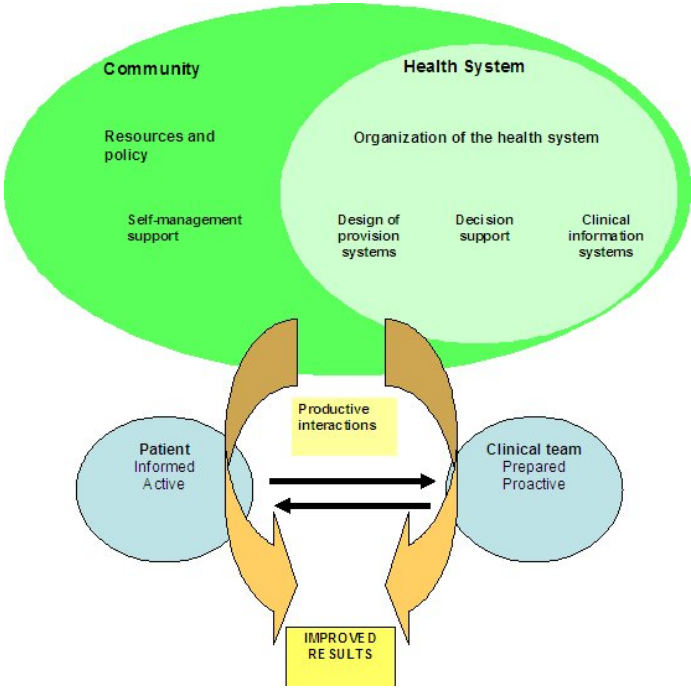
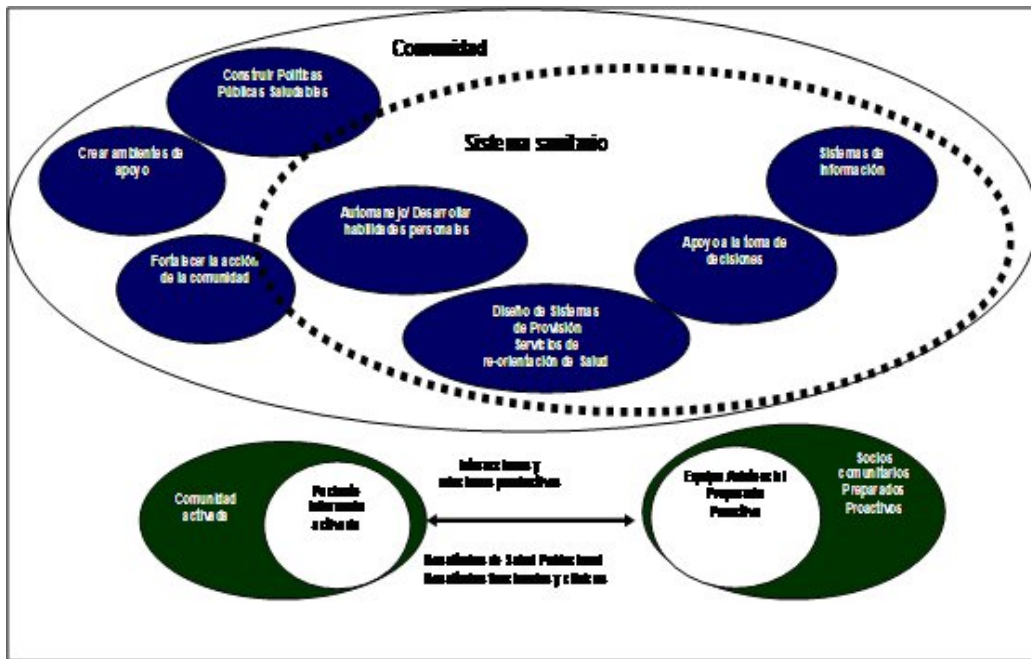


Figure 2. The Expanded Chronic Care Model. Source: Ministry of Health: Government of British Columbia. Expanded Chronic Care Model



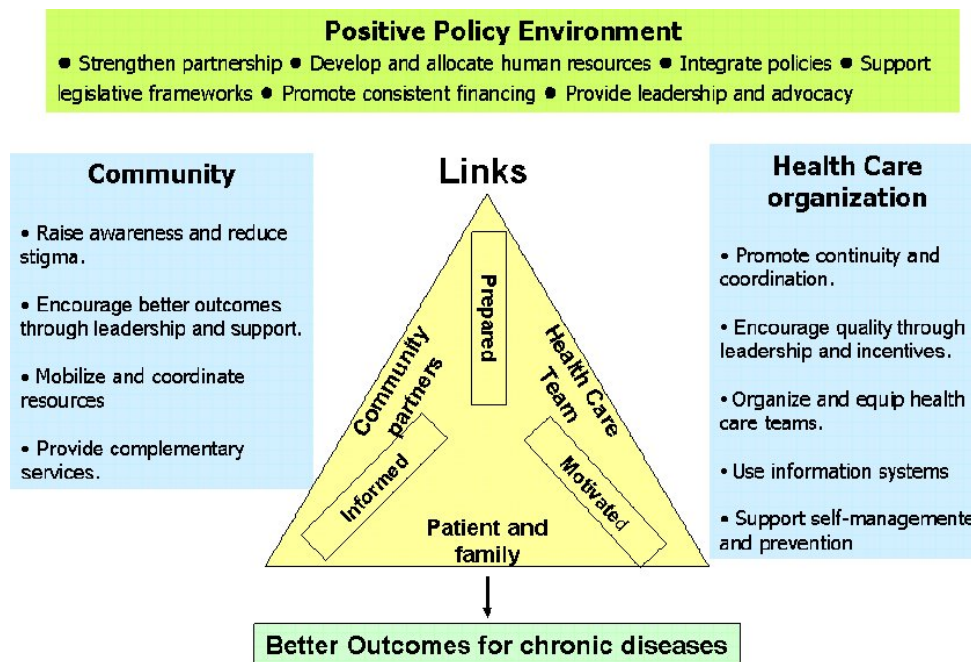
Another popular adaptation of the CCM is the WHO's *Innovative Care for Chronic Conditions (ICCC) Framework* (2, 13). model (Figure 3), which adds a health policy perspective. One of its key aspects is the emphasis it places on the need to optimize the use of available health resources within a particular geographical and population context. Such a focus is crucial in many mid- and low-income countries where multiple provider infrastructures coexist, with evident overlaps and sub-optimal use of services. Table 1 present a summary of the key ideas underlying this model.

Table 1. Key elements of the ICCC model

- Evidence-based decision-making
- Population health focus
- Focus on prevention
- Emphasis on quality of care and systemic quality
- Flexibility/adaptability
- Integration as the hard and fractal core of the model

Figure 3. WHO, Innovative Care for Chronic Conditions Framework, 2002.

Source: WHO. Innovative Care for Chronic Conditions: Building Blocks for Action. 2002



The ICCC makes key complementary contributions to the CCM(14).

- At the macro level, it emphasizes the need for a positive political environment to support the reorientation of services towards the needs of people living with chronic conditions. Solid leadership, inter-sectoral action and partnerships, policy integration, financial sustainability, and the provision and development of qualified human resources represent key elements and constitute a dimension not explicitly dealt with in Wagners original version of the CCM
- At the meso-level, emphasis remains on the role of community actors and the importance of service integration and coordination. Meanwhile, issues related to decision support are included under resource provision, to match the needs in contexts where there is a lack of equipment and medication
- At the micro-level, the dyad established within the CCM between healthcare professional and patient is extended to a triad that now involves the community. The term "activated" in reference to patients is replaced by "motivated and prepared". There exists a broad consensus as to the potential value of the ICCC in low-income countries (15), despite the fact that the evidence which supports model-driven transformational initiatives is very substantially drawn from experiences in high-income countries and from within the conceptual framework of the CCM. The following are a few highlights of such evidence:
- Studies supported through the Institute for Healthcare's *Improving Chronic Illness Care* program (16). illustrate that external guidance and the involvement of multi-disciplinary teams from a wide range of clinical contexts are essential for

successful implementation of the model. Nonetheless, a number of contextual factors limit the success and sustainability of the changes, with the most successful experiences being provided by large, well-resourced teams. Further research is in any case needed as to the critical factors for success and the cultural, organizational, professional and resource-based barriers which influence the practical implementation of the CCM (17,18).

- The presence of one or more of the components of the CCM leads to improved clinical outcomes and to more effective care processes, with most evidence gathered during the management of diabetes, heart failure, asthma and depression (11). Extrapolating results from the application of the model to the management of diabetes at a population level, one might expect a reduction of mortality of more than 10% (19). All the components of the model, except for community support (for which there is a dearth of research), have been associated with clinical and process improvements. The two single most effective components seem to be the redesign of clinical practice and support for self-management (20,21). Although it would be challenging to evaluate the entire CCM as an integrated, multi-component intervention, it has been shown that a greater alignment of primary care with CCM bears a positive relationship with improved process and clinical indicators (22,23).
- Although studies of the economic impact of the CCM are limited, cost savings and cost-effectiveness have been reported for diabetic patients (24,25,26).

CCM and complex chronic cases

Although the holistic and integrated focus of the CCM matches the reality of complex chronic diseases, there is very little evidence on its applicability and effectiveness in this area(6,27).

This is compounded by the absence of clinical practice guidelines addressing multiple conditions or that are designed to enable primary care professionals to consider the individual circumstances and preferences of people who live with multiple chronic diseases (28).

In addition, there is a need for quality standards for services targetting patients with multiple chronic conditions, particularly in relation to the coordination of care, patient and carer education, empowerment in support of self-management and shared decisions, while taking into consideration individual preferences and circumstances.

At the root of the existing knowledge gaps is the fact that patients with poly-pathology are often excluded from clinical trials (29). In the words of Upshur, *what is good for the disease may not be good for the patient* (30).

Against this background, it is not surprising that the reality of complex chronic patients has played a decisive role in the development of another highly significant adaptation of the CCM: The *Guided Care Model*. Under this model, primary care nurses, in coordination with a medical team, take care of the evaluation, planning, care and follow-up of complex chronic patients identified by means of predictive

modeling. Preliminary evidence suggests that this approach leads to improvement in health outcomes, reduced costs, a lower burden on carers and the family, and greater levels of health professionals satisfaction ([31](#), [32](#), [33](#), [34](#)).

Stratification of risks and case management

Risk stratification means the classification of individuals into categories in accordance with their probability of suffering events associated with the deterioration of health, almost always involving the consumption of some type of resource.

The most widely used approach to stratification is known as Kaiser's Pyramid (Figure 4), developed by Kaiser Permanente in the United States to categorize patients into three levels of intervention depending on their level of complexity. At the bottom of the pyramid, Kaiser places healthy members of the public for whom prevention and early diagnosis of disease are the priorities. At the second level, where patients have some form of chronic illness, the emphasis shifts to self-management, the appropriate administration of medication and health education. At the third level, patients identified as complex (3 to 5% of the total) are assigned care plans guided by *case management* efforts designed to reduce inappropriate use of specialist services and to avoid hospital admissions.

Some European public health systems, notably the NHS (National Health Service) in Britain, have applied the Kaiser model in their contexts, documenting important gains in efficiency ([35](#), [36](#), [37](#), [38](#)).

The method used to identify patients with complex diseases varies from model to model. Kaiser Permanente and the NHS's *Evercare* model (see details below) are based on eligibility criteria ([39](#)) while others follow predictive modeling ([40](#)) using a wide range of methods such as *Adjusted Clinical Groups-Predictive Modeling (ACGs-PM)*, *Diagnostic Cost Groups (DCGs)*, *Patients at Risk of Re-Hospitalization (PARR 1 and 2)* and the *Combined Predictive Model (CPM)* ([41](#)).

Figure 4. Kaiser Permanente risk stratification pyramid

Regardless of the approach, the initial step is the collection and analysis of demographic, clinical or cost databases to establish, for a given individual or group of individuals, the risk of suffering a specific illness or an event associated with deterioration in their health ([42](#)).

The event most frequently measured is unscheduled hospital admission, although many others may be employed, such as emergency room visits, drug costs and loss of independence. Stratification can also be performed on the basis of the different prevalence among different populations of risk factors based on unhealthy lifestyles ([43](#)).

The risk stratification technique arose from economic reasons, as insurance

companies started to use it to create different products or premiums according to the risk profile of their clients, while avoiding the introduction of models that reject individuals based on previous conditions. In national health systems, risk adjustment and stratification allows for the differential allocation of health services and activities (preventive, corrective or compensatory) and resources, aiming to avoid critical system overload. In sum, risk stratification models enable the identification and management of individuals who require the most intensive actions, such as elderly patients with multiple complex conditions. In these cases, in particular, stratification seeks to avoid unscheduled hospital admissions(44), to optimize resource allocation (45), to promote patient self-management(46), to prioritize the intensity of interventions in all settings(47) and can even be used for the selection of participants in clinical trials (48) .

Although the increasingly widespread application of electronic health records is facilitating risk stratification, the availability of precise information with low rates of data loss is still difficult to achieve in most settings. In many cases, resources must be invested in data transformation for analytical purposes. In others, the classification of illnesses is a common and major source of distortion. Misclassification, for instance, has been described in up to 30% of patients using the International Classification of Diseases (ICD) codes (49) .

There are problems arising from the complex condition itself. Co-morbidity is generally assessed using scales that in some way add up the number of illnesses suffered by an individual, with weighting based on severity, such as the Charlson Index(50)(Chapter 3). Some groups have proposed the selection of complex patient groups by means of associations of specific illnesses (51) although others claim that specific disease combinations are of lesser relevance than the burden of co-morbidity (52) .

Stratification by fragility or illness has also proved useful during natural disasters, such as Hurricane Katrina in New Orleans. Although evacuation strategies stratified by level of economic income were applied, the elderly or chronically ill within each social stratum had fewer options for evacuation than healthy people(53).

Stratification is also fueling the increasing interest in case management, a concept that has its origins in the care of non-institutionalized psychiatric cases in the USA during the 1950s. Case management is a complex intervention generally led by nursing staff, which covers a wide range of interventions including patient identification, the evaluation of problems and needs, planning of care in accordance with such needs, coordination of services, and review, monitoring and adaptation of the care plan. Case management is usually promoted either as a key component or as complement to other elements within multi-component approaches (54,55,56,).

Evercare is the cornerstone of one of the most widespread care coordination programs in the United States, with more than 100,000 individuals currently signed

up across 35 states (57). Its basic principles are:

- Individual whole-person approach to elder care is essential, to promote the highest level of independence, well-being and quality of life, and to avoid adverse effects from medication (with emphasis on poly-pharmacy)
- The principal provider is the primary care system. The best placed professional to implement the plan is a community-based nurse acting as clinical agent, partner, patient educator, coordinator and counselor. Only a third of work time is dedicated to direct patient care(58)
- Care is provided in the least invasive manner and context
- Decisions are supported by data recorded using advanced technological platforms

The first step in the model is identification of high risk elderly patients, for whom an individual care plan is devised. Advanced primary nurses are then allocated a list of patients whom they regularly supervise. They are responsible for providing additional care, including admissions to nursing homes or hospitals.

Under the *Evercare* model, nurses direct and provide care, with the emphasis on psychosocial well-being. Participating physicians must have experience and skills in geriatrics, in particular in the care of fragile individuals. Transfer of care is minimized, and the proportion of care received at nursing homes increased. Early detection and surveillance programs are applied, with teams acting as the patient's representatives, in an attempt to obtain the maximum benefit in care from their medical insurance. The family is involved in patient care, with intense and consistent communication among family, professional team and nursing staff.

An evaluation of the system has demonstrated reductions of 50% in hospital admissions rates, without an increase in mortality, with cost savings and high levels of satisfaction (59).

In light of this success in the USA, in 2003 the British Department of Health decided to pilot an implementation of the *Evercare* model at 9 Primary Care Trusts (60). A preliminary analysis identified a high-risk population including individuals with two or more hospital admissions over the past year. This group represented 3% of the population aged over 65, but accounted for 35% of unscheduled admissions for that age band. Surprisingly, many of these patients were not actively being dealt with by the system: only 24% were registered as cases by the district nurses, and only one third were known to social services. Curiously, 75% of the highest-risk population lived in the community, and only 6% and 10% in residential homes and nursing homes respectively. The use of an adapted version of Evercare with a community focus in the NHS, and the differences between the healthcare contexts in the US and the United Kingdom, brought about very different results. A formal evaluation through pilot experiments did not show a reduction in urgent hospital admissions, average hospital stays and mortality, underscoring how sensitive these models could

be to modifications or to differences in health care context (61).

What do we need to know about complex chronic patient management models?

Although there is growing evidence of the effectiveness and efficiency of the interventions related to chronic care management (7,11,14, 62,63,64,65,66,67,68,69) (Table 2), there is little specifically related to the impact of care models for the management of different combinations of complex diseases.

Some disappointing results from the application of the *Evercare* model in the British NHS, along with somewhat promising new evidence in support of case management of vulnerable elderly people (70, 71, 72, 73) underscore the need for further efforts to understand the role of care models for the management of multiple chronic diseases (74). Such efforts should focus on:

- The applicability and impact of different models in diverse contexts
- The development of a consistent language for the different elements in the models
- Standardization of interventions
- Comparative evaluation of the benefits of multiple vs. isolated interventions
- Implementation strategies to facilitate rapid and successful implementation and dissemination
- Their economic impact and efficiency

Table 2. Effective interventions in the management of chronic patients (produced by the authors) (7,11,14, 62,63,64,65,66,67,68,69).

What innovative strategies are required to fill the gaps in our knowledge?

Views on innovation in the field of chronic disease management models vary between two extremes, from the most optimistic forecasts as to their impact (75): (reduction in mortality and resource utilization, with net savings to the system) to the more skeptical, even questioning whether they are worthwhile (76).

As noted above, there is evidence supporting mostly the effectiveness and efficiency of individual interventions (77, 78, 79, 80, 81, 82, 83, 84), but still lacks standardization in almost all aspects of such interventions. Some prestigious organizations have proposed the use of a standard taxonomy (85), and there are projects aiming to enrich this, with the emphasis on multiple conditions (86).

Cooperation, especially across institutional, national and cultural boundaries, is essential to avoid overlapping efforts, to encourage a public debate and to promote effective policy change. New technologies could play an important role, not only to facilitate meetings and communication across long distances, but also to promote the design and implementation of multi-centric studies using standardized measurements.

Although the context for transformative efforts is highly favorable, bringing about large scale shifts in the health system to meet the challenges posed by complex chronic diseases will demand planning, change management and concerted efforts at all levels within the health system.

For any meaningful change to occur, policy makers, funders and health care managers would need to view the sector with new eyes and understand that the playing field now involves complex adaptive systems that have rendered traditional solutions irrelevant. Health professionals and patients cannot be considered any longer as standardizable and predictable components of a depersonalized system.

The complexity of the desired system change can be better illustrated by means of an example. Studies indicate that 76% of hospital readmissions are avoidable(87) within 30 days of discharge. This represents 13% of admissions to a modern-day hospital, a high share of which are complex chronic high-flying patients (Chapter 3).

The scientific evidence indicates that this situation could be rectified through a reduction in complication rates during hospital stays, improvement of communication in the hospital discharge process, closer monitoring and active participation of the patients at home, and better communication and cooperation between hospital and primary care following discharge. These outcomes could be easily achieved by means of optimal continuity of care resulting from integrated care processes that guarantee that patients remain engaged and monitored following discharge, and that managers and professionals work seamlessly across the hospital-community divide (Chapter 6). Unfortunately, most systems around the world continue to operate under highly centralized policies and procedures that nurture a traditional acute care model in which hospitals rule over a fragmented ecosystem of services.

With the impending pandemic of chronic diseases, and with the new challenges created by complex cases, it is imperative to muster the levels of leadership and commitment to change, and to abandon the usual linear process of planned change that pervades most systems (Figure 5).

**New way of working
the health sector**



change

Perceived need for integrated in



The linear process of planned change

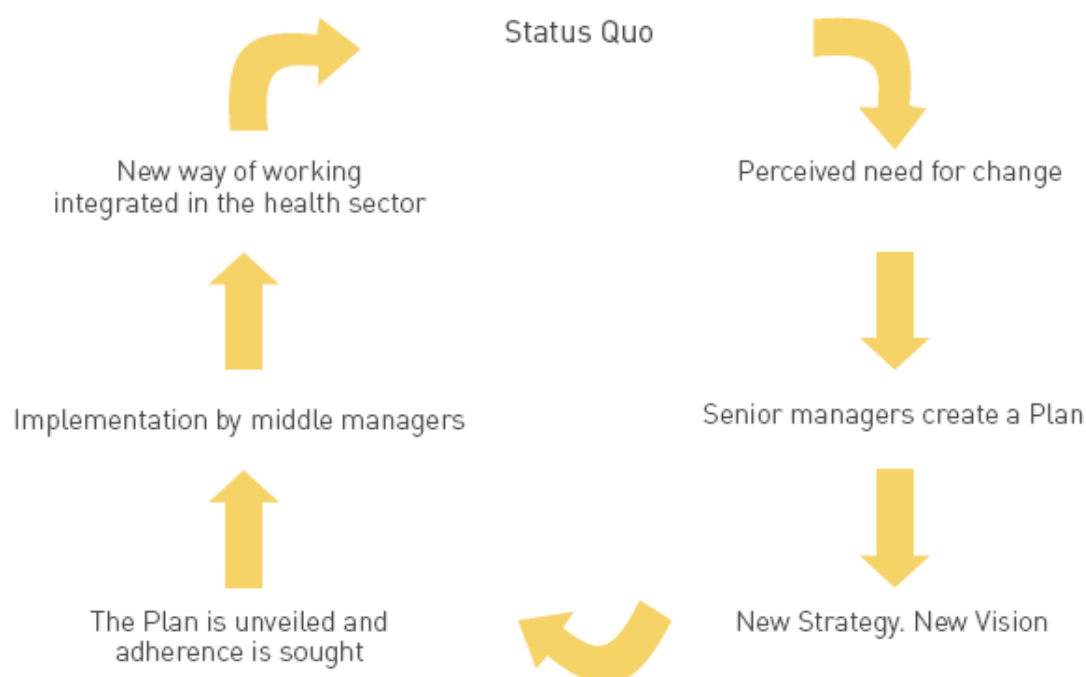


Figure 5. Adapted from "Planned Change" (88)

Times have changed. This highly prevalent planning approach reflects an excessively simplistic vision of the way organizations work today. Although it is applied with the best of intentions in an attempt to reorganize the sector on the basis of hierarchy and linear top-down planning, it is outdated, as it reflects the conditions of an era of management derived from the industrial age, with central managers at an organization defining strategy, creating structures and systems to influence what have been called "organization men"(89).

It is a philosophy that expected a high degree of conformism from its human resources, what has for some time not corresponded to the situation in the health sector, where health professionals and local administrators are increasingly alienated and disconnected from the central management and policy making engines of the system.

Nowadays, change will only be possible through local leadership and enthusiastic participation of health professionals, administrators and the public within the network of care. This calls also for greater sophistication in the management/planning of the system to enable professionals and users to play a much more strategic role in the development and refinement of models that match the needs of people living with multiple chronic diseases. This is clearly a complex cultural change for which there is no magic wand.

As with any other complex system, progressive steps will be needed to re-build the system from the bottom up, while drawing on the intellectual capital of front line professionals, administrators, patients and their loved ones. In fact, it has been

shown that the most substantial and sustained changes have occurred at those organizations which allow for bottom-up change instigated by frontline users, professionals and managers (90).

As suggested above, policy makers must devote more efforts to enabling those working at different parts of the organization (primary and hospital care in particular) to create new ways of working together and to generate communities of practice that spur organizational change. The idea is to promote the entrepreneurship among professionals and local administrators rather than expecting them to implementing the scripts designed by those "high up".

This more decentralized form of leadership does not mean sacrificing the benefits achieved over recent years through direct, centralized management. Nor does it mean a return to the past, to a system in which professionals are not accountable and do not need to report back. In a decentralized system, central policy makers and managers should act and be perceived as motivators, promoters of interrelationships at all levels and network facilitators. One of their main roles in a modern system should be the reinforcement of incentives to encourage local teams of health professionals, administrators and members of the public to experiment with improvements of their own devise, facilitating the availability of resources, analyzing and comparing results and disseminating lessons learnt across other teams within the network.

Another key role for central policy makers and managers could be the creation of mechanisms to support management training and the promotion of local leadership. Local managers need to know, among other aspects, how to motivate teams, build networks, involve the community in change management, and harmonize local initiatives with the general strategies pursued by the organization at large. In the Basque Country (Spain), for example, an organization has been created to fulfill this role. This organization, known as O+Berri, has as one of its main functions the promotion of best practice communities throughout the organization. In this regard, the agency also promotes connectivity among different best practice communities, while assisting sector managers in analyzing trends to optimize their strategies for the dissemination of innovations and policies throughout the system.

The strength of this more decentralized form of leadership and administration lies in taking advantage of the intellectual capacity of the network and abandoning the false illusion that it is possible to devise one single operational model for an entire region or country. Within such a system, the differences that exist across organizations should be viewed as a strength, not as a weakness, with leaders at all levels relentlessly pursuing innovative ways to facilitate and enable improvements in context that are more receptive to such changes thanks to their collective effort and commitment.

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Comments to the whole document

- 20 Feb 2010 02:21 [Rodrigo Gutiérrez](#) commented, on

Al respecto de los diferentes modelos y enfoques expuestos, que se han venido aplicando en el abordaje de las enfermedades crónicas, por si lo estimáis conveniente, os apporto una cita literaria del escritor canadiense **Robertson Davies** (1913-1995) de su novela "El mundo de los prodigios":

"No nos es posible saber ni la calidad ni los resultados de nuestros actos, salvo de un modo sumamente limitado. Todo lo que podemos hacer es intentar tener toda la certeza que podamos en aquello que hacemos, al menos en la medida en que guarda relación con nosotros mismos."

- 8 Feb 2010 18:24 **Francisca Dominguez Guerrero** commented, on

LOs apartados, contenidos y redacción de capítulo me parecen buenos te dan una visión global de la situación

Francisca Dominguez Guerrero

francisca.dominguez.sspa@juntadeandalucia.es

(Este está supongo que por error situado como comentario a la sección en la que se incluye la referencia de Creative Commons)

Comments by section

[Vignette: How it could be](#)

- 27 Mar 2010 19:01 [Richard Smith](#) commented, on

I've made a few minor stylistic changes, but this doesn't seem to me to be about the future. This is all happening now--supported, indeed, by technology that records all the patients issues and values. But technology isn't mentioned.

[Summary](#)

- 27 Mar 2010 19:17 [Richard Smith](#) commented, on

I've made only very minor edits.

[What do we know?](#)

- 22 Feb 2010 23:22 [Sara Kreindler](#) commented, on

Re: "Aunque diversas evaluaciones tienden a desgajar los componentes del modelo, la filosofía del mismo se corresponde con una intervención integrada multicomponente. Así Parchman y colaboradores han evidenciado que en el nivel primario de atención un mayor grado de adecuación al CCM se relaciona positivamente con mejores indicadores de proceso y resultado."

I agree that the philosophy of an integrated, multi-faceted approach is integral to the CCM. However, this philosophy need not imply that every possible type of intervention is equally effective. It is still valuable to ask which components are necessary, sufficient, or most important to a multi-faceted strategy. This is a particularly important question for organizations who may be unable to implement all of the model's components simultaneously, and need guidance on which interventions to introduce first, next, or (perhaps) not at all. Some interventions (e.g., delivery system redesign) may have positive effects all by themselves, whereas others (e.g., clinical information systems) may be beneficial only when used to support and facilitate other interventions.

The two studies by Parchman et al. that are cited here avoided differentiating between the effects of different components of the CCM. However, two more recent studies by Parchman and Kaissi did differentiate among components. These studies found that different CCM components were correlated with different outcomes (HbA1C control and self-management behaviour), and clinical information systems were *inversely* related to both of these desirable outcomes. Since these studies were cross-sectional, they do not lend themselves to firm conclusions. However, they do

point to the continuing relevance of research assessing the contributions of specific elements of the CCM (both separately and in various combinations).

Parchman M, Kaissi AA. [Are elements of the chronic care model associated with cardiovascular risk factor control in type 2 diabetes?](#) Jt Comm J Qual Patient Saf. 2009 Mar; 35(3): 133-8.

Kaissi AA, Parchman M. [Organizational factors associated with self-management behaviors in diabetes primary care clinics.](#) Diabetes Educ. 2009 Sep-Oct; 35(5):843-50.

Hope this comment is useful to you, and thank you for your extensive work on this important topic.

Sara

P.S. The English translation of this chapter does not seem to be complete - hence I am reading in Spanish but commenting in English.

CCM and complex chronic cases Normal 0 21 fals

- 31 Mar 2010 08:33 [Richard Smith](#) commented, on

I've made minor language edits.

I didn't add the considerable extra information on Guided Care Model as it already seems to have been taken in.

Nevertheless, Tracey should be included as a contributor.

- 23 Feb 2010 10:04 **Tracy Novak** commented, on

Comments to Multiple Chronic Disease-Collaborative Book with OPIMEC. For Chapter 4, CCM and Complex Chronic Cases section

Tracy Novak's comments submitted in place of Chad Boulton

In Guided Care, a registered nurse, who is based in a primary care office, works closely with 3-4 physicians and health information technology to provide state-of-the-art care for 50-60 chronically ill Medicare beneficiaries. Following a comprehensive assessment and planning process, the Guided Care nurse educates and empowers patients and families, monitors their conditions monthly, and coordinates the efforts of health care professionals, hospitals and community agencies to be sure that no important health-related need slips through the cracks.

[Boyd CM et al. Guided Care for Multimorbid Older Adults. Gerontologist 2007;47(5):697-704.]

Cluster-randomized Controlled Trial (cRCT) of Guided Care

Encouraged by results of a 1-year pilot, the Lipitz Center secured grant funding from the John A. Hartford Foundation, the Agency for Healthcare Research and Quality

(AHRQ), the National Institute on Aging (NIA), and the Jacob and Valeria Langeloth Foundation in 2005 to conduct a cRCT of Guided Care in 8 community-based primary care practices in the Baltimore-Washington DC region. The primary objective of this cRCT is to evaluate the effects of Guided Care on the quality, efficiency and clinical outcomes of health care for chronically ill older patients and their informal caregivers. The trial began in 2006 and was scheduled to end in June 2008, but was extended through June 2009.

Preliminary data indicate that Guided Care:

- **Improves the quality of patients' care.** After six months, Guided Care patients were twice as likely as usual care patients to rate the quality of their care highly. [*Boult C et al. Early Effects of "Guided Care" on the Quality of Health Care for Multimorbid Older Persons: A Cluster-Randomized Controlled Trial. J Gerontol Med Sci 2008;63A(3):321-327.*] After 18 months, Guided Care patients were more than twice as likely as usual care patients to rate the quality of their care highly. [*Boyd CM et al. The Effects of Guided Care on the Perceived Quality of Health Care for Multi-morbid Older Persons: 18-Month Outcomes from a Cluster-Randomized Controlled Trial. J Gen Intern Med. Published online December 22, 2009.*]
- **Reduces the use and cost of expensive services.** After the first eight months of the study, Guided Care patients experienced, on average, 24% fewer hospital days, 37% fewer skilled nursing facility days, 15% fewer emergency department visits, and 29% fewer home health care episodes, as well as 9% more specialist visits (not statistically significant). Based on current Medicare payment rates and Guided Care costs, these differences in utilization produce net savings for health care insurers. [*Leff B et al. Guided Care and the Cost of Complex Health Care. Am J Manag Care 2009; 15(8):555-559.*]
- **Reduces family caregiver strain.** After six months, the Guided Care caregivers' "strain" and "depression" scores were lower than the comparison (usual care) caregivers' scores, especially among caregivers who provided more than 14 hours of weekly assistance. [*Wolff JL et al. Caregiving and Chronic Care: The Guided Care Program for Families and Friends. Journal of Gerontol Med Sci 2009;64A(7):785-791. Wolff JL et al. Effects of Guided Care on Family Caregivers. Gerontologist 2009 Epub Aug 26.*]
- **Improves physicians' satisfaction with chronic care.** Compared to the physicians in the control group, the physicians who practiced

Guided Care for six months reported significant positive effects on communicating with patients, communicating with family caregivers, educating family caregivers, motivating patients to participate in their care, referrals to community resources, and knowing patients' medications. [Boult C et al. *Early Effects of "Guided Care" on the Quality of Health Care for Multimorbid Older Persons: A Cluster-Randomized Controlled Trial. J Gerontol Med Sci 2008;63A(3):321-327.*]

Recognition

Guided Care is the winner of the **2009 Medical Economics Award for Innovation in Practice Improvement** cosponsored by the Society of Teachers of Family Medicine, the American Academy of Family Physicians, and *Medical Economics* magazine.

Guided Care also won the American Public Health Association's **2008 Archstone Foundation Award for Excellence in Program Innovation**. The Award, established by an endowment from the Archstone Foundation, recognizes one innovative model of health care for older Americans each year.

Guided Care is a finalist for the **British Medical Journal's Getting Research into Practice Award** and for three **Case In Point Platinum Awards** for Case Management Provider Program, Integrated Case Management Program, and Overall Case Management Program.

Ease of Adoption

Guided Care is a well-defined model of care that primary care practices can fully implement in six-to-nine months. Implementation involves hiring a registered nurse who has completed a course in Guided Care Nursing and integrating the nurse into the practice. Several forms of technical assistance are available to practices that wish to adopt Guided Care, including a detailed implementation manual,^{*} an accredited online course in Guided Care Nursing, an accredited online course for physicians and other practice leaders, and guidance in selecting health information technology. Additional assistance will also be available to medical practices that participate in the upcoming national Medicare Medical Home Demonstrations.

For more information, visit <http://www.GuidedCare.org> for details about Guided Care and visit <http://www.MedHomeInfo.org> for details about technical assistance on becoming a Guided Care medical home plus other assistance for the Medicare Medical Home Demonstration.

^{*} Boult C et al. "Guided Care: a New Nurse-Physician Partnership in Chronic Care."

Springer Publishing Co., New York 2009. For details, visit <http://www.SpringerPub.com/GuidedCare>.

Stratification of risks and case managementRisk st

- 31 Mar 2010 09:08 [Richard Smith](#) commented, on I agree with Rafael, but I decided against restructuring the article.

- 31 Mar 2010 08:37 [Richard Smith](#) commented, on

1. A few language edits

2. The references to Kaiser in the NHS don't cover case management but a comparison between the Kaiser system and the NHS. So I've removed them but added a reference specifically on case management in the NHS

3. I've suggested some changes of meaning at the end of the section, but I will discuss these with Alex before including them

- 9 Feb 2010 21:49 [Rafael Pinilla](#) commented, on

La Figura 4 está repetida.

La transición de estar hablando de modelos de atención al concepto de estratificación de riesgos crea cierta confusión ya que da la impresión de que la estratificación de riesgos sea el modelo de atención a crónicos de Kaiser permanente.

What innovative strategies are required to fill th

- 31 Mar 2010 09:14 [Richard Smith](#) commented, on

I incorporated the words of Rafael, and he should be included as a contributor.

Very few changes.

It's a pity that there is a figure showing the "old model" but not one showing the "new model."

Might there be evidence for the new model?

- 9 Feb 2010 22:17 [Rafael Pinilla](#) commented, on

El contenido de esta sección es repetido de la anterior y en cualquier caso parece bastante pobre. Tras la revisión que se hace en el capítulo no hay duda de que los modelos de atención a crónicos, entendidos como un conjunto de elementos integrados para el cambio en las prácticas de atención a la enfermedad crónica han sido muy importantes para promover una serie de cambios necesarios. Sin embargo,

cabría decir también que todavía no existe el modelo perfecto a imitar. Y quizá no exista nunca. Entonces, limitarse a pedir más diversidad de experiencias, más estudios de impacto económico, y los demás puntos parecen demasiado obvios y poco operativos. Creo que sería importante hacer un llamamiento también a una mayor innovación con búsqueda activa de nuevas ideas a incorporar a los modelos, con formas de evaluación más atrevidas que permitan aprender más rápido (el modelo de ensayo clínico es perfecto para aislar efectos simples, pero no sirve para aprender de experiencias complejas), incluyendo la evaluación participativa que tenga en cuenta los puntos de vista y expectativas de profesionales y usuarios. En contextos complejos las técnicas de investigación cualitativa pueden desbrozar el camino con más eficacia que las técnicas cuantitativas que siempre padecerán del sesgo de dejar fuera aspectos relevantes de los que no se tienen datos. Lo que se echa en falta es espíritu vanguardista para ir más allá de los modelos existentes. Posiblemente hacen falta cambios más radicales (en el sentido de ir a la raíz) en las formas culturales de acometer la responsabilidad de las personas sobre su salud y enfermedad. Falta una apuesta decidida por la capacidad de las personas para adquirir conocimiento, cambiar sus comportamientos y permitirles elegir libremente.