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HEALTH SYSTEMS AND POLICY ANALYSIS

POLICY BRIEF

How can chronic disease management programmes operate across care settings and providers?

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World Health Organization
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EVIDENCE FOR DECISION-MAKERS

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This policy brief, written for the WHO European Ministerial Conference on Health Systems, 25–27 June 2008, Tallinn, Estonia, is one of the first in what will be a new series to meet the needs of policy-makers and health system managers.

The aim is to develop key messages to support evidence-informed policy-making, and the editors will continue to strengthen the series by working with authors to improve the consideration given to policy options and implementation.

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Key messages

- Chronic diseases affect all countries, and the increase in their prevalence is largely attributable to changing demographics, increased life expectancy, changing lifestyles, better disease management and treatment and a better understanding of the factors that cause poor health and disease.
- In the WHO European Region, 86% of deaths are attributable to chronic diseases. With 50–80% of all global health spending related to chronic diseases, health systems that maintain current disease management practices cannot afford to continue caring for the escalating numbers of people with chronic diseases.
- Chronic disease management is a systematic approach to coordinating health care interventions across levels (individual, organizational, local and national), and good evidence indicates that such coordination across care settings and providers is more effective than single or uncoordinated interventions.
- Policy options to manage chronic diseases can be pursued via different avenues but can be broadly divided into individual, health delivery systems and system-wide approaches. Interventions in European countries generally focus on specific diseases rather than determinants and are often insufficiently coordinated.
- Interventions such as ranking people according to their risk, multidisciplinary teams and supporting self-management have potential but only if policies, structures and financial and other incentives support people in working together.
- There is no correct approach to chronic disease management. Evidence throughout the world suggests that, to be successful, policy-makers should consider:
    - providing strong leadership and vision at the national, regional or organizational level;
    - ensuring robust collection of information and data-sharing among all stakeholders;
    - providing care based on people’s needs and an ability to identify people with different levels of need;
    - targeting key risk factors, including widespread disease prevention initiatives;
    - supporting self-management and empowering people with chronic diseases; and

- involving a wide range of stakeholders such as individuals, the voluntary and community sector, clinicians, private industry and public services.

Executive summary

Policy issue

Improved health care, lifestyle changes and changing demography mean that more people are living longer and often with chronic diseases that cannot currently be cured. Advances in health care that support longer life are to be celebrated, but health care systems cannot cope with the increasing incidence and cost of chronic diseases. Across low-, medium- and high-income countries, 50–80% of the health budget is spent on chronic diseases. Without intervention, this will continue to rise, as risk factors such as tobacco use, unhealthy diet and lack of physical activity remain prevalent.

Chronic diseases cause 86% of deaths across the 53 Member States in the WHO European Region. Countries have set up interventions to reduce the social, health and financial effects of chronic diseases. However, when used in isolation, these interventions may have limited long-term impact, especially given the need to tackle inequality in health and problems with transferring initiatives across the varied contexts of the Region.

Chronic disease management is a systematic approach for coordinating health care interventions and communication at the individual, organizational, regional or national level. Evidence indicates that coordinated approaches are more effective than single or uncoordinated interventions, but the best strategies for integrating interventions across different providers, regions and funding systems remain uncertain.

Potential policy approaches

There are several approaches to policy interventions for coordinating disease management, including methods that focus on:

- the level of individuals
- health delivery systems or selected components
- a system-wide or population health approach.

Initiatives focusing on individuals, such as those based on psychological or behavioural theory or simple case management, may produce short-term clinical gains and can target people who are currently most severely affected. However, integrating disease prevention and treatment across different funding systems and settings is difficult when policy has an individualistic focus.

Delivery system approaches, such as the chronic care model first developed in the United States of America, use information systems, new staff roles, organizational design and self-management education to identify and target the significant components of care. Evidence demonstrates that these approaches can reduce the potentially superfluous use of health care services and improve health outcomes, but implementing such programmes widely can be very resource-intensive and their effectiveness varies depending on resources, motivation and incentives.

System-wide approaches build on delivery system methods but focus more fully on the policy, structures and community resources needed to implement long-term change. There is often a strong focus on disease prevention and health promotion, and the aim is to operate across benefit programmes, care settings and providers. There are few well-evaluated examples of this approach, but WHO and the European Strategy for the Prevention and Control of Noncommunicable Diseases support a cross-system preventive approach.

These approaches are not mutually exclusive and can be used simultaneously to create a strategy appropriate to the unique circumstances of different contexts.

Implementing change

Many approaches to coordinating chronic disease management have been implemented. These can be differentiated based on the locus of control (government, professional bodies or commercial entities), the level of integration (single versus multiple care settings and providers), funding (public, private and part payment), methods (regulation, risk stratification, case management, decision support and supporting self-care) and target audience (whole population, service users, professionals, institutions and governments).

No one correct approach would be appropriate for or could be successfully implemented across all 53 European countries. The narrative synthesis of the research literature conducted here suggests that operating effectively across settings requires: providing strong leadership at the national, regional or organizational level; ensuring robust collection of information and data-sharing among all stakeholders; providing care based on people's needs and an ability to identify people with different levels of need; targeting key risk factors, including widespread disease prevention initiatives; supporting self-management; and involving a wide range of stakeholders including individuals, the voluntary and community sectors, private industry and public services.

Perhaps most importantly, the evidence suggests that chronic disease management will not be routinely implemented across different settings unless all stakeholders have incentives to implement disease prevention and care. Good evidence indicates what works to control and minimize chronic conditions – no matter how large or small the country. The challenge for policy-makers is thus to ensure the best implementation of what works in their context. Policy-makers must therefore identify key stakeholders, ascertain what would motivate them to implement widespread disease prevention and coordinated care and then set up systems that provide those incentives.

Policy brief

Policy issue

Advances in health care and technology mean that people are living longer and sometimes surviving diseases that would previously have been fatal. These advances, coupled with changing lifestyles, have led to a high incidence of chronic disease. Some 86% of deaths in the WHO European Region result from chronic diseases, which consume about three quarters of health care budgets *(1)*. Managing chronic disease is a significant priority for every country that wants to increase the quality of life and reduce the burden on health care systems.

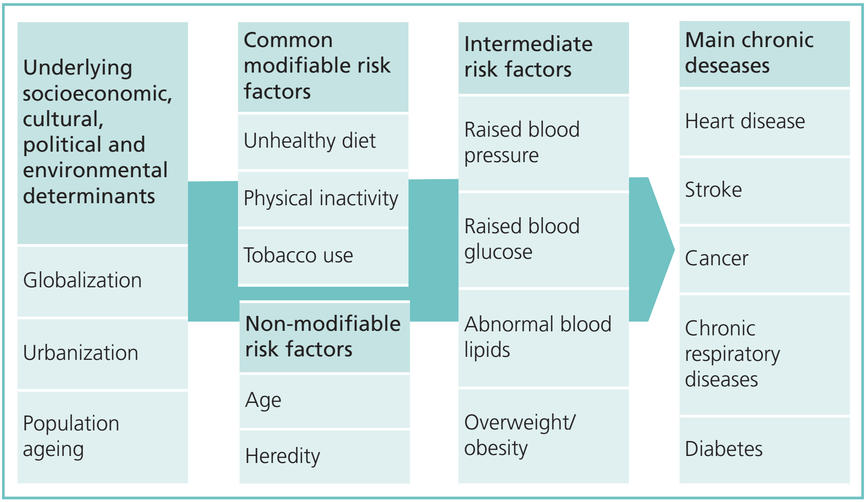
There is considerable evidence about what works to reduce the burden of chronic disease, but less is known about the policies needed to ensure that these interventions are consistently set up and maintained in different settings *(2)*. Every country and region has different requirements, and no one policy option is therefore relevant or appropriate to all systems and contexts. Based on a narrative synthesis of the research literature and considering policy options and services tested in various contexts, this policy brief synthesizes key findings about how chronic disease management programmes can be implemented across different settings, organizations and funding arrangements. Highlighting the most successful components of chronic disease strategies, the aim is to summarize key points so that policy-makers can consider the extent to which these factors are currently operating within their countries or whether and how they could be pursued.

What is chronic disease?

WHO defines chronic diseases as “diseases of long duration and generally slow progression” *(3)*, and the United States Centers for Disease Prevention and Control defines them as “conditions that are not cured once acquired … are considered chronic …. Additionally, other conditions must have been present 3 months or longer to be considered chronic” *(4)*. The most common chronic diseases in the European Region are heart disease, stroke, cancer, respiratory disease, diabetes and mental health problems *(1)*. This policy brief treats cancer as a chronic disease because WHO includes cancer in its predictions and economic calculations. However, it is acknowledged that cancer has a different disease pathway and that some policy options may therefore not be as relevant.

Laboratory, clinical and population-based studies suggest that a few risk factors are responsible for most chronic diseases: unhealthy diet and high energy intake, lack of physical activity and tobacco use. Alcohol intake, environmental pollutants, age and hereditary factors also play a role. These risk factors are the same in men and women and across all regions *(5)*.

Fig. 1. Top causes of chronic disease according to WHO



Source: *Preventing chronic disease: a vital investment. WHO global report (1).*

Chronic disease represents one of the most important challenges facing health care systems. Many people with chronic illnesses survive for a considerable period of time, but they need ongoing care. Risk factors such as obesity, smoking and lack of exercise are prevalent, so without significant and sustained policy intervention chronic disease rates will continue to rise. Chronic disease affects the rich and poor, young and old and women and men. It affects all countries, and 80% of deaths globally from chronic diseases are in low- and middle-income countries. Worldwide, chronic diseases now affect more people than infectious diseases and are responsible for most of the disease burden in Europe (Table 1). Heart disease or stroke is the leading cause of death in all 53 countries in the European Region.

Countries cannot afford the status quo. The costs to health services are too high, and lost productivity has considerable economic costs *(6)*. From 2005 to 2015, for example, projected forgone national income due to heart disease, stroke and diabetes in the Russian Federation will amount to an estimated 300 billion international dollars*(1)*.[1]

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[1] An international dollar is a hypothetical currency that is used as a means of translating and comparing costs between countries using a common reference point, the United States dollar. An international dollar has the same purchasing power as the United States dollar has in the United States. This is also called purchasing power parity.

Table 1. Burden of disease and deaths from noncommunicable diseases in the WHO European Region by cause, 2005

Groups of causes	Disease burden		Deaths	
	DALYs[a] (thousands)	Proportion from all causes (%)	Number (thousands)	Proportion from all causes (%)
Selected noncommunicable diseases				
Cardiovascular diseases	34 421	23	5 067	52
Neuropsychiatric conditions	29 370	20	264	3
Cancer (malignant neoplasms)	17 025	11	1 855	19
Digestive diseases	7 117	5	391	4
Respiratory diseases	6 835	5	420	4
Sense organ diseases	6 339	4	0	0
Musculoskeletal diseases	5 745	4	26	0
Diabetes mellitus	2 319	2	153	2
Oral conditions	1 018	1	0	2
All non-communicable diseases	**115 339**	**77**	**8 210**	**86**
All causes	**150 322**	**100**	**9 564**	**100**

[a] DALYs: disability-adjusted life-years.

Source: *Preventing chronic disease: a vital investment. WHO global report (1).*

The costs and effects of chronic disease are significant, but chronic disease can be reduced or onset prevented until much later in life. Making changes does not have to be expensive, and the means of preventing and controlling most chronic diseases are already well known. These range from interventions that target individuals or families (such as providing information leaflets and proactive telephone support), initiatives aimed at health professionals (such as decision support tools, training for new roles and multidisciplinary teams), organizational change (such as workplace education and intersectoral work) and strategies aimed at populations (such as health promotion advertising and identifying people at different levels of risk) *(7)*. Rather than focusing on certain interventions alone, chronic disease management is a way of coordinating care and ensuring that people gain the support they need at an appropriate time. Evidence suggests that planned, proactive care can lead to a better quality of life and improved health outcomes for people with chronic disease *(8–10)*.

What is chronic disease management?

The Kaiser Permanente care triangle has commonly been used to conceptualize chronic care at three main levels (underpinning by population-wide disease prevention and health promotion):

- supporting self-care for people with a chronic disease who are at low risk of complications and hospitalization;
- disease management for people who need regular routine follow-up and are at high risk; and
- case management for people with complex needs who are high-intensity users of unplanned secondary care.

For this brief, disease management is defined as the coordination of care at all levels.

Disease management programmes organize care in multidisciplinary programmes with many components, using a proactive approach that focuses on the whole course of a chronic disease *(11)*. Chronic disease management includes the coordination of health care, pharmaceutical or social interventions designed to improve outcomes for people and cost–effectiveness. It recognizes that a systematic approach is an optimal and cost-effective way of providing health care *(12)*.

Approaches to policy interventions

Over the past decade, countries throughout the Region have developed policies and legislation to help prevent and control chronic diseases and their risk factors (Table 2). Nevertheless, many of these policies focus on specific diseases such as diabetes, heart disease and cancer, rather than determinants such as weight control and physical activity.

To coordinate chronic disease management across settings and providers, approaches to policy interventions may focus on:

- the level of individuals
- health delivery systems or selected components
- a system-wide or population health approach.

Table 2. Policies, programmes and legislation relevant to noncommunicable diseases in place in 38 European countries responding to a WHO survey, 2005–2006

Topic	National health policy	Specific national programme	Specific act, law, other legislation or ministerial decree
Preventing and controlling non-communicable diseases	28	28	–
Tobacco control	28	25	37
Nutrition and diet	24	20	35
Physical activity	19	17	13
Alcohol control	19	17	28
Hypertension	15	16	–
Diabetes	20	29	–
Heart disease	20	20	–
Stroke	17	14	–
Cancer	23	23	–
Chronic respiratory disease	13	10	–
Other chronic diseases	10	10	–

Source: *Gaining health: the European Strategy for the Prevention and Control of Noncommunicable Diseases (13).*

These approaches are not mutually exclusive and are presented here as a simple framework to assist when thinking about local implementation and resources.

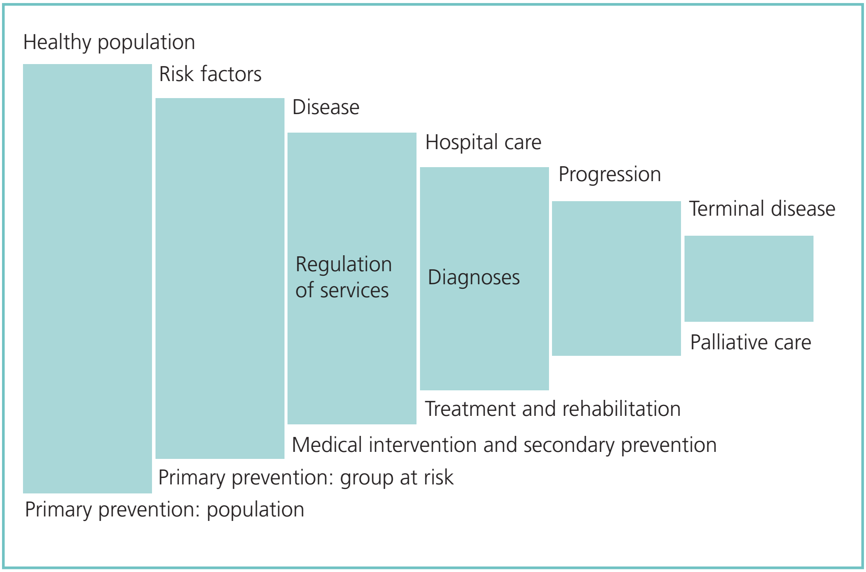
Individual-level initiatives

Interventions at the individual level focus on coordinating care for users of health services or families. These include approaches based on psychological or behavioural theory, some forms of case management and stages of change models. Space precludes an examination of individual-level initiatives, but one example illustrates some of the key themes of these approaches.

The stages of change (transtheoretical) model of behaviour change, which evolved from targeting smoking cessation and drug and alcohol addiction, have been applied to a variety of other types of health behaviour *(14)*. It proposes a process in which individuals progress through various levels: precontemplation, contemplation, decision, action, and maintenance. People at different points in the process of change can benefit from different interventions. These approaches are sometimes associated with a life-course policy that tracks chronic care from the general population to people who develop one or more long-term conditions following exposure to risk factors and then to people who have terminal disease (Fig. 2). This policy approach suggests the need for different prevention schemes, treatment, rehabilitation and palliative care at varying stages of the disease pathway *(15)*.

It is not clear whether such individualistic models are effective *(17)*. Some studies suggest that they can help alter behaviour such as eating habits and exercise *(18)*, but evidence is limited that these frameworks consistently result in real change in such areas as multiple lifestyle changes, mammography

Fig. 2. The life-course approach



Source: adapted from Suñol et al. *(16)*.

screening, treatment adherence or reducing smoking and alcohol use *(19)*. Nevertheless, this may be because the interventions are too short, not well targeted or do not assess the participants' stage of change correctly.

Pharmaceutical companies, workplace initiatives and other companies sometimes implement such options, and there are many examples in the United States. They have also been tested in Europe, including in partnerships between the public and private sector (Box 1). For example, a pharmaceutical company in Italy has been working with the health services to establish a proactive nurse-led care management service based on the stages of change model. Using a web-based decision support tool, specially trained nurses support people with regular motivation and reminders, act as a signposting service to other resources and coordinate care for individual people at general practices *(20)* (Box 1). Systematic reviews of similar interventions throughout the world suggest that proactive individualist support, often by telephone, can improve short-term health gains, but the effects on the use of health services are less certain *(21)*. Telephone care management targeting individuals may not be an option for some countries, as it can be costly to implement and requires some technological infrastructure. There may also be inequity concerning people who can afford telephones and differences in the cultural appropriateness of using telephones.

Individualistic disease management policies can be motivating for families, but studies suggest that individual-level approaches are unlikely to be cost-effective or sustainable on a countrywide or regional basis. Such approaches usually do not take a strategic approach and are unable to reap the benefits of organizing

Box 1. Policy approach focused on the stages of change model

A public–private partnership between the regional government of Puglia and a private-sector organization used a team-based approach, with nurses (care managers), physicians and specialists working together as partners with 1153 service users. The local health authority employed 30 nurses to work in general practices, seeing service users face to face and applying an individualized stage of change model for disease management. The general practitioners received financial incentives for meeting enrolment and assessment targets and clinical outcome indicators.

An eighteen-month observational pre- and post-test evaluation found improved adherence to medication regimens; 66% of participants reported improved general health; 59% reported improved functional ability; and 60% reported an improved relationship with their general practitioner.

This care management model was adapted from the United States (originally based on telephone support) and found evidence that several factors are critical when importing policy options to new regions. The three Ps of successful implementation when transferring policy options were payers, practitioners and participants *(22)*.

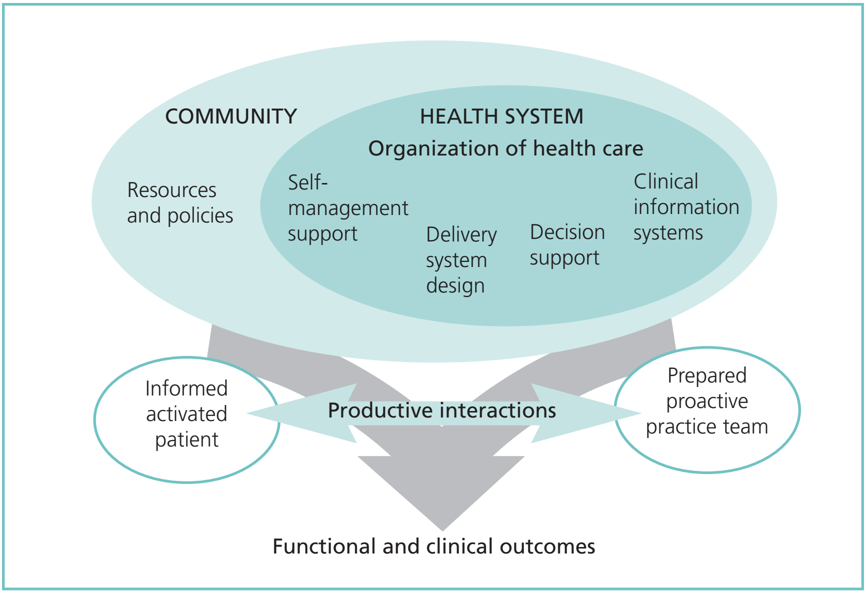
care for a greater number of individuals simultaneously *(23)*. Programmes that target individual needs are important but may be more effective when integrated into a whole-system approach to disease management.

Delivery-level initiatives

Delivery system policy options focus on coordinating chronic disease management through various service delivery components. One of the most widely applied is the generic chronic care model originally developed in the United States. The model suggests that six interdependent components are essential for chronic disease management: health care organization, delivery system design, community resources and policies, self-management support, decision support and clinical information systems *(24)* (Fig. 3). Denmark, England, France, Germany, Ireland, Italy, Scotland, Sweden and Wales have adopted policies based to some extent on this model focused on service delivery *(25)*. The approaches in these countries are very different, but they share an emphasis on disease management at the level of service delivery.

Delivery system policy approaches have been tested at a national level and by local or regional groups operating within a given benefit programme or setting (Box 2). For example, in Germany, physicians initially opposed a chronic care

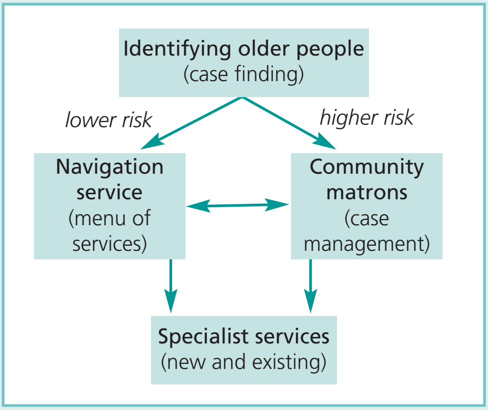
Fig. 3. The chronic care model



Box 2. Example of testing new service delivery options

Areas in England (United Kingdom) have been testing innovative service delivery policy options to support older people with long-term conditions. One local authority (council) led a partnership between health and social service teams and community and voluntary services, including jointly funding and delivering services. The aim is to integrate preventive and specialized care into a coherent service package to help older people remain at home and independent. Key features include proactive identification of service users, specialized services for those at high risk of hospitalization and signposting to other services for those with lower levels of need.

Case-finding tools and referral from health professionals were used to identify older people who may benefit from extra support. Those assessed as being at high risk of hospitalization were signposted to specialist nurses and other services, whereas a navigation service run by the voluntary sector assessed people at lower risk. Specialized preventive services such as preventing falls, assessment for the early stages of dementia, social work teams in hospitals, management of medicines and paramedic admission avoidance teams were also set up (see figure).



The innovative aspects of this model include:

- integration (health and social services working together and the council administering funding);
- substituting skills (using the voluntary sector as navigators);
- substituting the location of care (home- and community-based services);
- segmenting service users into high and lower risk groups; and
- new types of service delivery (navigators and pharmacists visiting people at home).

Twenty-nine similar pilot programmes were run throughout England using national government funding allocated to individual providers who were asked to work as a consortium. The effects on clinical indicators, staff perceptions and service use (including admission rates) were monitored. The initial evaluation findings suggest that the regions that implemented integrated preventive disease management approaches had fewer hospital admissions than did other areas.

The major barrier to this integrated programme was identifying and applying appropriate tools for identifying people and stratifying their risk. Data systems did not enable sharing of health and social care data across organizations, and a list of all people aged over 65 years in the population whose risk of admission could be stratified using algorithms could not be obtained. The services developed individual priority-setting and inclusion criteria, so the implementation of this programme was not as integrated as planned.

framework focused on evidence-based guidelines and data-sharing, but disease-specific programmes are now being implemented *(26)*. Legislation has been introduced to provide incentives for care providers to develop approaches to coordinate care for people with long-term conditions, and new risk-adjustment mechanisms are being tested *(27)*.

In the Netherlands, the government has been implementing components of the chronic care model for at least 10 years (before the model was formally conceptualized). Transmural care programmes aim to bridge the gap between hospital and community care (an intermediate care approach), but some research suggests that this approach is not broad enough to have a long-term impact *(28)*.

The effectiveness of approaches led by the delivery system has been widely assessed, although many studies and reviews focused on examining specific components rather than the policy model as a whole. Studies, mostly observational, have reported better processes, outcomes and costs in organizations adopting new delivery system policies *(29,30)*, but such studies do not determine whether this model is more effective than other approaches or whether anything is lacking.

Some evidence *(31–33)* indicates that policies focused at the level of service delivery may improve the quality of care for people with long-term conditions, but evidence about effects on clinical outcomes is varied *(34)*. Some studies *(35,36)* suggest that policies focused on delivery systems can improve clinical outcomes, reduce the risk of hospital admission and reduce costs. One review *(24)* found that service delivery policies for long-term conditions such as congestive heart failure, asthma and diabetes were associated with reduced health care costs or reduced use of health care services. Nevertheless, there are some dissenting views regarding their effect on clinical outcomes or health care resource use *(37,38)*. Even the most effective policies and interventions based on service delivery policies tend to have modest effects *(39)*.

Several reviews have investigated the most effective components of service delivery policies. One meta-analysis *(40)* found that no single element of the chronic care model was essential for improving outcomes but that changing the design of the delivery system significantly improved processes and outcomes, as did self-management support. On the other hand, the RAND Corporation set up a formal evaluation of the chronic care model with more than 40 organizations in the United States. The evaluators found that this policy option can lead to better processes and outcomes of care, including clinical outcomes, satisfaction and costs *(41)*. Four components of the model were most likely to be associated with sustained change: organizing practice teams, collaborative decision-making with people with long-term conditions, encouraging provider participation in improvement efforts and wider patient education methods. All focused on communication, involvement and engagement – core aspects of policy options that take a population health or system-wide approach. Such findings are important because they attempt to analyse exactly which components of the policy framework may have most benefit and whether the entire model or just some components are necessary.

Much of the research evidence about these frameworks is observational and cannot be used to draw causal inferences. There are trials and reviews of specific policy components, such as patient education or self-management, but few high-quality studies have assessed the effects of the overall framework of focusing policy at the level of service delivery. The few studies that do investigate this area tend to have relatively small numbers of participants, are industry-sponsored or do not investigate health care resource use and costs *(42,43)*. Most evidence is drawn from the United States, although recent studies from Europe support these trends *(25)*.

System-wide initiatives

System-wide policies for chronic disease management build on delivery system methods but focus more fully on the policy, structures and community resources needed to implement long-term change. There is often a heavy focus on disease prevention and health promotion, and the aim is to operate across benefit programmes, care settings and providers. Ratification of the European Strategy for the Prevention and Control of Noncommunicable Diseases *(13)* suggests that intersectoral and system-based approaches are supported in principle. Except for the countrywide integrated noncommunicable diseases intervention (CINDI) programme, there are few well-evaluated examples of this approach (Box 3). It appears that countries may aspire to system-wide approaches, but most are currently implementing service delivery policies *(23,25)*.

WHO’s Innovative Care for Chronic Conditions Framework, which focuses on community and policy aspects of improving chronic care rather than the primary care focus of the chronic care model (Fig. 4), is also a system-wide approach. It suggests that it is important to target disease management at the micro level (individual and family), meso level (health care organization and community) and macro level (policy).

Another system-wide policy approach is the ecological or public health model for chronic conditions. The principle is that influencing the burden of chronic conditions requires intervention in population-wide policies, community activities and health services. This perspective includes the continuum of prevention and care. It emphasizes the determinants of disease as well as

Box 3. Steps towards implementing a system-wide initiative

The CINDI network comprises over 30 countries in the WHO European Region, plus Canada. It aims to provide an integrated mechanism for considering activities to prevent and control risk factors and to address their social and environmental determinants. The policy is that integrated action at the local, national and region-wide levels against common risk factors may reduce long-term conditions and improve general population health. The strategy uses a four-factor approach. It targets four long-term conditions (cardiovascular diseases, cancer, chronic obstructive pulmonary disease and diabetes), considers the effects of four lifestyle-related factors and four social determinants and uses four major strategies to promote change interlinked with a number of integrated approaches.

CINDI suggests that the following key components need to be supported at the regional, national and international levels:

- surveillance to track trends in long-term conditions and their determinants;
- disease prevention and health promotion to reduce premature morbidity, mortality and disability; and
- health care innovations and effective management tailored to local situations.

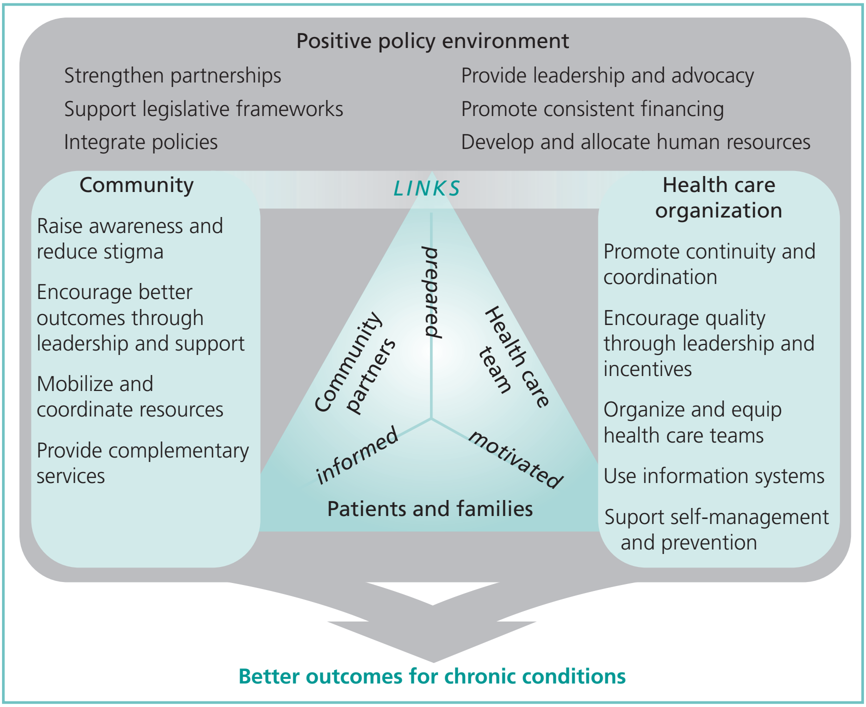
Denmark, France and Canada are beginning to implement aspects of this approach (44), but evidence about effectiveness and comparisons with other frameworks are still lacking. It is presented here as a menu that policy-makers may wish to draw on in considering how to structure an integrated local approach to disease management across providers. Most countries do not have the resources to target all of these areas immediately. Activities that are most feasible in the existing context should be implemented first, but focusing on the determinants of chronic disease that may lie outside the health sector is important.

Source: *A strategy to prevent chronic disease in Europe*. *A focus on public health action. The CINDI vision (44)*.

social, cultural and economic factors that might affect the quality and quantity of care. Policies based on an ecological perspective emphasize the interaction between and interdependence of factors within and across all levels of health policy, including people's interactions with their physical and sociocultural environments. It takes account of inequality in health and its causes *(46)*.

Evaluations of individual initiatives using this model have found benefits for service users and service provision *(47–49)*. Evaluations also suggest that leadership, epidemiology and surveillance, partnerships, government plans, targeted interventions, evaluation and good programme management are all critical to implementing chronic disease management across care programmes *(50)*.

Fig. 4. The Innovative Care for Chronic Conditions Framework



Source: *Innovative care for chronic conditions: building blocks for action (45).*

Implementing change

No evidence suggests that one policy approach to chronic disease management is necessarily superior to others. The components of disease management programmes vary according to local needs, budgets and inequality in health. The key to success appears to be the joint development of solutions to meet local needs and systematic implementation with regular monitoring built in *(51)*. Current thinking is that strategic system-wide initiatives may be more sustainable than individualistic approaches *(13)*.

Evidence about effective and cost-effective solutions, however, is good. The question is how to implement these solutions in a comprehensive and integrated manner. Examples include the following.

- A single benefit plan or provider can be provided with accountability and appropriate funding for coordinating all disease management for any given person even if others are involved in delivering services. This can be a hands-off regulatory approach, as in the case of United States health management organizations or private health insurers, or a broader government-focused strategy as in the case of the National Health Service in England, which comprises multiple organizations all working under one national health insurance plan.

- Disease can be managed with government-mandated minimal standards across benefit plans and providers. This is more of a hands-on regulatory approach, examples of which are available in some parts of France, Germany, Italy and the Netherlands.
- A market can be established for disease management credits in which benefit plans and providers can either buy or sell credits to deliver care. This is a market-based approach that is common in the United States.
- Disease management can focus on self-management education, electronic health records and systems that service users can access to help them identify specific interventions that might apply to them and which providers offer these services. Such systems have been tested in some parts of Scandinavia.

Evidence on the relative benefits, harms and costs of these different approaches to implementation is lacking. However, evidence indicates that the key priorities for implementing chronic disease management within any of these types are similar and span all countries, no matter how small or large or at what stage of development *(25)*. Irrespective of which implementation options are considered, the following are key points.

- Disease prevention and health promotion comprise a core component of disease management.
- Targeting the right people is essential (such as through risk stratification).
- Consistency of information and approach is important when disease management programmes are implemented across providers. Information technology systems, records held by the service users and decision support tools can aid consistency, but these must be seen as tools in the process rather than emphasizing these technologies to motivate and maintain disease management.
- Multidisciplinary teams and clinical engagement are essential. Developing the workforce is crucial, including the public and private sector, health and social services, voluntary and community groups and service users and their families.
- Service users are a common theme across all of the different settings in

which disease management may be implemented, so motivating them for self-care is essential.

Annex 1 provides a range of initiatives that could be used to address each of these core success factors.

Given the diverse governance, professional and funding arrangements in European countries, prospective implementation examples are unlikely to be instructive. Instead, providing policy-makers with a list of key themes that need to be considered when implementing chronic disease management on a broader scale may be useful. Box 4 provides a checklist of considerations. As changes to chronic disease management cannot be implemented all at once, research suggests that countries focusing on the more immediate areas in Box 4 are likely to achieve the most significant and long-lasting change *(52)*.

Box 4. Steps for implementing chronic disease management

Immediate

- Raise public, professional and political awareness about the importance of chronic disease management.
- Focus policy from a public health perspective that examines the determinants of chronic disease and targets risk factors.
- Set up incentives for cooperation across institutional boundaries or remove competition between primary health care, hospitals, social services and the voluntary sector.
- Make health services more health-promoting and focus on healthy eating, smoking cessation and exercise.
- Use education and funding as levers to increase opportunities for health promotion and disease prevention.
- Recognize that service users and their families are integral parts of the care team and focus on fully using service users as a resource by supporting self-management, self-monitoring and volunteering opportunities.
- Create service networks and pathways that cut across health, social care and sectoral boundaries.
- Ensure that adequate systems are set up to share information between providers.
- Ensure that tools are available to help to identify people with different levels of need and to target services accordingly.
- Deliver community-based services.

Medium term

- Implement national policy frameworks for tackling the causes of chronic disease as well as focusing on specific diseases.

- Consider taxation, subsidization and trade agreements as ways to control the prices of healthy foods, tobacco, alcohol and exercise equipment.
- Consider changes to the built environment to encourage physical activity.
- Use health system performance indicators and quality assurance tools to measure and report publicly on the quality of care provided.
- Consider evidence-informed service delivery options such as assertive case management or multidisciplinary teams.
- Consider social and cultural levers to help promote healthy eating and behaviour.
- Use financial incentives such as linking professional payments to improved clinical performance.
- Design services to increase the equity of, affordability of and access to services for vulnerable groups.
- Ensure that service users and carers are involved in planning, delivering and monitoring services.

Longer term

- Offer decision support tools to help professionals implement good practice guidelines.
- Make employers a key partner in chronic disease management.
- Empower community resources such as voluntary and faith-based groups.
- Allocate resources within the health and social system based on the burden of disease.
- Improve the skills and number of staff members trained specifically in managing chronic disease at all levels.
- Focus health professional training on disease prevention and palliative care as well as treatment.

Requiring all clinicians, hospitals, social service groups and other providers to implement an integrated chronic disease management programme necessitates incentives and a strong policy framework. Legal changes may be required. In many countries, organizations are unlikely to work together effectively unless there is strong leadership and some reorganization of care structures and funding. This may involve shared budgets between organizations, capital rewards for reducing health care service use, bonuses for achieving health care targets or opportunities to take part in innovative services. For example, countries need to test which initiatives for encouraging organizations to work together to support chronic disease management are most effective in their context.

The financial implications of change are significant. But the implications of not changing are even more marked. Funds need to be allocated to restructuring, to financial incentives, to training staff and to monitoring progress. Providers will require multifaceted clinical, evaluation and interpersonal skills, spanning the range of health promotion to palliative care. Interdisciplinary working may be required, and staff members need to acquire more advanced data analysis and monitoring skills.

Health systems are not always amenable to change, which makes the job of policy-makers more difficult. All stakeholders must recognize the seriousness of the issue and that significant change is needed *(51)*.

Summary

This policy brief has outlined some of the core factors policy-makers may need to consider when planning chronic disease management programmes that span different settings. Countries cannot afford to maintain the status quo either in terms of health or economic productivity costs.

Chronic disease management has the potential to save lives and resources. Nevertheless, the evidence suggests that the individualistic or service-led models adopted in many European countries may not be as effective as system-wide approaches that focus on population health. Examining the wider determinants of health and taking a proactive preventive approach requires some up-front investment and a long-term vision. Addressing risk factors may not result in immediate changes, but a long-term perspective towards reducing the onset of chronic disease as well as managing its manifestation is required.

Policy-makers want actionable messages, but there is no correct solution to implementing chronic disease management in different contexts. What is clear is that strategies that focus solely on changing how services are offered will not have the long-term impact required. More systematic approaches that address the causes of chronic diseases are needed. This necessitates:

- providing strong leadership at the national, regional or organizational level;
- ensuring robust information collection and data sharing;
- providing care based on people's needs and an ability to identify people with different levels of need;
- targeting key risk factors, including widespread disease prevention initiatives;
- supporting self-management and empowering people who have chronic diseases; and
- involving a wide range of stakeholders such as individuals, the voluntary and community sector, private employers and public services.

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Annex 1. Strategies targeting key success factors

Components	Strength of evidence	Applicability
Health promotion and supporting self-care		
Preventive messages	Information alone is not enough *(1,2)* Mass-media campaigns need to be supplemented with other messages *(3)* School-based education can be successful Lay educators can be useful *(4)* Can use Internet, video, telephone and other technologies *(5–7)*	**High** Can be implemented in all contexts Policy needs to be widespread Not solely health focus Requires partnership working Requires long-term view
Self-care education	Strong evidence that empowering the users of services has significant benefits *(8)* Group education may improve short-term outcomes *(9)*	**High** Can be implemented in all contexts Involvement has costs *(10)* Requires commitment from professionals Being implemented widely in Europe
Self-monitoring	Self-monitoring blood pressure and blood glucose can improve clinical outcomes *(11,12)* Limited evidence about outcomes for the use of services	**Low** Requires technology and infrastructure
Records held by service users	Insufficient evidence of benefit *(13,14)*	**Low** Difficult to set up and maintain
Telecare	Proactive telephone support can improve outcomes *(15)* There is good evidence for voice prompts, alarms and other monitoring systems *(16,17)*	**Low** Requires technology and infrastructure

Components	Strength of evidence	Applicability
Information systems and targeting the right people for intervention		
Evidence-based care pathways and guidelines	Limited effectiveness when used alone *(18,19)* Guidelines are more likely to be effective if they take into account local circumstances, are linked explicitly to evidence, are disseminated by an active educational intervention and use reminders specific to each person *(20)*	**Medium** Easy to develop in all contexts Implementation is more difficult to monitor Education strategies required *(21)* Sanctions and incentives may be required
Decision support tools	Can improve consistency *(22)* Can improve prescribing and outcomes *(23)*	**Medium** Wide range of formats available Can be adapted for any budget, such as web-based, paper and general practitioner computer systems *(24)* Education strategies required
Disease registries	Important for identifying and tracking people *(25)* Effective when used for reminding service users and clinicians *(26)*	**High** Requires some communication infrastructure to set up and maintain Relatively low cost Can work well in low- and medium-income countries *(27)*
Risk stratification models	Good evidence for targeting people at high risk *(28,29)* Important also to target people at low risk for different levels of care	**High** Requires infrastructure for routine information collection and analysis Some risk stratification tools have limited validity Danger of only focusing on people at high risk Screening tools can ensure that high-cost services are targeted most effectively *(30)*

Components	Strength of evidence	Applicability
Multidisciplinary clinical engagement		
Shared care of an individual by physicians from primary and secondary care	Limited evidence of effect *(31–33)*	**Low** May improve processes but not outcomes Consider as part of wider system changes only
Combined primary and secondary care (integrated care pathways)	Good evidence of effect in the United States *(34)*	**Medium** Works where financial incentives are linked Requires infrastructural change
Specialists working with generalists in primary care	Mixed evidence of effectiveness *(35)* Shifting care into the community may not reduce service use *(36)*	**Low** Works where financial incentives are linked
Multi-disciplinary teams and using nurses to substitute for doctors	Mixed evidence of effect *(37)* Can improve professional communication but may have limited effect on health outcomes *(38)* May have short-term benefits *(39)* May reduce service use *(40,41)*	**Medium** May improve processes but not long-term outcomes Can be expensive to implement Can be cost-effective if used to transfer skills or roles
Offering services in community settings	Some evidence of effect *(42)* Potential to reduce service use *(43)*	**High** Can be used in many contexts without large-scale infrastructural change Not costly

Components	Strength of evidence	Applicability
Education of professionals	Continuing education based on needs assessment can change behaviour *(44,45)* Interactive sessions that allow skills practice are most effective *(46)* Can reduce health service use *(47,48)* Conferences and one-off paper format education have little impact *(49)* Multidisciplinary education has uncertain benefits *(50)*	**Medium** Can be adapted to meet any budget Group, individual, telephone, paper and online methods possible Requires commitment from professionals Can be costly, as it needs to be ongoing for best effect
Audit and feedback	Some evidence of improved process outcomes *(51–53)*	**Low** Can be implemented in any context Requires some supervisory body

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This publication is part of the joint policy brief series of the Health Evidence Network and the European Observatory on Health Systems and Policies. Aimed primarily at policy-makers who want actionable messages, the series addresses questions relating to: whether and why something is an issue, what is known about the likely consequences of adopting particular strategies for addressing the issue and how, taking due account of considerations relating to policy implementation, these strategies can be combined into viable policy options.

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