

Innovative Care for Chronic Conditions

■ ■ ■ Building Blocks for Action

GLOBAL REPORT



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This report was produced under the direction of JoAnne Epping-Jordan, Health Care for Chronic Conditions. It is the first key component of a three-pronged WHO strategy to improve the prevention and management of chronic conditions in health care systems. This strategy is overseen by Rafael Bengoa, Director, Management of Noncommunicable Diseases, and Derek Yach, Executive Director, Noncommunicable Diseases and Mental Health.

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- ⊕ Improving Adherence (managed by Eduardo Sabaté)
- ⊕ Primary Health Care for Chronic Conditions (managed by Rania Kawar)

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Introduction

THE *Report of the Commission on Macroeconomics and Health*, as well as the subsequent WHO report *Scaling Up the Response to Infectious Disease: A Way Out of Poverty*, documented the incontrovertible links between health and economic development, and the rising health care demands related to infectious diseases such as HIV/AIDS and tuberculosis. More generally, the management of all chronic conditions – noncommunicable diseases, long-term mental disorders, and certain communicable diseases such as HIV/AIDS – is one of the greatest challenges facing health care systems throughout the world. Currently, chronic conditions are responsible for 60% of the global disease burden. They are increasing such that by the year 2020 developing countries can expect 80% of their disease burden to come from chronic problems. In these countries, adherence to therapies is as low as 20%, resulting in poor health outcomes at a very high cost to society, governments, and families. Yet, around the world, health systems do not have a plan for managing chronic conditions, and simply treat symptoms when they occur.

Recognizing the opportunity to improve health care for chronic conditions, WHO has launched a new project on *Innovative Care for Chronic Conditions*. During the first phase of this project, best practices and affordable health care models for chronic conditions have been identified, analysed, and synthesized. A number of international experts, organizations, and institutions have been involved in the process.

Innovative Care for Chronic Conditions: Building Blocks for Action presents the result of this effort: a comprehensive framework for updating health care to meet the needs of chronic conditions. The proposed building blocks and overall framework are relevant for both prevention and disease-management in health care settings. This is especially important given that most chronic conditions are preventable. In an international review meeting, policy-makers judged these strategies, as well as the overall framework, to be robust across a range of scenarios that developing countries might face, including an HIV/AIDS epidemic, a flight of skilled human resources to the private sector, general economic collapse, and a change of government. Participants also felt that the framework was applicable to a range of chronic conditions, including HIV/AIDS, tuberculosis, cardiovascular disease, diabetes, and long-term mental disorders.

Next steps for the project include country demonstration projects in the implementation of strategies described in this report. This process will be completed in close collaboration with public health partners.


This report represents an important step towards preparing policy-makers, health service planners, and other relevant parties to take action that will reduce the threats chronic conditions pose to the health of their citizens, their health care systems, and their economies.



Derek Yach
Executive Director, Noncommunicable Diseases and Mental Health



Executive Summary



THE DRAMATIC INCREASE IN CHRONIC CONDITIONS, including noncommunicable diseases, mental disorders, and certain communicable diseases such as HIV/AIDS demands creative action. The World Health Organization created this document, *Innovative Care for Chronic Conditions: Building Blocks for Action*, to alert decision-makers throughout the world about these important changes in global health, and to present health care solutions for managing this rising burden. Every decision-maker has the potential to improve his or her health care system's ability to address the growing problem of chronic conditions. Today's choices influence the future.

In addition to health policy-makers, persons with the interest and ability to influence health care systems at national and/or local levels (such as Ministries of Finance and Planning, donors, and development agencies) are encouraged to assimilate the information contained within this report regarding chronic conditions. The message is timely and pertinent for all countries, regardless of resource availability.

Advances in biomedical and behavioural management have substantially increased the ability to effectively prevent and control conditions like diabetes, cardiovascular disease, HIV/AIDS, and cancer. Growing evidence from around the world suggests that when patients receive effective treatments, self-management support, and regular follow-up, they do better. Evidence also suggests that organized systems of care, not just individual health care workers, are essential in producing positive outcomes.

In developing countries, chronic conditions present mainly at the primary health care level and need to be handled principally in these settings. Yet, most primary health care is oriented toward acute problems and the urgent needs of patients. As part of overall improvement efforts, an evolution in primary health care is imperative. A primary care system that cannot effectively manage HIV/AIDS, diabetes and depression will soon become irrelevant. Primary health care must be reinforced to better prevent and manage chronic conditions.

Improving health care for chronic conditions also means focusing on adherence to long-term therapies. Patients with HIV/AIDS, tuberculosis, diabetes, hypertension, and other chronic conditions are often prescribed essential drugs as part of their overall disease management plan. Yet, adherence to long-term treatments is remarkably low. Although patients are frequently blamed for failing to follow regimens as they are prescribed, nonadherence is fundamentally a failure of the health care system. Health care that provides appropriate information, support, and ongoing surveillance can improve adherence, which will in turn reduce the burden of chronic conditions and enhance patients' quality of life.

Decision-makers can take actions that will reduce the threats chronic conditions pose to the health of their citizens, their health care systems, and their economies. Their actions regarding financing, resource allocation, and health care planning can significantly diminish negative effects. Armed with essential elements for improvement, informed decision-makers can make a difference.

The eight essential elements for taking action are as follows:

1. Support a Paradigm Shift

Health care is organized around an acute, episodic model of care that no longer meets the needs of many patients, especially those with chronic conditions. Decreases in communicable diseases and the rapid ageing of the population have produced this mismatch between health problems and health care, and chronic conditions are on the rise. Patients, health care workers, and most importantly, decision-makers must recognize that effective chronic condition care requires a different kind of health care system. The most prevalent health problems such as diabetes, asthma, heart disease, and depression require extended and regular health care contact. A new paradigm will dramatically advance efforts to solve the problem of managing diverse patient demands given limited resources. Through innovation, health care systems can maximize their returns from scarce and seemingly non-existent resources by shifting their services to encompass care for chronic conditions.

2. Manage the Political Environment

Policy-making and service planning inevitably occur in a political context. Political decision-makers, health care leaders, patients, families, and community members, as well as the organizations that represent them, need to be considered. Each group will have its own values, interests, and scope of influence. For transformation toward care for chronic conditions to be successful, it is crucial to initiate bi-directional information sharing and to build consensus and political commitment among stakeholders at each stage.

3. Build Integrated Health Care

Health care systems must guard against the fragmentation of services. Care for chronic conditions needs integration to ensure shared information across settings and providers, and across time (from the initial patient contact, onward). Integration also includes coordinating financing across different arms of health care (e.g., inpatient, outpatient, and pharmacy services), including prevention efforts, and incorporating community resources that can leverage overall health care services. The outcome of integrated services is improved health, less waste, less inefficiency and a less frustrating experience for patients.

4. Align Sectoral Policies for Health

In government, diverse authorities create policies and strategies that affect health. The policies of all sectors need to be analysed and aligned to maximize health outcomes. Health care can be and should be aligned with labour practices (e.g., assuring safe work contexts), agricultural regulations (e.g., overseeing pesticide use), education (e.g., teaching health promotion in schools), and broader legislative frameworks.

5. Use Health Care Personnel More Effectively

Health care providers, public health personnel and those who support health care organizations need new, team care models and evidence-based skills for managing chronic conditions. Advanced communication abilities, behaviour change techniques, patient education, and counselling skills are necessary in helping patients with chronic problems. Clearly, health care workers do not have to possess physician degrees to provide such services. Health care personnel with less formal education and trained volunteers have critical roles to play.

6. Centre Care on the Patient and Family

Because the management of chronic conditions requires lifestyle and daily behaviour change, emphasis must be upon the patient's central role and responsibility in health care. Focusing on the patient in this way constitutes an important shift in current clinical practice. At present, systems relegate the patient to the role of passive recipient of care, missing the opportunity to leverage what he or she can do to promote personal health. Health care for chronic conditions must be re-oriented around the patient and family.

7. Support Patients in their Communities

Health care for patients with chronic conditions does not end or begin at the doorway of the clinic. It has to extend beyond clinic walls and permeate patients' living and working environments. To successfully manage chronic conditions, patients and families need services and support from their communities. Moreover, communities can fill a crucial gap in health services that are not provided by organized health care.

8. Emphasize Prevention

Most chronic conditions are preventable. Additionally, many of the complications of chronic conditions can be prevented. Strategies for reducing onset and complications include early detection, increasing physical activity, reducing tobacco use, and limiting prolonged, unhealthy nutrition. Prevention should be a component of every health care interaction.

Outline of the Report

SECTION 1 introduces the reader to the term, “chronic conditions,” which describes health problems that persist across time and require some degree of health care management. Diabetes, heart disease, depression, schizophrenia, HIV/AIDS, and ongoing physical impairments fall with the category of chronic conditions. This section outlines the justification for an updated definition and conceptualization of what constitutes a chronic condition.

Globally, chronic conditions are on the rise. Due to public health successes, populations are ageing and increasingly patients are living with one or more chronic conditions for decades. Urbanization, adoption of unhealthy lifestyles, and the global marketing of health risks such as tobacco are other factors contributing to an increase. This places new, long-term demands on health care systems. Not only will chronic conditions be the leading cause of disability throughout the world by the year 2020; if not successfully managed, they will become the most expensive problems faced by our health care systems. In this respect, they pose a threat to all countries from a health and economic standpoint. Chronic conditions are interdependent and intertwined with poverty, and they complicate health care delivery in developing countries that concurrently face unfinished agendas around acute infectious diseases, malnutrition, and maternal health.

SECTION 2 addresses the deficits in current systems of health to successfully manage chronic conditions. Health care systems have evolved around the concept of infectious disease, and they perform best when addressing patients’ episodic and urgent concerns. However, the acute care paradigm is no longer adequate for the changing health problems in today’s world. Both high and low-income countries spend billions of dollars on unnecessary hospital admissions, expensive technologies, and the collection of useless clinical information. As long as the acute care model dominates health care systems, health care expenditures will continue to escalate, but improvements in populations’ health status will not.

Micro-, meso-, and macro-levels of health care refer to the patient interaction level, the health care organization and community level, and the policy level, respectively. Evolution is necessary within each level. Increased attention to patient behaviours and health care worker communications is crucial for improving care for chronic conditions. Care has to be coordinated for chronic conditions using scientific evidence to guide practice. Community resources must be integrated to make significant gains. Health care organizations must streamline services, upgrade the skills of health care workers, focus on prevention, and establish information tracking systems to provide planned health care for predictable complications. Governments need to make informed decisions for their populations and set standards for quality and incentives in health care. Financing must be coordinated and intersectoral links must be strengthened.

SECTION 3 presents a new framework for health care systems to improve care for chronic conditions. *The Innovative Care for Chronic Conditions Framework* is comprised of fundamental components within the patient (micro-), health care organization and community (meso-), and policy (macro-) levels. These components are described as “building blocks” that can be

used to create or re-design a health care system to more effectively manage long term health problems. Decision-makers can use these building blocks to develop new systems, to initiate changes in existing systems, or to make strategic plans for future systems. A number of countries have implemented innovative programmes for chronic conditions using building blocks from the framework. These are presented as examples of real world success.

The Innovative Care for Chronic Conditions Framework is centred around the idea that optimal outcomes occur when a health care triad is formed. This triad is a partnership among patients and families, health care teams, and community supporters. It functions at its best when each member is informed, motivated, and prepared to manage chronic conditions, and communicates and collaborates with the other members of the triad at all levels of care. The triad is influenced and supported by the larger health care organization, the broader community, and the policy environment. When the integration of the components is optimal, the patient and family become active participants in caring for chronic conditions, supported by the community and the health care team.

SECTION 4 provides specific strategies for creating innovations in the care of chronic conditions. Eight essential elements for improving care are described, and decision-makers are also given strategies for where to begin making changes to improve care for chronic problems.

The scarcity of resources for health care is a problem in most settings. Nevertheless, there are several financing mechanisms that can be considered in generating new resources for chronic conditions care. Decision-makers can also enhance outcomes for chronic conditions by applying existing resources to more equitable and efficient care. By managing chronic conditions more comprehensively, acute symptom exacerbations can be minimized, thus resulting in greater health care efficiency.

Regardless of resource level, every health care system can take action to improve health care for chronic conditions. Resources are necessary, but not sufficient for success. Leadership combined with a willingness to embrace change and innovation will have far more impact than simply adding capital to already ineffectual health care systems.

THE ANNEX presents examples from the scientific literature on outcomes associated with innovative programmes. The evidence, from case studies to randomized trials, is compelling even in the earliest stages of development. Those interested in improving care for chronic conditions, or presenting persuasive arguments on the effectiveness of innovative approaches, can learn something from reviewing these studies. Evidence demonstrates innovative programmes successfully improve biological disease indicators; reduce death; save money and health care resources; change patients' lifestyles and self-management abilities; improve functioning, productivity, and quality of life; and improve the processes of care.

Summary

Chronic conditions will not go away; they are the health care challenge of this century. Alteration of their course will require determined effort among decision-makers and leaders in health care in every country in the world. Fortunately, there are known, effective strategies to curtail their growth and reduce their negative impact.

The solution is to embrace a new way of thinking about and managing chronic conditions. Through innovation, health care systems can maximize their returns from scarce and seemingly non-existent resources by shifting from an acute to a chronic care model. Many countries are making the shift and starting with the development of innovative chronic conditions programmes.

Small steps are as important as system overhaul. Those who embrace change, large or small, are experiencing benefits today and creating the foundation for success in the future.



Chronic Conditions: The Health Care Challenge of the 21st Century

CHRONIC CONDITIONS are health problems that *require ongoing management over a period of years or decades*. Considered from this perspective, “chronic conditions” cover an enormously broad category of what could appear on the surface as disparate health concerns. However, persistent communicable (e.g., HIV/AIDS) and noncommunicable diseases (e.g., cardiovascular disease, cancer, and diabetes), certain mental disorders (e.g., depression and schizophrenia), and ongoing impairments in structure (e.g., amputations, blindness, and joint disorders) while seemingly different, all fit within the chronic conditions category.

Chronic conditions share fundamental themes: they persist and they require some level of health care management across time. In addition, chronic conditions share some concerning features:

- ⊕ Chronic conditions are increasing throughout the world, and no country is immune to their impact.
- ⊕ Chronic conditions seriously challenge the efficiency and effectiveness of current health care systems and test our abilities to organize systems to meet the imminent demands.
- ⊕ Chronic conditions engender increasingly serious economic and social consequences in all regions and threaten health care resources in every country.
- ⊕ Chronic conditions can be curtailed, but only when leaders in government and health care embrace change and innovation.

A New, Expanded Definition of Chronic Conditions

The term “chronic conditions” encompasses but expands beyond the traditional “non-communicable diseases” (e.g., heart disease, diabetes, cancer, and asthma) to include several communicable diseases. Consider the communicable disease, HIV/AIDS. A decade ago, this diagnosis meant the likelihood of impending death. However, because of advances in medical science, HIV/AIDS has become a health problem with which people can live and effectively manage for years. Tuberculosis (TB) is another example of an infectious or communicable disease for which advances in medical technology have yielded similar achievement. Although TB can be cured in many cases, a number of people manage TB over time only with the help of the health care system.

When communicable diseases become chronic problems, the delineation between non-communicable and communicable diseases becomes artificial and unwieldy. Indeed, the noncommunicable/communicable distinction may not be as useful as using the terms, acute and chronic, to describe the spectrum of health problems.

The consideration of mental disorders and physical impairments stretches traditional concepts about what constitutes a chronic condition. Depression and schizophrenia are examples of disorders that more often than not follow a chronic course. They wax and wane in terms of severity and they require long-term monitoring and management. Depression is of particular concern because by the year 2020, it will be surpassed only by heart disease in terms of the disability it causes. The personal, social, and economic impacts from depression will be substantial. Physical disability or “structural problems” including blindness or amputation are often the result of improper prevention or management of chronic conditions. Regardless of cause, they are chronic conditions unto themselves, and require lifestyle changes and health care management over time. Persistent pain problems, from a variety of causes, fit within the category of chronic conditions as well.

In summary, chronic conditions are no longer viewed conventionally (e.g., limited to heart disease, diabetes, cancer, and asthma), considered in isolation, or thought of as disparate disorders. The demands on patients, families, and the health care system are similar, and, in fact, comparable management strategies are effective across all chronic conditions, making them seem much more alike than different. Chronic conditions therefore include:

- ⊕ noncommunicable conditions
- ⊕ persistent communicable conditions
- ⊕ long-term mental disorders
- ⊕ ongoing physical/structural impairments

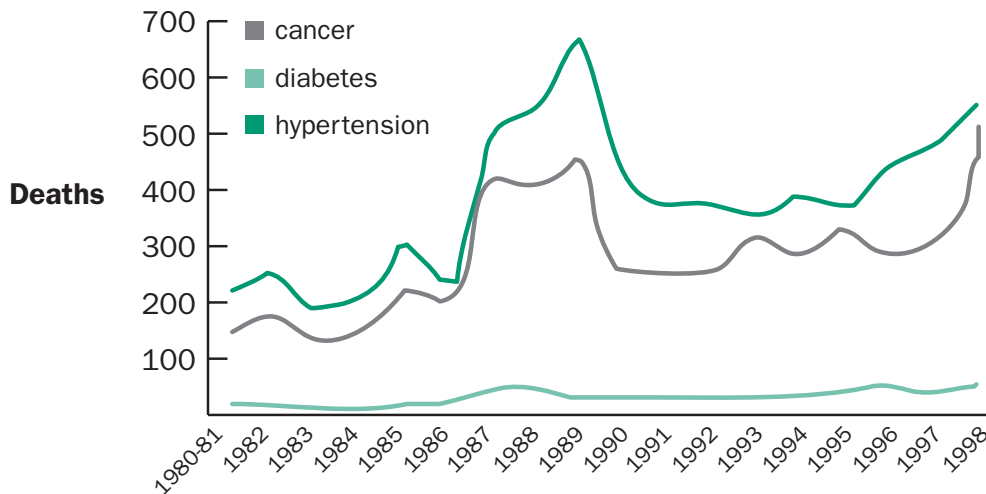
Chronic Conditions are Escalating

Chronic conditions are increasing at an alarming rate. The rise in noncommunicable conditions and mental disorders is the most concerning, overwhelming both high and low-income countries. This undeniable shift in health problems, away from infectious and perinatal conditions to chronic health problems, has far-reaching implications and poses predictable and

significant threats to all countries.

Chronic conditions presently make up the major health burden in developed countries, and trends for developing countries forecast a similarly concerning situation. Epidemiological trends demonstrate increases in chronic conditions throughout the world.

Mortality trends for cancer, diabetes, and hypertension in Botswana



Source: Botswana Ministry of Health, Community Health Services Division, Epidemiology and Disease Control Unit

Epidemiological Evidence

Chronic conditions are accelerating globally, undaunted by region or social class. Consider the traditional noncommunicable conditions as an example of this exponential growth. Noncommunicable conditions and mental disorders accounted for 59% of total mortality in the world and 46% of the global burden of disease in 2000. This disease burden will increase to 60% by the year 2020; heart disease, stroke, depression, and cancer will be the largest contributors.

By the year 2020, chronic conditions including injuries (e.g., transport injuries that result in persistent disability) and mental disorders will be responsible for 78% of the global disease burden in developing countries.

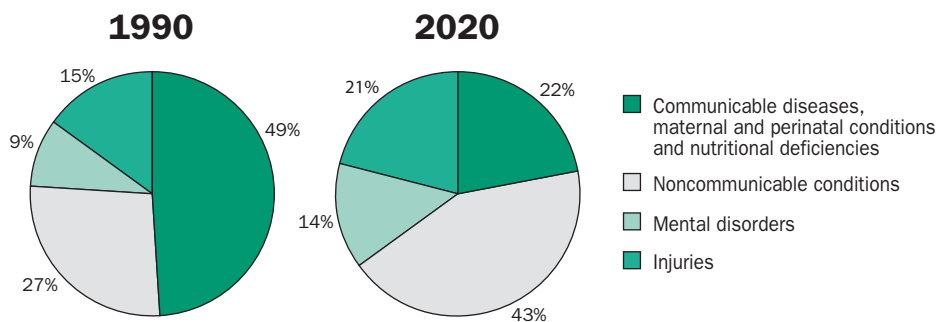
Low- and middle-income countries are the biggest contributors to the increase in burden of disease from noncommunicable conditions. In China or India alone, there are more deaths attributed to cardiovascular disease than in all other industrialized countries combined. In fact, in 1998 77% of all mortality related to noncommunicable conditions was in low- and middle-income regions, as was 85% of the global burden of disease. Unfortunately, these countries experience the greatest impact from chronic conditions, while they continue to deal with acute infectious diseases, malnutrition, and poor maternal health.

Leading causes of death by region, 2000 (rank order)

	Africa	Americas	Eastern Mediterranean	Europe	South East Asia	Western Pacific
Ischaemic heart disease	8	1	1	1	1	3
Cardiovascular disease	9	2	5	2	5	1
Trachea, bronchus, lung cancers		4		3		5
Diabetes Mellitus		5	12	12	14	
COPD	3	6	15	5	9	2
Hypertensive heart disease		10	10	10	12	11
HIV/AIDS	1				8	
TB	7		6		6	9
Malaria	3					
Lower respiratory infections	2	3	2	4	2	4

Only top 15 causes considered | Source: World Health Report, 2001.

Global burden of disease 1990–2020 by disease group in developing countries



Source: Murray & Lopez, Global Burden of Disease, 1996.

The increase in diabetes in developing countries is especially concerning. This chronic condition is a major risk factor for heart and cerebrovascular disease and it often co-occurs with hypertension, another major risk factor for chronic problems. Developing countries contribute $\frac{3}{4}$ of the global burden for diabetes. However, the number of persons diagnosed with diabetes will increase from 135 million in 1995 to 300 million in 2025. India reports a startling two-fold increase.

King H, et al. *Global burden of diabetes, 1995–2025. Diabetes Care* 1998; 21:1414–1431.

Mental health problems represent five of the 10 leading causes of disability world-wide, amounting to 12% of the total global burden of disease. Currently, over 400 million people suffer from a mental or behavioural disorder, and in view of the ageing of the population and worsening social problems, increases in the number of diagnoses are likely. This growing burden will create a substantial cost in terms of suffering, disability, and economic loss.

What is a DALY? In the case of prolonged health problems and their associated disability, “global disease burden” is a meaningful way to examine the related magnitude. This methodology provides a metric called the disability adjusted life year (DALY) to quantify the burden of premature death and disability. One DALY is considered one lost year of “health” and the burden of disease is considered the gap between a person’s current health status and the health status that one could expect with old age, perfect health, and no disability.

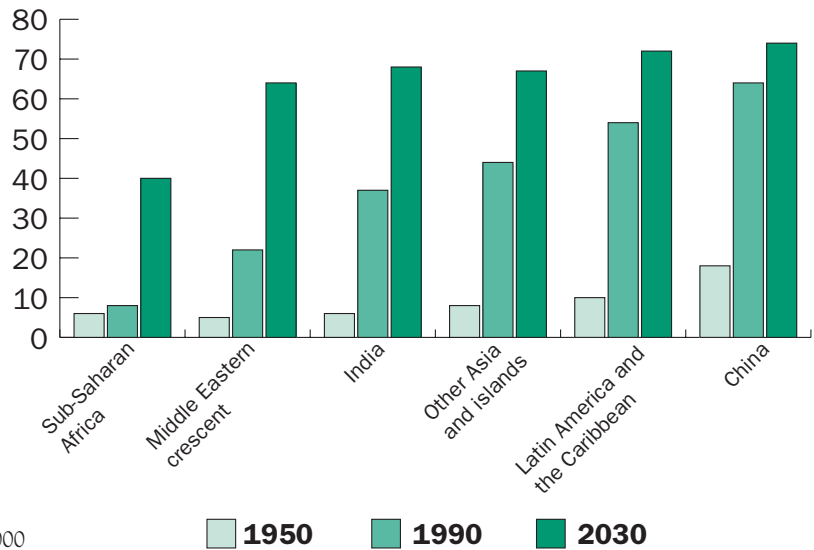
Why are Chronic Conditions Increasing?

The Demographic Transition

Throughout the world birth rates are declining, life expectancies are increasing, and populations are ageing. For example, in the 1950s, the expected number of children a woman would bear over a lifetime was six; today, the total fertility rate has declined to three. In addition, over the last century, life expectancies have increased by 30 to 40 years in developed countries. Longer lives are due, in part, to advances in medical science and technology, but also are because of successful public health and development efforts during the past 100 years.

One consequence of these changes in world demographics is an accompanying increase in the incidence and prevalence of chronic health problems. As infant mortality declines,

Median age at death across regions of the world



Source: World Bank data, 2000

and life expectancies and the possibility of exposure to risks for chronic health problems rise, chronic conditions become more pervasive.

All regions of the world can anticipate similar transitions in their populations and health problems, but the timing of the changes will differ across regions. There will be a continued shift in the relative balance of acute and chronic health conditions, accompanied by progressive increases in the prevalence of prolonged disorders unless these conditions are prevented. Stated in other words, increases in longevity do not inevitably lead to higher rates of chronic conditions, but actions are necessary to prevent the onset of chronic problems.

Consumption Patterns and Lifestyle Changes

The modifiable risk factors for chronic conditions such as heart disease, cerebrovascular disease, diabetes, HIV/AIDS, and many cancers are well known. In fact, lifestyle and behaviour are primary determinants of these conditions with the potential to prevent, initiate, or advance these problems and their associated complications. Predominantly implicated in chronic conditions are lifestyles that embrace unhealthy behaviours and patterns of consumption. Tobacco use, prolonged and unhealthy nutrition, physical inactivity, excessive alcohol use, unsafe sexual practices, and unmanaged psychosocial stress are major causes and risk factors for chronic conditions. Unfortunately, the world is undergoing an undeniable transformation in adopting these health-jeopardizing behaviours.

Tobacco use is a remarkable example of the effects of behaviour on health. It is a major health threat with negative consequences recognized for more than four decades. Tobacco use is a cause of numerous chronic conditions including heart disease and stroke, cancer, and chronic respiratory conditions. The evidence that it is associated with premature death and disability is clear, yet dissemination of accurate information regarding the hazards of tobacco use is limited, and tobacco controls are inadequate in most parts of the world. In fact, tobacco

consumption, while decreasing in developed countries, is increasing in developing countries by 3.4% every year. Consequently, low and middle-income countries are where 82% of all smokers currently reside. Tobacco is responsible for approximately four million deaths annually in the world today. Ten million deaths will occur per year by 2030 and over 70% of these deaths will be in the developing world.

Tobacco will cause more deaths than any other single reason, and health systems will not be able to afford the long and expensive care in its wake.

Dr Gro Harlem Brundtland, World Health Assembly 2001

Unhealthy changes in dietary patterns, reduced physical activity, and increased illicit drug use may seem minor by comparison to the destruction caused by tobacco. Nevertheless, these negative changes in lifestyle are on the increase throughout the world and they merit serious attention in the context of chronic health problems. All of the above health-threatening behaviours are known risk factors for a variety of chronic problems, including heart disease, diabetes, and stroke. Diet is increasingly recognized as a primary determinant of chronic health problems.

Urbanization and Global Marketing

“Diseases of urbanization” is a term ascribed to chronic conditions, and the number of persons moving to urban areas is on the rise. Between 1950 and 1985, the urban population of industrialized countries doubled, and in developing countries the urban population quadrupled. Cities in developing nations, which already have enormous squatter settlement populations, added an additional 750 million people between the years 1985 and 2000. The problem with such rapid growth is the lack of facilities and services for the “urban poor” that are essential to good health. These deficiencies include housing, infrastructure (including roads, piped water, sanitation, site drainage, and electricity), and basic services (including collection of household wastes, primary health care, education, and emergency life-saving services).

Concurrent with the shift in population from rural to urban areas is a dramatic increase in advertising and promotion of unhealthy products in developing countries. These regions are particularly attractive markets for industries selling health-threatening goods. Tobacco, alcohol, and food industries have identified countries in which national regulation and public health education programmes are weak, or in many cases non-existent. Vulnerable countries are prime targets for creative marketing plans that seem to capitalize on social deprivation in many cases. The combination of deprivation and early exposure to harmful products appears to be especially profitable to companies marketing harmful commodities. Unfortunately, the success of these marketing campaigns is equalled by the devastation they bring to the health, economic, and social well being of countries and their populations.

Tobacco companies target the poorest countries that have inadequate or non-existent public health education campaigns.

What is the Impact of Chronic Conditions?

Economic Impact: Everyone Pays the Price

Health care costs become excessive when chronic conditions are poorly managed. However, the impact of chronic health problems extends far beyond the obvious expenses associated with medical treatment. From an economic perspective, everyone pays a toll:

- ⊕ Patients (and families) pay the measurable monetary costs, including the expense associated with medical care, reduced workdays, and lost employment. In addition, patients (and families) incur costs that defy precise monetary calculation, such as condition-related disability, shortened life span, and lowered quality of life.
- ⊕ Health care organizations pay most of the cost of medical care, but also bear many of the expenses that hide behind the cost of treatment.
- ⊕ Health care workers experience professional and work-related frustration in managing chronic conditions and health care administrators are dissatisfied with outcomes of care and wasted resources.
- ⊕ Governments, employers, and societies suffer because of the loss of workers due to death, disability, and morbidity related to chronic conditions. Moreover, chronic conditions result in major losses of productive potential.

HIV prevalence rates of 10–15%, which are no longer uncommon, can translate into a reduction in growth rate of GDP per capita of up to 1% per year. TB takes an economic toll equivalent to \$12 billion dollars per year from the incomes of poor communities.

The studies described below address the expenses related to chronic conditions. They vary in terms of methods and degree of rigor. However, the findings consistently demonstrate high economic costs related to chronic conditions.

Cost of Asthma in Singapore

Medical costs for asthma constitute 1.3% of Singapore's total health care cost (i.e., \$33.93 million per year).

Chew FT, Goh DY, Lee BW. The economic cost of asthma in Singapore. Aust N Z J Med 1999; 29(2):228–33.

Cost of Asthma in Estonia

Asthma accounts for 1.4% of direct health care costs, or 2.1 million EUR. Medication expenses are 53% of the total.

Kiivet RA, Kaur I, Lang A, Aaviksoo A, Nirk L. *Costs of asthma treatment in Estonia. Eur J Public Health* 2001; 11(1): 89–92.

Cost of Heart Disease in the USA

Direct health care expenditures for heart disease are \$478 per person per year. Indirect costs, including lost workdays and reduced productivity, on household income are \$3013 per year. To the extent that all of these people would be employed, this translates into an estimated \$6.45 billion lost in productivity every year.

Hodgson TA, Cohen AJ. *Medical expenditures for major diseases, 1995. Health Care Finance Rev.* 1999; 21(2):119–64.

Cost of Diabetes in Taiwan, China

Over 2% of the population has a diagnosis of diabetes. The direct costs of health care for this condition in 1997 was 11.5% of the total costs of health care for the country and was 4.3 times higher than the average cost of care for individuals without diabetes.

Lin T, Chou P, Lai M, Tsai S, Tai T. *Direct costs-of-illness of patients with diabetes mellitus in Taiwan. Diabetes Res Clin Pract* 2001; 54:Suppl 1.

Cost of Diabetes in India

Approximately 20 million persons in India are diagnosed with diabetes and the annual estimated cost of US\$ 2.2 billion for health care for this population.

Shobhana R, Rama Rao P, Lavanya A, Williams R, Vijay V, Ramachandran A. *Expenditure on health care incurred by diabetic subjects in a developing country—a study from southern India. Diabetes Res Clin Pract* 2000; 48(1):37–42.

Cost of HIV/AIDS in the Ivory Coast

In the Ivory Coast, the direct costs of treatment of children born to HIV-infected mothers and children infected with the virus were estimated for 1996. The mean cost of treatment was 1,671 FF (254 EUR) per child-year for infected children. This amount is 709 FF (108 EUR) more than the mean cost of treatment for HIV-negative children born to HIV-positive mothers. HIV infection resulted in a 74% increase in treatment costs.

Giraudon I, Leroy V, Msellati P, Elenga N, Ramon R, Wellfens-Ekra C, Dabis F. *The costs of treating HIV-infected children in Abidjan, Ivory Coast, 1996–1997. Sante.* 1999; 9(5):277–81.

Cost of HIV/AIDS in India

The loss of productive potential due to HIV/AIDS from 1986 to 1995 is estimated to be between 8 and 28 million years. The estimated total annual cost (in billions of Rupees) of HIV/AIDS in India under low, medium and high estimates was 6.73, 20.16 and 59.19, respectively. The estimated annual cost of HIV/AIDS appears to be about 1% of the GDP of India if based on the high estimates.

Anand K, Pandav CS, Nath LM. *Impact of HIV/AIDS on the national economy of India. Health Policy* 1999; 47(3): 195–205.

Cost of Hypertension in the USA

The medical costs related to hypertension were \$108.8 billion in 1998. This is approximately 12.6% of total national health care spending.

Hodgson TA, Cai L. Medical care expenditures for hypertension, its complications, and its comorbidities. Med Care 2001; 39(6):599–615.

The failure to address the economic repercussions of chronic conditions by revising health policies and health services endangers the economic prosperity of all nations.

Impact on the Poor: A Vicious Cycle

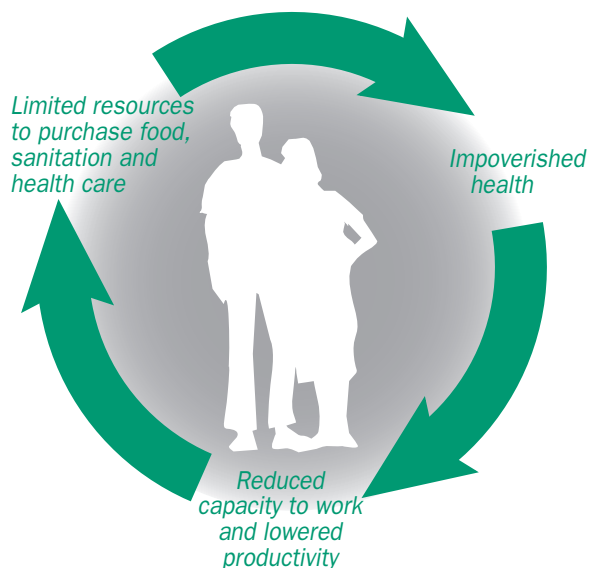
Approximately 1.2 billion people in the world live in extreme poverty (i.e., live on less than \$1 per day). This group is less healthy and experiences increased exposure to risks associated with ill health than do more economically advantaged groups. For example, conditions such as HIV/AIDS and TB disproportionately affect the poor.

Report of the Commission on Macroeconomics and Health, World Health Organization, 2001.

Even in high-income countries, those in poverty are vulnerable to chronic conditions. For example, in the United States, children from poor families are at increased risk of experiencing chronic problems. Once a chronic condition develops, economically disadvantaged children experience barriers to care, they are more likely to be uninsured than are children from non-poor families, and they are more likely to lack a regular source of health care. More concerning, poor children with chronic conditions receive less ambulatory care services, and use more inpatient hospital care than their non-poor counterparts.

Newacheck PW. Poverty and childhood chronic illness. Arch Pediatr Adolesc Med 1994 Nov; 148(11):1143–9.

The poor are at risk of becoming more impoverished when they experience diminished health or a health crisis in the household. They often spiral in a vicious cycle of poverty and poor health as shown in the diagram at right.



A cycle such as this one involving limited resources and poor health is difficult to break. It often perpetuates. Consider families in which a parent has a chronic condition that precludes his/her working. Children in these families are at risk of poor health due to the lack of family resources, and when they surrender to illness, the cycle of poverty and chronic health problems endures. The children develop chronic conditions, cannot participate in the work force as adults, cannot purchase resources, and are unable to improve their health or poverty situation. When they have children, the cycle continues.

The Path from Poverty to Chronic Conditions

To understand further the health and poverty relationship, consider the path from poverty to chronic conditions. A number of socioenvironmental factors play a role and are critical determinants of health status:

⊕ **Prenatal factors.** Mothers with poor nutritional standing bear children who experience chronic conditions in adulthood such as diabetes, hypertension, and heart disease. Poverty and poor health during childhood is associated with adult chronic conditions as well, including cancer, pulmonary disease, cardiovascular disease, and arthritis.

Law CM, Egger P, Dada O, Delgado H, Kylberg E, Lavin P, Tang GH, von Hertzen H, Shiell AW, Barker DJ.

Body size at birth and blood pressure among children in developing countries. Int J Epidemiol. 2001; 30(1):52–7.

Law CM, de Swiet M, Osmond C, Fayers PM, Barker DJ, Cruddas AM, Fall CH. Initiation of hypertension in utero and its amplification throughout life. BMJ. 1993; 306(6869):24–7.

Blackwell DL, Hayward MD, Crimmins EM. Does childhood health affect chronic morbidity in later life? Soc Sci Med. 2001; 52(8):1269–84.

⊕ **Ageing.** The role of age surfaces in studies of the impoverished elderly in developed and developing countries. In **Kenya**, the poor elderly are observed to have poor health and unsatisfactory access to care. A **UK** study found that older adults are at high risk of physical dysfunction and cannot afford care for their chronic conditions.

Lynch JW, Kaplan GA, Shema SJ. Cumulative impact of sustained economic hardship on physical, cognitive, psychological, and social functioning. N Engl J Med. 1997; 337(26):1889–95.

Dranga HM. Ageing and poverty in rural Kenya: community perception. East Afr Med 1997; 74(10):611–3.

Zimmer Z, Amornsirisomboon P. Socioeconomic status and health among older adults in Thailand: an examination using multiple indicators. Soc Sci Med. 2001; 52(8):1297–311.

⊕ **Socio-economic Status.** People with the lowest socio-economic status (SES) have eight times more relative risk for schizophrenia than do people with the highest SES.

Holzer CE, Shen BM, Swanson JW: The increased risk for specific psychiatric disorders among persons with low socio economic status. American Journal of Social Psychiatry, 4, 259–271, 1986

Dohrenwed BP, Levav I, Shrout PE, Scwartz S, Naveh G, Link BG: Socioeconomic status and psychiatric disorders: the causation-selection issue. Science 255, 946–952, 1992.

- ⊕ **Education and Unemployment.** Poor families tend to receive less education, which has been associated with higher rates of mental disorders in **Brazil** and in **Pakistan** linked with limited knowledge of chronic conditions and their management. Moreover, unemployment has been associated with health problems; morbidity and mortality rates are higher in the unemployed than in the general population. For example, compared to people without mental disorders, those with schizophrenia are 4 times more likely to be unemployed.

Ali M, Khalid GH, Pirkani GS. *Level of health education; Buffat J. Unemployment and health Rev Med Suisse Romande* 2000; 120(4):379–83.

Ludermir AB, Lewis G. *Links between social class and common mental disorders in Northeast Brazil. Soc Psychiatry Psychiatr Epidemiol* 2001; 36(3):101–7.

Robins LN, Locke BZ, Regier DA: *An overview of psychiatric disorders in America. New York, Free Press, 1991*

A significant portion of poor health results from poverty and low education levels or from their consequences in inadequate food or sanitation or other specific risks.

The World Health Report 1999

- ⊕ **Environment.** Environments where the poor live and work are associated with diminished health status. Greater exposure to disease agents, increased susceptibility, and poor health behaviours interact to impact health status. This occurs in developed as well as developing countries. The work environments of the poor tend to be more physically demanding and place individuals at risk of injury due to automobile collisions or exposure to harmful substances. Hazardous chemical exposure and pollution, particularly in developing countries have been linked with local prevalence rates of cancer, cardiovascular, and respiratory diseases.

Marmot M, Bobak M. *International comparators and poverty and health in Europe. BMJ.* 2000; 321(7269): 1124–8.

Narayan D, Chambers R, Shah KM, Petesch P. *Crying Out for Change. Published by Oxford University Press for the World Bank, 2000; August.*

Cohen D. *Poverty and HIV/AIDS In Sub-Saharan Africa. SEPED Conference Paper Series, Number 2, 2000.*

Warden J. *Britain's new health policy recognises poverty as major cause of illness. BMJ.* 1998; 316(7130):495.

Tomatis L. *Inequalities in cancer risks. Semin Oncol.* 2001; 28(2):207–9.

Mengesha YA, Bekele A. *Relative chronic effects of different occupational dusts on respiratory indices and health of workers in three Ethiopian factories. Am J Ind Med.* 1998; 34(4):373–80.

- ⊕ **Access to care.** The economically impoverished often lack access to health care or preventive measures that, in turn, have been associated with poor health outcomes and

exacerbation of chronic conditions. Care often is delayed or impeded because of cost for indigent groups. In **Vietnam**, compared to the rich, the poor were observed to delay treatment, use less government provided health services, and pay more for each episode of care. Similarly, in **Mexico**, poor populations experience inadequate care because of restricted access to medications and health professionals due to unavailability or expense. In general, preventive care is too costly and often is out of reach for the poor allowing avoidable health problems to become chronic conditions. This relationship holds for developed countries, such as the **USA** and has been substantiated in **Ghana**, and **Sub-Saharan Africa**. Finally, even when care is publicly funded, distance and travel time may exclude the poor from receiving adequate services.

Ensor T, San PB. Access and payment for health care: the poor of Northern Vietnam. *Int J Health Plann Manage* 1996; 11(1):69–83.

Leyva-Flores R, Kageyama ML, Erviti-Erice J. How people respond to illness in Mexico: self-care or medical care? *Health Policy*. 2001; 57(1):15–26.

Asch SM, Sloss EM, Hogan C, Brook RH, Kravitz RL. Measuring underuse of necessary care among elderly Medicare beneficiaries using inpatient and outpatient claims. *JAMA*. 2000; 284(18):2325–33.

Gao J, Tang S, Tolhurst R, Rao K. Changing access to health services in urban China: implications for equity. *Health Policy Plan* 2001; 16(3):302–12.

Nyonator F, Kutzin J. Health for some? The effects of user fees in the Volta Region of Ghana. *Health Policy Plan* 1999; 14(4):329–41.

Stierle F, Kaddar M, Tchicaya A, Schmidt-Ehry B. Indigence and access to health care in sub-Saharan Africa. *Int J Health Plann Manage* 1999; 14(2):81–105.

Chernichovsky D, Meesook OA. Utilization of health services in Indonesia. *Soc Sci Med* 1986; 23(6):611–20.

The Path from Chronic Conditions to Poverty

The poverty-chronic condition relationship is bi-directional, and while there is a path from poverty to chronic health problems, the path of chronic health problems to poverty deserves equal consideration. Loss of income, the costs of treatment, and marginalization because of chronic health problems negatively affect the economic status of those with chronic conditions.

⊕ **Loss of income.** Chronic conditions have been linked to work disability, early retirement, and reduced productivity that may put employees at risk of premature job termination. This phenomenon has been observed in persons with heart disease and asthma. In addition, a survey in **Bangladesh** noted significant loss of income in persons with tuberculosis.

Dooley D, Fielding J, Levi L. Health and unemployment. *Annu Rev Public Health* 1996; 17:449–65.

Herrin J, Cangialose CB, Boccuzzi SJ, Weintraub WS, Ballard DJ. Household income losses associated with ischaemic heart disease for US employees. *Pharmacoeconomics*. 2000; 17(3):305–14.

Mark DB, Lam LC, Lee KL, Clapp-Channing NE, Williams RB, Pryor DB, Califf RM, Hlatky MA. Identification of patients with coronary disease at high risk for loss of employment. A prospective validation study. *Circulation* 1992; 86(5):1485–94.

Blanc PD, Trupin L, Eisner M, Earnest G, Katz PP, Israel L, Yelin EH. *The work impact of asthma and rhinitis: findings from a population-based survey.* *J Clin Epidemiol* 2001; 54(6):610–8 .

Croft RA, Croft RP. *Expenditure and loss of income incurred by tuberculosis patients before reaching effective treatment in Bangladesh.* *Int J Tuberc Lung Dis* 1998; 2(3):252–4.

- ⊕ **Loss of education.** In an underdeveloped community in **South Africa**, 50% of school age children who had at least one parent with chronic hip disease had not received schooling. This was in contrast to the 30% of young people whose parents did not suffer from hip disease, who had no schooling.

Yach D, Botha JL. *Mselini joint disease in 1981: decreased prevalence rates, wider geographic location than before, and socioeconomic impact of an endemic osteoarthritis in an underdeveloped community in South Africa.* *International Journal of Epidemiology* 1985; 14(2):276–84.

- ⊕ **Treatment costs.** Treatment expenses for chronic conditions can be exorbitant when conditions are not initially well managed or prevented. For example, Rice et al. estimated direct costs of treatment for chronic mental disorders at \$42.5 billion per year.

Elliott BA, Beattie MK, Kaitfors SE. *Health needs of people living below poverty level.* *Fam Med* 2001; 33(5): 361–6.

Rice DP, Kelman S, Miller LS. *The economic burden of mental illness.* *Hosp Community Psychiatry* 1992; 43(12):1227–32.

- ⊕ **Marginalization.** Persons with chronic conditions are at risk of marginalization and stigmatization in their communities that may result in further limitations in educational and employment opportunities. Moreover, stigmatization and neglect have been associated with exacerbation of chronic problems. Women with chronic conditions are at even greater risk of harm, educationally, financially, and physically.

Alem A. *Mental health services and epidemiology of mental health problems in Ethiopia.* *Ethiop Med J.* 2001; 39(2): 153–65.

Oxaal Z, Cook S. *Health and poverty: a gender analysis.* BRIDGE Report No. 46, 1998, prepared for the Swedish International Development Agency.

Brighton, Winkvist A, Akhtar HZ. *God should give daughters to rich families only: attitudes towards childbearing among low-income women in Punjab, Pakistan.* *Soc Sci Med* 2000; 51(1):73–81.

Finally, the relationship between poverty and chronic conditions is limited not only to the lack of resources in the economically disadvantaged. Education about health and healthy behaviours among impoverished groups appears especially deficient. For example, consider the costs associated with health-threatening behaviours and unhealthy lifestyle: not using tobacco costs less than using tobacco, basic foods may cost less than unhealthy foods, and daily travel by walking or bicycling is less expensive than using other modes of transportation. Clearly, there are additional factors beyond lack of resources to be considered when examining the poverty-chronic condition relationship.

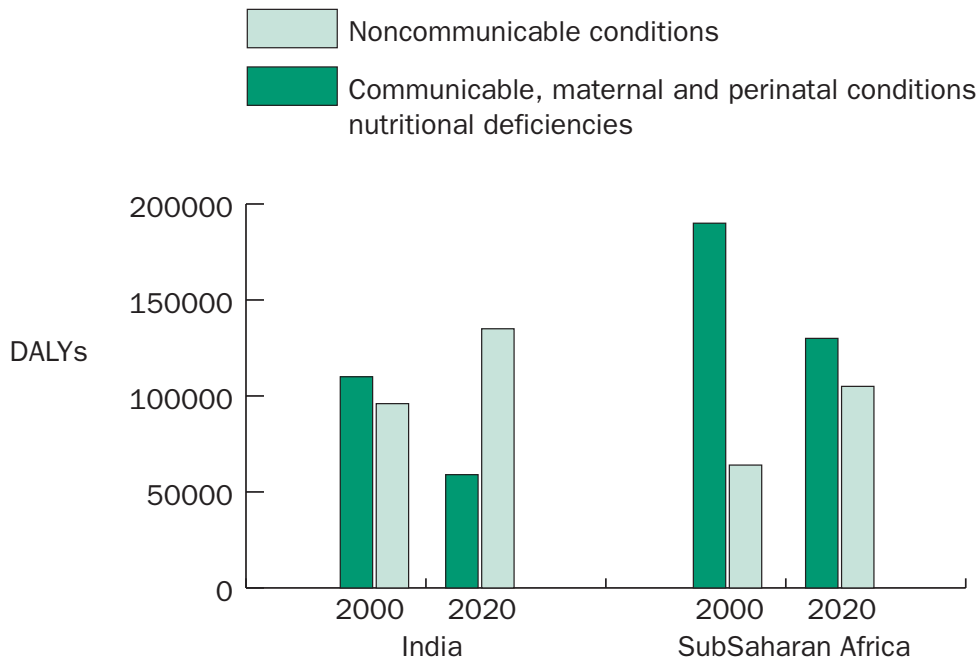
Impact on Developing Countries: “Double Jeopardy”

Developing countries are experiencing a case of “double jeopardy.” They concurrently face two major and urgent health concerns:

- ⊕ Continued infectious diseases, malnutrition, and maternal/perinatal deficiencies
- ⊕ Rapid escalation of other chronic conditions that are not communicable (e.g., heart disease, depression, and diabetes)

The “double burden” of disease for countries experiencing a transition in their health care problems is especially challenging. Infectious diseases and malnutrition problems obviously necessitate attention, but these problems cannot take precedence over the growing epidemic of other chronic conditions. Both problems require judicious planning and strategizing. Thus, countries experiencing “health transitions” are in the double jeopardy situation of simultaneously addressing acute infectious diseases and maternal health in addition to chronic conditions that are noncommunicable. The only solution is a dual agenda of health care in countries experiencing multiple acute and chronic problems. Developing countries have to brace themselves to meet these challenges and to embrace innovative ways of doing so.

Double Burden of Disease in Middle/Low Income Countries



Source: Murray & Lopez, Global Burden of Disease, 1996.

Summary

“Chronic conditions” describes all health problems that persist across time and require some degree of health care management. Diabetes, heart disease, depression, schizophrenia, HIV/AIDS, and ongoing physical impairments all fall with the category of chronic conditions. This section outlines the justification for an updated definition and conceptualization of what constitutes a chronic condition. The separation of health problems into acute vs. chronic seems most pragmatic, comprehensible, and in line with the most contemporary thinking.

Globally, chronic conditions are on the rise. Due to public health successes, populations are ageing and increasingly patients are living with one or more chronic conditions for decades. This places new, long-term demands on health care systems. Not only will chronic conditions be the leading cause of disability throughout the world by the year 2020; if not successfully managed, they will become the most expensive problems faced by our health care systems. In this respect, they pose a threat to all countries from a health and economic standpoint. Chronic conditions are interdependent and intertwined with poverty, and they complicate health care delivery in developing countries that concurrently face unfinished agendas around acute infectious diseases, malnutrition, and maternal health.

Chronic conditions will not go away; they are the challenge of this century. To alter their course will require the concerted and sustained efforts among decision-makers and leaders in health care in every country in the world. Fortunately, there are known, effective strategies to curtail their growth and reduce their negative impact.

1. Chronic Conditions: The Health Care Challenge of the 21st Century



Current Systems Are Not Designed for Chronic Problems

“HEALTH CARE SYSTEM” has been defined as that system which encompasses all the activities whose primary purpose is to promote, restore, or maintain health (*World Health Report 2000*). Thus, “systems” are remarkably expansive and include patients and their families, health care workers and caregivers within organizations and in the community, and the health policy environment in which all health related activities occur.

A Brief History of Health Care Systems

Historically, acute problems, such as certain infectious diseases, were the principal concern for health care systems. Advances in biomedical science and public health measures over the past century have limited the impact of many communicable diseases in most developed countries. And, while some infectious diseases continue to be a threat and an important consideration for health care systems in many developing countries, these systems now must respond to an additional set of health problems.

Because current health care systems developed in response to acute problems and the urgent needs of patients, they are designed to address pressing concerns. For example, testing, diagnosing, relieving symptoms, and expecting cure are hallmarks of contemporary health care. Moreover, these functions fit the needs of patients experiencing acute and episodic health problems. However, a notable disparity occurs when applying the acute care template to patients who have chronic problems. Health care for chronic conditions inherently is different from health care for acute problems, and in this regard, current health care systems worldwide fall remarkably short. Health care systems have not kept pace with the decline in acute health problems and the increase in chronic conditions.

When health problems are chronic, the acute care practice model doesn't work.

In fact, health care systems have not noticeably evolved beyond the conceptual approach used in diagnosing and treating acute conditions. The acute care paradigm is pervasive and now permeates the thinking of decision-makers, health care workers, administrators, and patients. The acute care model drives the organization of care throughout the world even today, even in the most economically developed countries.

To address the rising rates of chronic conditions, an evolution in health care systems is imperative, and they have to advance beyond the acute care model. Acute care will always be necessary (even chronic conditions have acute episodes), but at the same time health care systems must embrace the concept of caring for long-term health problems. Patients, health care organizations, and decision-makers have to recognize the need to expand systems to include new concepts. Decision-makers are instrumental in facilitating a shift in thinking about health care.

What are the Current Problems? Micro-, Meso-, and Macro-Levels

One strategy to organize thinking about health care systems is to divide these complicated networks into strata or levels. Micro-, meso-, and macro-levels provide a reasonable framework and refer to the patient interaction level, the health care organization and community level, and the policy level, respectively. Each of these levels interacts with and dynamically influences the other two. For example, consider the levels as linked by interactive feedback loops in which events at one level influence actions and events at another level, and so on. In this scheme, patients respond to the system in which they receive care, and health care organizations and communities are responsive to policies that in turn influence patients. And, the feedback loops perpetuate.



When micro-, meso- and macro-levels work effectively within themselves, and successfully function in relation to each other, health care is efficient and effective; patients experience better health. Dysfunction within and among the levels creates waste and ineffectiveness. Unfortunately, concerning health care for chronic conditions, dysfunction in the health care system is typical.

Delineation between micro-, meso-, and macro- levels is not always clear. For example, when health care personnel are not prepared to manage chronic conditions because of training deficiencies, the problem could be considered a micro-level problem because it affects patients. Training deficiencies could be considered a meso-level problem because it is the responsibility of the health care organization to ensure providers have the expertise and tools to care for patients. Alternatively, training could be considered a macro-level issue because a policy decision could alter medical training curricula or continuing education requirements to meet population demands.

Micro-Level: Patient Interaction Problems

Within the micro-level of health care, problems are evident. Systems fail to recognize the extraordinary importance of patients' behaviours and the value of quality interactions with health care workers in influencing the outcomes of health care. There is ample scientific evidence regarding efficacious strategies for the micro-level (e.g., interventions for changing patient behaviours, techniques for increasing medication adherence, or methods for improving health care worker communication); however, this evidence is not integrated into daily clinical practice. Two common problems at the micro-level are the failure to empower patients to improve health outcomes and the lack of emphasis on quality interactions with health care personnel.

Failure to Empower Patients

Chronic health problems are enduring, necessitating a care strategy that reflects a protracted time frame and clarifies for patients their roles and responsibilities in managing their health problems. Appropriate clinical care is necessary; however, it is not sufficient for optimal health outcomes. Patients have to make changes in their lifestyles, must develop new skills, and must learn to interact with health care organizations to successfully manage their conditions. They no longer can be viewed as, nor see themselves as, passive recipients of health care services.

Patients have to participate in their care and health care personnel must support their efforts. In fact, there is substantial evidence from more than 400 published articles that interventions designed to promote patients' roles in the management of chronic conditions are associated with improved outcomes. What patients do for themselves on a daily basis (e.g., adhere to medication regimens, exercise, eat properly, sleep regularly, interact with health care organizations, and cease tobacco use) influences their health far more than medical interventions alone. Unfortunately, patient behaviour that could prevent many chronic conditions, and improve their management once they occur, often is overlooked in current health care.

Health care workers report awareness of the importance of patient behaviour, but they state they are ill-prepared to offer behavioural interventions to improve patients' self-management

and adherence abilities. Health care workers also relate that they are too time-pressured to address the educational deficits and psychosocial needs of patients and families.

Center for the Advancement of Health. Indexed Bibliography of Behavioral Interventions of Chronic Disease. Washington, DC, 1996.

There is substantial evidence (from over 400 studies of self-management) that programmes providing counselling, education, information feedback, and other supports to patients with chronic conditions are associated with improved outcomes.

Center for the Advancement of Health, 1996.

Failure to Value Patient Interactions

It becomes imperative that patients develop quality relationships with health care personnel and that these relationships persist across time. Health care workers must ensure that patients have adequate information and skills to manage their chronic conditions. For this to occur, patients need a context in which they can freely ask questions, and they need an environment that initiates and supports their self-management behaviours. The quality of communication between the patient and the provider is known to affect health outcomes across a variety of chronic conditions, including cancer, diabetes, hypertension, headaches, and peptic ulcer disease.

Unfortunately, health care systems have failed to create an environment that promotes quality interactions and partnerships with patients, and there is evidence that health care workers do not collaborate with patients on a variety of topics. Self-management, medication adherence, functional abilities, knowledge, or personal responsibilities are rarely discussed in the clinical context.

Including patients in decision making and treatment planning makes the delivery of care for chronic conditions more effective and more efficient.

Holman, H. & Lorig, K. Patients as partners in managing chronic disease. BMJ 2000; 320:526–527.

Meso-Level: The Problems with the Health Care Organization and its Links to the Community

The health care organization coordinates the delivery and evaluates the quality of the services provided. The organization has a responsibility to unite health care personnel, provide them with the expertise and tools they need to perform their roles in managing patients with chronic problems, and link to community resources. Below are some examples of problems at the meso-level.

Failure to Organize Care for Chronic Conditions

Health care organizations are designed to address acute problems. They use discrete, face-to-face visits with health care workers whose purpose is to diagnose and treat a patient's presenting complaint. There are obvious problems with the application of this typical visit format to chronic conditions. One problem is the discrete nature of the interactions, which belies the importance of promoting a continuous, thoughtful, and high quality relationship between patients and health care workers. Clearly, chronic conditions are not a series of disconnected complaints.

Health care organizations should emphasize treating the patient who has diabetes, not treating the diabetes.

Health care organizations have not created a planned programme of care across time. This simply is unjustified as complications and the eventual outcomes of poorly managed chronic conditions follow a known and predictable course. (For instance, neuropathy and amputation are typical outcomes of uncontrolled diabetes.) The risks and complications associated with every chronic condition are reasonably calculable and in many cases can be delayed, if not prevented entirely. However, this requires health care that is proactive and organized around the concepts of planning and prevention. As health care happens now, complications or symptoms prompt patients to visit their health care workers.

Health Care Workers Lack Tools and Expertise

Current health care organizations employ a workforce that is trained in acute care practice models. This training strategy is appropriate for health care workers who diagnose and treat acute health problems; however, acute care skills are necessary, but not sufficient, for managing chronic conditions.

Specialized knowledge is available for managing chronic problems, and for changing patient behaviour associated with self-management. For example, there are tools and techniques that enhance medical management by helping patients with adherence and other self-management strategies. Health care workers are not exposed to these skills or to skills that enable them to effectively collaborate with patients and function within health care teams.

Practice is not Informed by Scientific Evidence

Guidelines based on the available scientific evidence for the management of many chronic conditions are well established. Unfortunately, this important information does not systematically reach health care personnel; thus, interventions known to be effective for many chronic problems are not provided routinely. Moreover, medications, diagnostic equipment, and laboratory services that are necessary to follow guideline protocols are not always available. The failure to provide care informed by evidence results in sub-optimal patient outcomes and waste. Without evidence to guide care, effective interventions are at risk of exclusion, and patients continue to be exposed to interventions known to be ineffective.

Stockwell, DH, et al. The determinants of hypertension awareness, treatment, and control in an insured population.

Amer J of Pub Hlth 1994; 84(11):1768–74.

Legorreta, AP, et al. Compliance with nation asthma management guidelines and specialty care: A health maintenance organization experience. *Arch Int Med* 1998; 158:457–64.

Kenny, SJ, et al. Survey of physician practice behaviors related to diabetes mellitus in the US: Physician adherence to consensus recommendations. *Diabetes Care* 1993; 16(11):1507–10.

Failure to Address Prevention

Most chronic health problems are preventable, yet health care workers fail to seize provider-patient interactions as opportunities to inform patients about health promotion and disease prevention strategies. Given information about making appropriate choices, patients and their families have the option to act to improve their health. With the help of health care personnel, patients can engage in behaviours that prevent the onset of chronic conditions, or delay complications of conditions they have already developed. However, they need knowledge, motivation, and skills to cope with substance abuse, to change hazardous work environments, to stop using tobacco products, to practice safe sex, to get immunizations, to eat healthy foods, and to engage in physical activity. Prevention and health promotion should be part of every health care encounter, but this is far from routine clinical care.

Information Systems are Not in Place

Information systems are a prerequisite for coordinated, integrated, and evidence-informed health care. They can be used to monitor health trends, birth and death rates, the implementation of standards and regulations, and clinical processes of care, among other things. In the case of chronic conditions, a patient “registry” can serve a reminder function for prevention and follow-up services, and it can assist in monitoring patient behaviours such as adherence to treatment regimens or other important health changes over time.

Without a monitoring system, health care workers are reactive rather than proactive when it comes to the needs of patients with chronic conditions. The failure to use a strategy to monitor chronic conditions allows problems to develop instead of being delayed or prevented.

Failure to Connect with Community Resources

Health care organizations rarely integrate community resources into the care of patients with chronic conditions leaving a broad array of consumer groups, patient advocates, and non-governmental agencies virtually untapped. Community resources are critical in every country, but they have the potential to leverage significantly the health care in low-income countries where basic primary health care services may be thinly stretched. Community resources can fill the gap in services that are not provided in health care organizations to greatly enhance the care of patients with chronic conditions, yet formal connections are rarely established.

Macro Level: Policy Problems

Much inefficiency in current systems of health care can be traced to the macro- or policy level. This is the level where overall values, principles, and strategies for health care develop,

and where decisions concerning resource allocation occur. Without overall coordination at this level, health services are likely to be wasteful and fragmented.

Despite the importance of health policies, a recent WHO survey revealed that in most parts of the world, governments do not have policies for preventing or managing noncommunicable diseases (see figure below). Similarly, the WHO ATLAS study (2001) on mental health has revealed that:

- ⊕ Over 40% of countries do not have a mental health policy;
- ⊕ Over 30% of countries do not have a mental health programme;
- ⊕ Around $\frac{1}{3}$ of countries do not have a mental health budget. Among those that do, around $\frac{1}{3}$ spends less than 1% of its total health budget on mental health.

Among the countries that have policies and plans directed at one or more chronic conditions, problems are common. Below are examples of some typical problems at the policy level.

A Legislative Framework is Lacking

With globalization and expanding private sector interests in health care, the need for a coherent legislative framework is increasing. Legislation can, among other things, define entitlements of people to health care, promote the protection of human rights for patients, define appropriate roles for private industry in influencing the choice of interventions, and impose safety regulations on health care workers outside the formal health system. Despite its wide-ranging potential benefits, in many parts of the world law making remains a neglected tool for enhancing the quality of health services.

Health Policies and Plans are Outmoded

Because of the double burden of infectious and noncommunicable diseases, governments face a pressing demand for efficiency in their management of chronic conditions. However, in many cases, policies and plans inadvertently perpetuate outmoded models of health care, by relying on out-of-date epidemiological data, using a singular biomedical focus, and emphasizing cost-containment at the expense of broader health objectives. Instead of integrated, population-based care that emphasizes patients' needs, policies and plans often promote models of acute, episodic care, which result in fragmentation and waste to the system.

Governments are not Investing Wisely

In many parts of the world, governments and health systems are investing in the wrong priorities for the management of chronic conditions. This is due to multiple factors, including donor-driven agendas and the undue influence of private industry and professional groups. The result is failure to allocate resources according to the disease burden and the existence of cost-effective interventions. Health care services do not benefit from rational planning according to population needs, and there is little emphasis on capacity building in terms of either human resources or infrastructure. Biomedically focused interventions, which often favour solely the use of medical technology and pharmaceuticals, are emphasized at the expense of low-tech strategies. Training health care workers and public health personnel in self-management strategies and adherence to enhance biomedical interventions, increasing educational

campaigns to increase health promotion awareness, and creating opportunities for patients to be more physically active may be worthwhile investments.

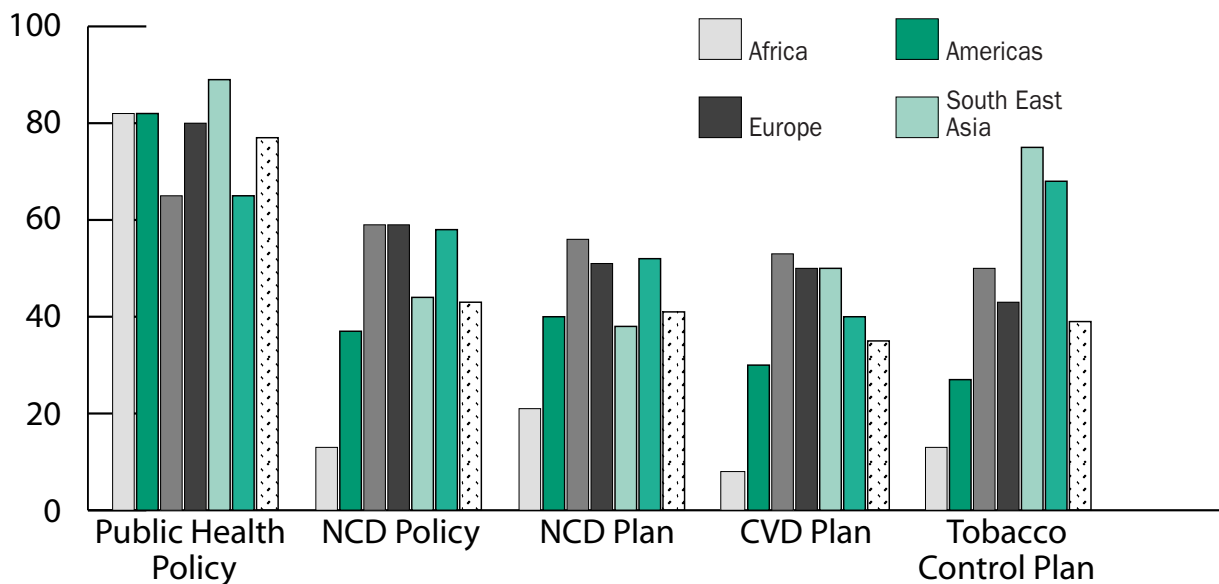
Financing Systems are Fragmented

In many systems of care, financing is fragmented across several budget lines, with different people responsible for different aspects of care. For example, capital expenses may fall under a different financing system than provider training, creating the unthinkable situation in which expensive medical equipment is purchased, but no one is trained to use it. Inpatient care may fall under the budget of a hospital administrator, whereas outpatient care may be the responsibility of a different clinic manager. With fragmentation such as this, it is difficult to provide consistent, coordinated care for chronic problems.

Provider Incentives are Misaligned

Despite financing systems establishing incentives for providers to deliver evidence-based and efficient care, problems abound. The retrospective reimbursement of providers without regulation (e.g., fee for service arrangements) is typical in many health systems. Unfortunately, it creates contexts whereby health care workers favour expensive, high-tech interventions over inexpensive, low-tech interventions, regardless of their relative cost-effectiveness. Indeed, when health care workers are reimbursed proportionate to the volume and cost of services they deliver, they are effectively economically “punished” for engaging in innovative, health promoting clinical practice.

Percent of countries by WHO Region with national policies, plans and legislation for NCD prevention and control



Standards and Monitoring are Insufficient

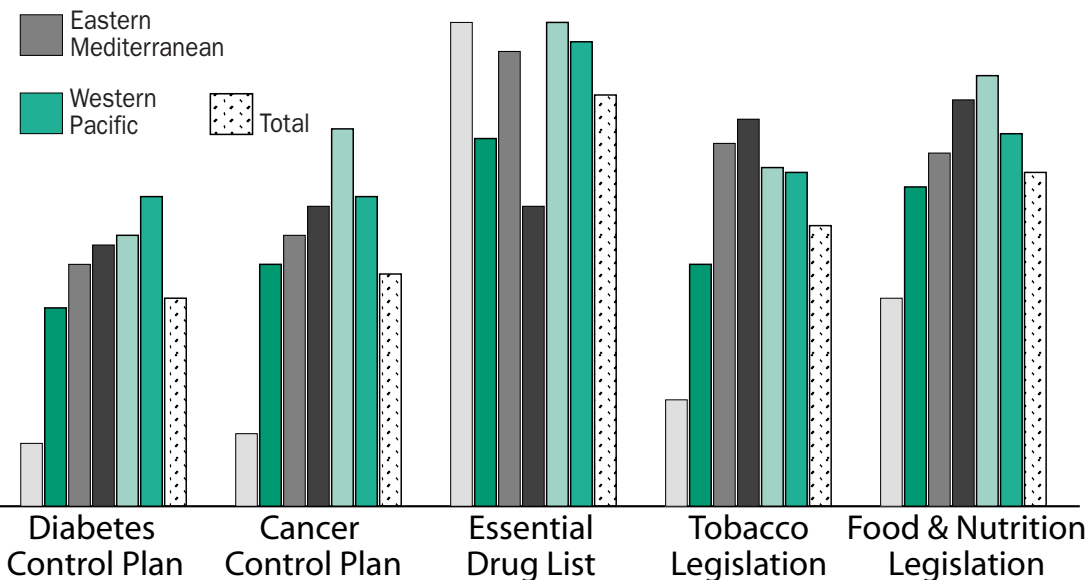
The assurance of quality in health care has not met even reasonable expectations. Consequently, health care is at risk of being substandard and frequently based on the personal preferences of health care workers, or at best, what health care workers learned during their professional education. Accreditation, monitoring, and quality assurance are tools at the disposal of health care systems and governments, yet they rarely are applied fully. Inefficiency and waste are the results.

Continuing Education is Lacking

Despite the benefits of continuing education, many countries have no requirement or mechanism for health care workers to participate in educational activities after finishing formal training. Subsequently, there is no built-in system for disseminating new information, and there may be a lack of interest by health care workers to attend training courses if they are not required to do so. Therefore, it often takes decades (if it happens at all) before a new discovery gains widespread awareness and acceptance in the health care community.

Intersectoral Links are Overlooked

Comprehensive care for chronic conditions extends beyond the formal health sector, to include community groups and nongovernmental organizations, as well as governmental non-health sectors such as housing, agriculture, transportation, and labour. Integrated legislative frameworks are rare. Without this level of coordination at the sector level, the quality and coherence of services diminishes. Duplication of care is also common, resulting in resource waste for the system.



Summary

Health care systems have evolved around the concept of acute, infectious disease, and they perform best when addressing patients' episodic and urgent concerns. However, the acute care paradigm is no longer adequate for the changing health problems in today's world. Unfortunately, but perhaps because of its remarkable success, the acute care model now permeates the thinking of patients, health care workers, organizations, and governments. It is pervasive across all levels of the health care system, and perpetuated by out-dated health care training curricula. Health care systems have to evolve by moving toward a model of care that incorporates both acute problems and chronic conditions. Without advances, countries can anticipate increasingly inadequate care and waste of precious resources.

Micro-, meso-, and macro- levels of the health care system are not discrete entities, rather their boundaries blur and they dynamically interact with and influence each other. Evolution is necessary within each stratum. Increased attention to patient behaviours and health care worker communications is paramount for improving care for chronic conditions. Care has to be coordinated for chronic conditions using scientific evidence to guide practice. Community resources must be integrated in order to make significant gains. Health care organizations must streamline services, upgrade the skills of health care workers, focus on prevention, and establish information tracking systems to provide planned health care for predictable complications. Governments need to make informed decisions for their populations and set standards for quality and incentives in health care. Financing must be coordinated and inter-sectoral links must be strengthened.

Without change, health care systems will continue to grow increasingly inefficient and ineffective as the prevalence of chronic conditions rise. Both high and low-income countries spend billions of dollars on unnecessary hospital admissions, expensive technologies, and the collection of useless clinical information. Health care expenditures will continue to escalate, but improvements in populations' health status will not. As long as the acute care model dominates health care systems, it will effectively undermine health outcomes that otherwise could be accomplished.

2. Current Systems Are Not Designed for Chronic Problems



Innovations in Care: Meeting the Challenge of Chronic Conditions

Innovation is Imperative

The magnitude of change needed in current health care systems to address chronic conditions might seem overwhelming. Health care leaders in every country need a strategy to help their systems evolve to meet the increasing challenges. In some countries, timing, knowledge, and resources might align to support a complete overhaul of an existing health system to more effectively address chronic problems. However, in most countries, a gradual approach to change will be a better tactic, and small steps in the right direction can greatly influence the health and clinical care of a population.

Initiating a major change in thinking among all stakeholders in the health care system is an especially challenging task. Nevertheless, the magnitude of the undertaking is not a justification to continue to ignore the chronic conditions problem or pass it on to future policy and health care leaders. Today's decision-makers have the responsibility for initiating the process of health care system change and improvement.

This section presents a new framework for health care systems to improve care for chronic conditions. The framework is comprised of fundamental components within the patient (micro-), organization/community (meso-), and policy (macro-) levels. These components are described as “building blocks“ that can be used to create or redesign a health care system that can more effectively manage long-term health problems. Decision-makers can use the building blocks to develop new systems, initiate changes in existing systems, or make strategic plans for future systems. A number of

countries have already implemented innovative programmes for chronic conditions using building blocks from the framework. These are presented as examples of real world successes.

System-wide improvement or integrated health care can be a long time in development and implementation. Fortunately, smaller, more individual changes can happen more quickly and have dramatic impact on the quality of clinical care.

Institute for Health Care Improvement, Eye on Improvement, 2001; VIII(1).

What is Innovative Care for Chronic Conditions?

Innovation in health care for chronic conditions is the introduction of new ideas, methods, or programmes to change the way chronic conditions are prevented and managed. Innovation means integration of fundamental components from each of the micro-, meso-, and macro-levels of the health care system, but first, a re-conceptualization of chronic conditions is needed to create a necessary foundation from which to build.

A New Way of Thinking about Chronic Conditions

From a health care perspective, it is no longer advantageous to view chronic conditions as discrete health problems, nor according to the traditional categories of noncommunicable and communicable diseases. Innovative care is not based on the etiology of a particular problem, but is based on the demands that the health problem places on the health care system. In the case of chronic conditions, the demands are similar regardless of the cause of the condition. Moreover, effective management strategies are remarkably comparable for many chronic problems, and chronic conditions management, inclusive of all chronic health problems, is developing an identity of its own in health care.

In new conceptualizations of chronic conditions, the quality of life of the patient and family is thought an important outcome, and the role of the patient in producing this outcome is emphasized. The patient is not an inactive participant in care; rather, he/she is considered a “health producer.”

Holman H. & Lorig K. Patients as partners in managing chronic disease. BMJ 2000; 320:526–527.

A New Way of Organizing Health Care Systems

Innovative care means re-orienting health care systems such that outcomes valued by the system are the ones that actually are produced. The outcomes desired for chronic health problems differ from those considered necessary for acute problems. The needs of patients with chronic conditions differ as well. Patients with chronic problems need broader support; they

need more than solely biomedical interventions. Patients need planned care; they need care that anticipates their needs. Patients need integrated care that cuts across time, settings, and providers and patients need self-care skills for managing problems at home. Patients and their families need support within their communities and support from broader policies to effectively manage or prevent chronic conditions. Optimal care for chronic conditions requires a different type of health care system.

One strategy for re-orienting services is to recognize previous successes in a health care organization or system. When effective clinical and operational solutions such as successful HIV/AIDS or depression programmes can be identified in existing systems, they can be leveraged into better care for other chronic problems.

Connecting the Patient, Community, and Health Care Organization

Innovative care elevates the roles of patients and their families and recognizes that they can most effectively manage chronic conditions with the support of their health care teams and their communities. All three entities need to be linked and each is integrally important to the other. Patients, communities, and health care organizations each have important roles to play in improving outcomes for chronic problems.

Innovation in care for chronic conditions is the integration of “building blocks” from the micro-, meso-, and macro-levels of the health care system.

Building a Health Care System for Chronic Conditions: The Innovative Care for Chronic Conditions Framework

The framework described in this section is an expansion of an earlier model, the Chronic Care Model, which was developed to present a structure for organizing health care for chronic conditions.

Wagner EH, Davis C, Schaefer J, Von Korff M, Austin B. A survey of leading chronic disease management programs: Are they consistent with the literature? Managed Care Quarterly, 1999. 7(3):56–66.

The new, expanded framework, called the Innovative Care for Chronic Conditions (ICCC) Framework, recognizes a broader policy environment that envelops patients and their families, health care organizations, and communities. The policy environment is responsible for legislation, leadership, policy integration, partnerships, financing, and allocation of human resources that allow communities and health care organizations to help patients and families with chronic conditions.

Guiding Principles of the Framework

The ICCC Framework is based upon a set of guiding principles. Each of the principles is fundamental to the micro-, meso-, and macro-levels of the health care system.

Evidence-based decision making

Evidence should be the basis for all decisions in policy-making, service planning, and clinical management of chronic conditions. Evidence includes the available information about the magnitude of chronic conditions, effective and efficient interventions to reduce the associated burden, current and anticipated resource needs, and the appropriate mix of skilled health care personnel. Evidence-based information includes what is known about clinical processes of care and patient outcomes.

If reliable data are scarce, it is necessary to build capacity and infrastructure for the collection and analysis of relevant information about chronic conditions. When evidence, rather than intuition or impulse guides decisions, care for chronic conditions is optimized.

Population focus

Health care systems for chronic conditions are most effective when they prioritize the health of a defined population rather than the single unit of a patient seeking care. Population management is a long-term, proactive strategy in which resources are organized to improve quality of care and health outcomes in populations with well known and well understood medical service needs. This approach reduces the need for high cost, high intensity resources.

Prevention focus

Because most chronic conditions are preventable, every health care interaction should include prevention support. When patients are systematically provided with information and skills to reduce health risks, they are more likely to reduce substance use, to stop using tobacco products, to practice safe sex, to eat healthy foods, and to engage in physical activity. These risk reducing behaviours can dramatically reduce the long-term burden and health care demands of chronic conditions. To promote prevention in health care, the commitment and action of the health care organization, community, and government are vital for success.

Quality focus

Quality control ensures that resources are used properly, that providers are accountable for providing effective and efficient care, and that patient outcomes are the best possible given any limitations. Quality is not only a health care delivery issue. A quality focus that begins at the policy level ensures better quality at the organization/community and patient levels of the system.

Integration

Integration is the core of the ICCC Framework and health care for chronic problems requires integration from multiple perspectives. Each level of the health care system, micro-, meso-, and macro-, must work together and share in the unmistakable goal of better care for chronic conditions. Boundaries among the levels of the system must blur to allow true integration of health care organizations and communities, policies, and patients.

Integration, coordination, and continuity should occur across time and health care settings, including primary health care, speciality care (if available), and inpatient care. Care should be integrated across all categories of chronic conditions, moving beyond traditional disease boundaries.

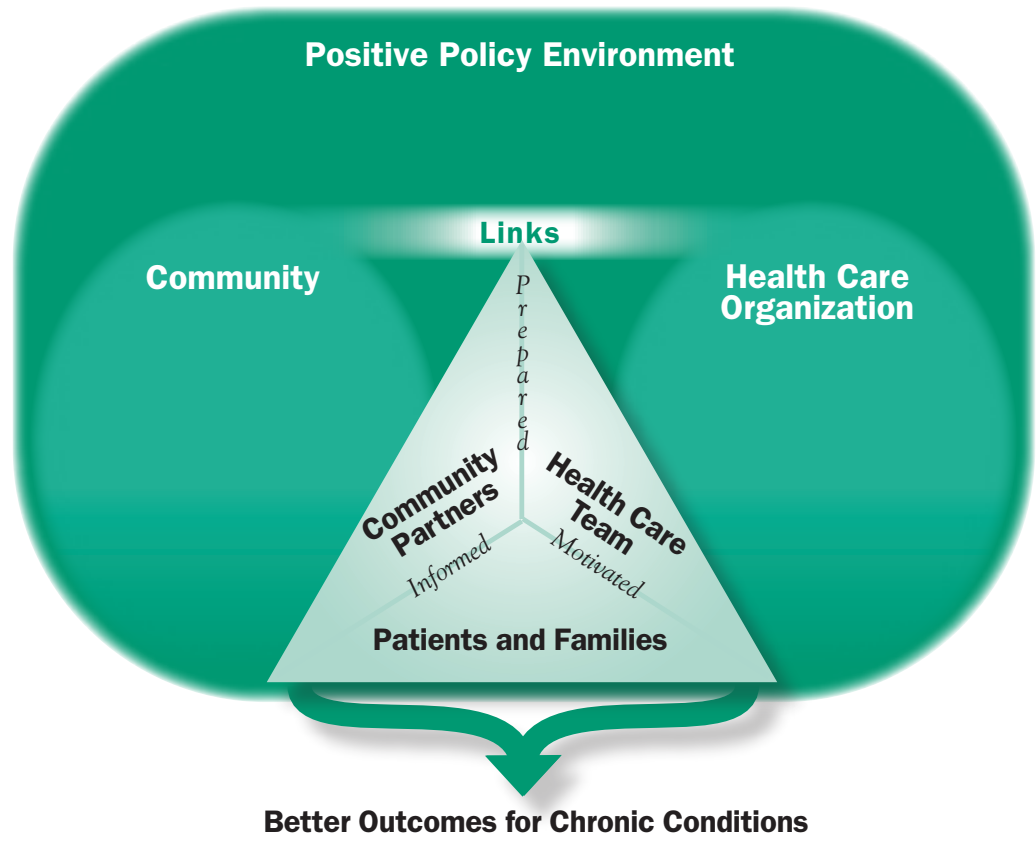
Flexibility/adaptability

Health care systems need to be prepared to adapt to changing situations, new information, and unforeseen events. Changes in disease rates and burden, as well as unpredicted disease crises can be assimilated into systems that are designed to adapt to change. The occurrence of political party transitions or unexpected economic downturns need to be planned for and accommodated in health care systems.

Routine surveillance, monitoring, and evaluation are key for systems to be able to adapt to changing contexts. When these processes are embedded within a health care system, it has the potential to become a constantly evolving, adapting “learning system” that foresees and responds flexibly to changing health care demands.

A flexible framework that tolerates transitions, yet remains robust in the face of changing demands is ideal. The building block concept of the ICCC Framework allows systems to adapt by emphasizing or developing different areas (building blocks) given situational pressures.

Innovative Care for Chronic Conditions Framework



Building Blocks of the ICCC Framework

Micro-Level: Building Blocks at the Patient Interaction Level

Patients and their families are the most undervalued assets in the health care system. Their potential to affect outcomes is undeniable and their capabilities should be leveraged fully in any model designed to improve care for chronic conditions. The ICCC Framework elevates the role of patients and families and partners them with their communities and health care organizations.

The triad at the centre of the ICCC Framework consists of the patient and family, community partners, and the health care team. This partnership triad is unique to the care of chronic conditions. Whereas successful outcomes for acute health problems can occur with a single health care provider, positive outcomes for chronic conditions are achieved only when patients and families, community partners, and health care teams are informed, motivated, prepared, and working together.

Note in the framework that the triad is influenced and supported by the larger health care organization and by the broader community, which in turn influence, and are influenced by, the broader policy environment. In essence, the meso- and macro-levels of the system enable the triad of the patient/family, community partners, and health care team to function at its best.

When the components of each level of the health care system are integrated and working optimally, the patient and family become active participants in care, supported by their community and their health care team. A well functioning triad occurs as the result of good communication between the health care organization and the community about patient-specific issues and about health care, in general. The triad is functioning optimally when patients and their families deny gaps, inconsistencies, and redundancies in their health care. They report feeling empowered, capable, and supported to self-manage their chronic problems.

Prepared, informed, and motivated patients and families

Patients and families make up one section of the triad. They need three fundamental things to manage and prevent chronic conditions.

- ⊕ They need to be informed about their chronic conditions, including the expected course, expected complications, and effective strategies to prevent complications and manage symptoms.
- ⊕ They need motivation to change and maintain daily health behaviours, adhere to long-term therapies, and self-manage their conditions.
- ⊕ They need to be prepared with behavioural skills to manage their conditions at home. This includes having the necessary medications and medical equipment, self-monitoring tools, and self-management skills.

Prepared, informed, and motivated health care teams

In the ICCC Framework, the health care “team” is part of the partnership triad. The team includes multiple categories of care providers, from each level of care (including specialists), and within all clinical settings. Team members accept roles and responsibilities for tasks according to their professional strengths and capacities. The traditional hierarchy flattens and moves

South Africa

Enhancing Self-Management and Adherence

The building blocks:

- Support self-management and prevention (health care organization)
- Mobilize and coordinate resources (community)
- Provide complementary services (community)

In Cape Town, South Africa, *The Compliance Service* is a new, unique service taking proactive steps to help people self-manage their chronic conditions by providing them with timely email and SMS reminders to take their medication as prescribed. This project is especially important in light of the fact that adherence to long-term therapies is around 50% in developed countries, and as low as 20% in developing countries.

The core of *The Compliance Service* is a system that sends patients reminders via the text functions of their mobile telephone at the appropriate time(s) of the day. The messages carry lifestyle tips (e.g., a low salt recipe for people with hypertension), humour, or condition-specific information. Each message ends with advice (e.g., "take your [medicine name] now", or "it is time to make an appointment at [clinic name] now"). There is a monitoring facility that allows recipients to report transmission problems, or to contact a 24 hour help line staffed by professional nurses.

Mobile telephones are common in this part of South Africa, allowing this service to reach otherwise underserved populations. In the most impoverished communities surrounding the city, 30% of patients have mobile phones; this figure rises to over 70 percent in other parts of the Cape Town region. The ongoing costs for running the service are small: roughly \$1 US, per patient, per month.

The system appears to be working. Health care workers, patients, and health care administrators are pleased with the service. In addition, the City Council reports that adherence for TB patients selected for the service is as at least as good as those who undergo directly observed therapy (DOTS). A formal evaluation of the project is planned.

Source: Dr David Green, On Cue Compliance Service. For more information see www.compliance.za.net/

away from physician dominated models because each team member is valued for his or her unique skills in the management of chronic conditions. Teams form according to human resource and geographic realities of the health care organization. However, innovations in the team concept may be necessary. For example, virtual teams, linked through information technology, would be practical in many regions.

Prepared, informed, and motivated community partners

Community partners are the third part of the micro-level triad. When community partners are armed with information and skills about the management of chronic conditions, a previ-

ously untapped collection of individuals become prepared to take on functions traditionally assigned to health care workers in a public health system. Large populations of persons willing to assist can transform into abundant and prepared resources for the delivery of essential services related to chronic conditions. Community partners can provide services that span all chronic problems, from diabetes and high blood pressure, to community based care of mental disorders. These community resources can reduce unnecessary demands for follow-up services and tertiary care typically provided in formal health care organizations.

Meso-Level: Building Blocks for the Health Care Organization

Health care organizations can create an environment in which efforts to improve health care for chronic conditions take hold and flourish. A recent Cochrane Collaboration review found several organizational factors, including health care workers' skills, personnel mix, visit schedules, information systems, and patient self-management made a difference in outcomes

Scotland

Integrating Primary and Community Health Services

The building blocks:

- Strengthen partnerships (policy environment)
- Develop and allocate human resources (policy environment)
- Organize and equip health care teams (health care organization)
- Support self management and prevention (health care organization)
- Encourage better outcomes through leadership and support (community)
- Mobilize and coordinate resources (community)

In Scotland, Local Health Care Cooperatives (LHCCs) are part of the internal structure of Primary Care Trusts (PCTs). They are local integrating organizations, bringing together primary and community health services with a range of specialist services. Participation in LHCCs by general practitioners is voluntary, but after only 2 years, the vast majority of medical practices in Scotland are involved. Most LHCCs have a multi-disciplinary management board typically drawn from medicine, nursing, pharmacists, the professions allied to medicine, and the public. LHCCs serve populations from under 10,000 to over 172,000. Although formal evaluation of LHCCs is pending, there is a growing view that they play an important part in the evolution of a care hierarchy that supports local community health and well-being through the integration of care.

A New Hierarchy of Care Promoted by Scotland's Local Health Care Cooperatives

Community Health and Well Being

A non-medical emphasis on the control of local health hazards, and the promotion of positive health through public health programmes linked to community plans

for chronic conditions. The review also noted that more comprehensive intervention is more likely to be successful; those that target only provider behaviour do not change patient outcomes unless accompanied by interventions directed at patients. In addition, the review reports health care organizations that delegate roles to non-physicians, assure close surveillance of patients, and plan follow-up care improve outcomes for chronic health problems, as well.

Renders, CM, Valk, GD, Griffin, S, Wagner, EH, vanEeijk, JTM, Assendelft, WJJ. *Interventions to improve the management of diabetes mellitus in primary care outpatient and community settings. Cochrane Review. In: The Cochrane Library, Issue 2, 2001. Oxford: Update Software.*

Promote continuity and coordination

Patients with chronic conditions need services that are coordinated across levels of care – primary, secondary, and tertiary care – and across providers. Health care workers who care for the same patients need to communicate with each other. There is strength in the collective knowledge, information, and skills of multiple health care workers that far surpass that

Self Care

Enabling people to look after themselves with the assistance of carefully designed information and educational materials, including advice offered through services delivered on line or through digital TV

NHS 24

A nurse-led triage system to direct patients unable to care for themselves to the most appropriate member of the extended primary care team or in emergency to the ambulance service or hospital

Extended Primary Care

Stronger teams of primary care professionals including doctors, nurses, midwives, pharmacists, social workers etc. able to meet the vast majority of patients care needs

Intermediate Care

Focussed on community hospitals, nursing, residential care and the patient's own home; utilizing the skills of 'intermediate care physicians', nurses, therapists and social workers IC offers locally provided 'step-up, step-down' services including investigation, rehabilitation, and respite, principally but not exclusively for the elderly

Secondary Care

Linked through managed clinical networks, and supporting the work of the levels below

Tertiary Care

Linked through managed clinical networks, as centres of highly specialized advice and care

Source: Woods KJ, The development of integrated health care models in Scotland; International Journal of Integrated Care 2001; 1(3)

of a single provider. Where possible, an identified “care coordinator” can serve as the overseer and director of a patient’s care ensuring that efforts of all involved health care workers are integrated and coordinated.

Continuity of care for chronic conditions also is critical. Care must be planned and thoughtful over the course of the condition. Follow-up visits should be scheduled and organizations must be proactive in caring for patients with chronic problems. Allowing symptoms or the onset of preventable complications to prompt patients to seek care is costly, inefficient, and ineffective. By contrast, planned care permits the early detection of complications and the swift identification of decline in patients’ health status.

Encourage quality care through leadership and incentives

Senior and other influential leaders need to lend clear support and sponsorship for improving the care of chronic conditions in their health care organizations. Incentives for administrators, health care workers, and patients can be re-aligned; rewards for effective clinical processes that affect management and prevention of chronic problems can be established. Ongoing quality monitoring and quality improvement projects should become routine activities among all health care workers. The quest for quality must emerge as part of the organizational culture. Health care leaders play a pivotal role in creating an environment that values quality.

Sub-Saharan Africa

The Essential NCD Health Intervention Project

The building blocks:

- Organize and equip health care team (health care organization)
- Use information systems (health care organization)

There is evidence that the prevalence of certain noncommunicable diseases, such as diabetes and hypertension, is increasing rapidly in parts of Sub-Saharan Africa. To address this emergent need, a pilot project is being undertaken in Tanzania and Cameroon. The aim of the project is to provide evidence-based treatment packages for hypertension, heart disease, and diabetes in primary health care. Project developments include:

- ⊕ clinical guidelines;
- ⊕ patient education materials to support the use of the guidelines;
- ⊕ methods and materials for training and supporting staff in the use of the guidelines;
- ⊕ patient record forms, and a system for appointments and follow-up.

Unwin N, Mugusi F, Aspray T et al. Tackling the emerging pandemic of non-communicable diseases in sub-Saharan Africa: the essential NCD health intervention project. Public Health 1999; 113: 141–146.

Organize and equip health care teams

Health care teams need to be equipped to manage chronic conditions. They need necessary supplies, medical equipment, laboratory access, and essential medications to provide care that is informed by scientific evidence. Teams require support to make optimal decisions, including written guidelines of care, and diagnostic and treatment algorithms.

Health care teams need special skills and knowledge that extend traditional biomedical training. Effective communication abilities are important to promote information exchange, open questioning, and shared decision-making with patients. In addition, health care workers need expertise in behavioural interventions to help patients initiate new self-management techniques, adhere to complex regimens, and make lifestyle changes. Even more importantly, workers need the skills to support patients in their efforts to maintain change over the long-term course of the condition.

Physicians and other health care workers need skills that enable them to work cooperatively. The traditional independent practice model is not optimal when health problems are chronic. In contrast, teams made up of multiple health care workers must learn to work collaboratively and share patient responsibilities.

Support self-management and prevention

Effective self-management helps patients and families adhere to regimens in ways that minimize complications, symptoms, and disability associated with chronic problems. Patients and their caregivers need to be informed about self-management strategies and be motivated to implement them on a daily basis over the course of time. Self-management training (for example, to improve adherence to medications, consistent exercise, proper nutrition, regu-

Ethiopia

Improving Access and Adherence

The building block:

- Organize and equip health care teams (health care organization)

In Ethiopia, the Gondar College of Medical Sciences is pioneering integrated care for chronic conditions. Its Chronic Illness Project is based on the concepts that access and adherence to treatment will be improved if patients are managed at health institutions closest to their homes. Internists from the College visit these health institutions every month to run follow up clinics with the help of trained nurses. This effort began as a diabetes project, but has now expanded to include epilepsy, rheumatic heart disease and hypertension, asthma, community eye care and management of chronic physical disability. Funding from the UK National Lottery, through the Tropical Health and Education Trust in London supports the project.

Source: Dr Shitaye Alemu, Gondar College of Medical Sciences, Ethiopia.

lar sleep, and tobacco cessation) can reduce the frequency of follow-up visits and will prove cost-effective with time.

Health care workers are crucial in educating patients and families about self-management. They are instrumental in helping patients initiate new behaviours. However, more importantly, health care workers must support patients' self-management efforts over time. Attention to self-management and prevention of chronic conditions should occur at every patient encounter.

USA

Integrated Care for Chronic Conditions

The building blocks:

- Promote continuity and coordination (health care organization)
- Organize and equip health care teams (health care organization)
- Use information systems (health care organization)
- Support self-management and prevention (health care organization)

Kaiser Permanente, a large managed care organization in California, recently re-oriented its primary care clinics to better meet the needs of patients, emphasizing the needs of those with chronic conditions. Multidisciplinary teams were created that include physicians, nurses, health educators, psychologists, and physical therapists. These primary care teams link with pharmacy, the telephone advice and appointment centre, chronic conditions management programmes, and specialty clinics creating a totally integrated system of care from outpatient clinics to inpatient hospital care.

Patients are enrolled in the chronic conditions management programs via outreach strategies that identify those with chronic conditions who have not sought primary care, and through physician identification during primary care office visits. Patients receive services from multiple disciplines, based on the intensity of their needs. There is an emphasis on prevention, patient education, and self-management. Non-physician team members facilitate group appointments. Biological indices have improved across conditions such as heart disease, asthma, and diabetes. Screening and prevention services have increased and hospital admission rates have declined.

A recent comparison of Kaiser's integrated care system with the UK's National Health System found that although costs per capita in each system were similar, Kaiser's performance was considerably better in terms of access, treatment, and waiting times. Explanations for Kaiser's better performance included real integration across all components of health care, treating patients at the most cost-effective level of care, market competition, and advanced information systems.

Feachem GA, Sekhri NK, & White KL. Getting more for their dollar: a comparison of the NHS with California's Kaiser Permanente. British Medical Journal 2002; 324:135-143.

Use information systems

Timely information about individual patients, and populations of patients is a critical feature of effective care for chronic conditions. Information systems gather and organize data about epidemiology, treatment, and health care outcomes. The goal is to use information systems to improve planning and the general standard of care.

China

Volunteer Lay Leaders Increase Self-management and Reduce Health Care Utilization

The building blocks:

- Support self-management and prevention (health care organization)
- Encourage better outcomes through leadership and support (community)
- Provide complementary services (community)

Chronic conditions – mainly heart disease, stroke, cancer and lung diseases – are becoming the leading causes of disability and premature death in China, and its major health care expense. In one of the most severely affected areas of the country, Shanghai, researchers have demonstrated that a chronic disease self management programme is successful in increasing self-management behaviours, maintaining and improving health status, and decreasing health service utilization.

This programme, modelled upon an approach developed and proven in the United States, is based on the following assumptions:

- ⊕ People with chronic conditions have similar concerns and problems;
- ⊕ People with chronic conditions can learn to take responsibility for the day-to-day management of their disease(s), and physical and emotional problems caused by their disease(s);
- ⊕ Lay people with chronic conditions, when given a detailed leaders manual, can lead a self-management programme as effectively, if not more effectively, than health professionals.

The programme is conducted in groups by trained volunteer lay leaders working in pairs. A total of seven sessions are scheduled on consecutive seven weeks, and are 2 to 2.5 hours per session in length. Topics include exercise, use of cognitive symptom management techniques, nutrition, fatigue and sleep management, use of community resources, use of medications, managing fear, anger, and depression, communication with health professionals, problem-solving, and decision-making.

The encouraging results demonstrate that this USA-developed approach is culturally acceptable to Chinese and feasible in China when delivered according to a locally based model and integrated into the routine of community government organizations and the community health services.

Fu Dongbo, Patrick McGowan, Ding Yongming, Shen Yi-e, Zhu Lizhen, Yang Huiqin, Mao Jianguo, Zhu Shitai, Wei Zhihua & Fu Hua. Implementation and Quantitative Evaluation of a Chronic Disease Self-Management Program in Shanghai. Unpublished manuscript, 2002.

An information system that lists patients with chronic conditions (referred to as a “patient registry”) can serve a reminder function for prevention and follow-up services. Health care teams can use this list to identify patients’ needs, to follow-up and plan care, to monitor responses to treatment, and to assess health outcomes. Information systems can be as simple and low cost as a paper-based registry of patients. Alternatively, information systems can be highly automated using the latest electronic technology. The essential point is to integrate a systematic strategy for collecting useful patient information that will result in effective management.

Meso-Level: Building Blocks for the Community

Community resources are vital to health care systems and to the management of chronic problems. Consider that persons with chronic conditions spend the vast majority of their time

USA

Community-Based Outreach Programme Helps Urban Poor Adhere to HIV/AIDS Treatment

The building blocks:

- Ensure quality through leadership and incentives (health care organization)
- Support self-management and prevention (health care organization)
- Use information systems (health care organization)
- Mobilize and coordinate resources (community)
- Provide complementary services (community)

The competing life priorities of people living in poverty make it difficult to adhere to complex medication regimens. The San Francisco Department of Health developed a community-based, locally-funded, drop-in medication adherence programme (ActionPoint) to help the city’s HIV-positive urban poor adhere to antiretroviral medications and benefit from advances in HIV treatment.

A variety of adherence support services is available. A small cash incentive is dispensed weekly to clients who use services at least once a week. In addition, after one month of enrolment, clients are offered a pager that buzzes at specific times of the day to remind them to take their medications. Other adherence support options include a buddy system among ActionPoint clients, and medical and psychological support groups to help instil a sense of community among clients and staff.

The cost of the project per client, per year is roughly equivalent to the yearly retail cost of a single protease inhibitor. Five months after the programme opened, the results were promising: many clients improved their living conditions, and 76% of the clients on antiretroviral therapy showed improved viral suppression.

Bamberger JD, Unick J, Klein P, Fraser M, Chesney M, & Katz, MH. Helping the urban poor stay with antiretroviral HIV drug therapy. American Journal of Public Health. 2000; 90(5): 699

outside the walls of a health care clinic, living within their communities. Informed and prepared community resources can fill an important gap in services that are not provided by the health care organization. When community services complement organized health care, outcomes associated with chronic conditions have the potential to improve significantly.

Raise awareness and reduce stigma

Communities play a crucial role in improving the lives of those living with chronic conditions. Leaders of local and international organizations, NGOs, and support and women's groups are perfectly positioned to raise awareness about chronic conditions and their associated risk factors. For example, community leaders can be "credible voices" for sensitizing the public to the rising burden of chronic conditions and for reducing the stigma associated with them. Leaders in the community also can lobby their political counterparts to enhance support for chronic conditions care.

Encourage better outcomes through leadership and support

Community leaders should be identified and supported in the quest to improve care for chronic conditions. Recognized structures, such as community development/health boards or village development groups can advocate for better health care for chronic problems. The leaders of these boards and groups are in the position to explore the best strategies to support fellow community members who are living with long-term problems.

Lebanon

Effective and Affordable Treatment for Children

The building blocks:

- Provide complementary services (community)
- Raise awareness and reduce stigma (community)

In Lebanon, public health service gaps are filled by nongovernmental organizations, such as the Chronic Care Center (CCC), which specializes in the management of childhood chronic conditions. One priority area for CCC is thalassemia, a chronic, genetic disease of the blood that is especially prevalent in Lebanon and other Eastern Mediterranean countries.

CCC provides effective and affordable treatment for thalassemia at little cost to patients and families. The Ministry of Health and the European Commission has supported these health care activities since 1994.

With the support of the Ministry of Social Affairs, CCC is also coordinating a national programme to raise awareness and change negative attitudes about this chronic condition. Based on a five year action plan, this programme is targeting different groups: the medical community, universities, secondary schools, youth groups and primary health care workers.

Source: <http://www.chroniccare.org.lb>

When communities do not have established structures, other community leaders become involved in the decision-making that can influence care for chronic conditions. Religious leaders, mayors, or chiefs of villages may be the ones to provide direction on health care issues. Thus, it is important for all leaders in the community, such as those from religious groups, schools, and employer organizations, to be knowledgeable about the burden of chronic conditions and strategies for prevention. All leaders are influential in aligning their policies and practices with the main objectives of optimal chronic conditions care.

Mobilize and coordinate resources

Locally generated funds can greatly affect health-related activities at the community level. Health promotion and prevention campaigns, assessment of risk factors, training of community health workers, or supplying health centres with basic equipment and supplies are important activities that can occur through the mobilization of local groups. Community leaders from local and international organizations, NGOs, community support groups, and women's groups can be invaluable resources. They can be encouraged to raise funds and to identify financing schemes that will generate resources to support screening, prevention, and improved management of chronic conditions.

Peru

Community Participation to Improve Primary Health Care

The building blocks:

- Encourage better outcomes through leadership and support (community)
- Mobilize and coordinate resources (community)

In Peru, the CLAS (Comites Locales de Administracion de Salud) are private, non-profit community-administered institutions created by community members around a health centre or post. Their objective is to improve the quality of primary health care services through community participation in the planning and management of public health care. The CLAS collaborate with health workers to develop a local health plan, determine a budget, and monitor expenditures and health services provision to the community. This arrangement has a number of benefits:

- ⊕ Community-based planning of health activities
- ⊕ Increased health care accountability, and incentives to raise productivity
- ⊕ Flexibility in budget management
- ⊕ Flexibility in hiring of staff
- ⊕ Improved quality of care

Cotlear D. Peru: Reforming Health Care for the Poor. 2000; The World Bank, Latin America and the Caribbean Regional Office, Human Development Department, LCSHD Paper Series No. 57.

Provide complementary services

Local and international NGOs play an important role in providing complementary preventive and management services for a given community, along with the participation of the community members. Every community has an informal network of providers, such as community health workers and volunteers, who are invaluable in the management and prevention of chronic health problems. In many developing countries, health care organization and NGOs use this network of community health workers to build stronger connections with the community, and therefore they are trained to provide basic services for patients with chronic conditions, including education about risks and self-management. In other situations, these informal providers operate independently and they could be more effective if they had stronger connections with a health care organization. In this case, they can be trained to provide basic services and encouraged to educate the community-at-large about the prevention of chronic problems.

Redundancies in services between the health care organization and local organizations should be minimized. The goal for organizations and communities is to have complementary functions. Ideally, community organizations will fill the gaps in services for patients with chronic problems that are not provided in health care organizations.

Brazil

Preventive Health Services in Low Resource Communities

The building blocks:

- Mobilize and coordinate resources (community)
- Provide complementary services (community)

Cearà, a poor state in Brazil presents a model of care that may be achievable for other countries in which resources, income, and education levels are limited. In 1987, auxiliary health workers, supervised by trained nurses (1 nurse to 30 health workers) and living in local communities, initiated once-monthly home visits to families to provide several essential health services. The programme was successful in improving child health status and vaccinations, prenatal care, and cancer screening in women. It was low cost, too. Salaries for the health workers were minimum wage, few medications were used and no physicians were included. Overall, the programme used a very small portion of the state's health care budget.

In 1994, the health worker programme integrated into the Family Health Programme that includes physicians and nurses on the team with the health workers. For the first time in Brazil, large scale integrated, preventive health services are in place.

Svitone, EC, Garfield, R, Vasconcelos, MI, & Craveiro, VA Primary health care lessons for the Northeast of Brazil: the Agentes de Saude Program, Pan Am J Public Health 2000; 7(5):293–301.

Macro-Level: Building Blocks for a Positive Policy Environment

Policies are powerful means for organizing the values, principles, and general strategies of governments or administrative divisions to reduce the burden of chronic conditions. With properly formulated policies and plans, decision-makers and planners can significantly impact the health of the population. To optimize health care for chronic conditions, a positive policy framework is essential. Critical components at the policy level are described below.

Provide leadership and advocacy

Decision-makers can influence senior political leaders to advance care for chronic conditions. Political leaders need to be identified and then encouraged to create a positive policy environment for patients, their communities and health care organizations managing chronic problems. Other crucial groups should be sensitized and informed about the rising burden of chronic conditions, and the existence of effective strategies and models for managing them.

Decision-makers can also increase awareness among policy-makers, health care leaders, health care workers, the general community, patients, and families. These groups can be influenced using a range of proven strategies to increase advocacy. For example, credible spokespersons can be recruited to share the message about chronic conditions. Effective media campaigns will go far in creating leadership and support.

Zambia

Home-Based Care for HIV/AIDS and TB

The building blocks:

- Encourage better outcomes through leadership and support (community)
- Mobilize and coordinate resources (community)
- Provide complementary services (community)

Only a small proportion of people living with HIV/AIDS in Africa have access to home care services. In Zambia, two community-based programmes, coordinated by the Family Health Trust and the Ndola Catholic Diocese, provided home based care for people with HIV/AIDS and people with TB.

In both programmes, the community is leveraged as a health care partner. Teams of mobile community nurses provide direct patient care and support community health workers. Nurses and community volunteers perform a wide range of tasks, including direct patient care, self-management support, and support to family caregivers.

The integration of HIV/AIDS and TB home based care appears to be a success factor for the programmes. High TB cure rates are possible through community-based DOTS, and the detection of HIV is facilitated in TB patients, and vice versa.

Nsutebu EF, Walley JD, Mataka E, Simon CF. Scaling up HIV/AIDS and TB home-based care: lessons from Zambia. Health Policy and Planning 2000; 16(3), 240–7.

Integrate policies

Integrated policies for chronic conditions minimize redundancies and fragmentation in the health care system. Policies are most effective when they cut across boundaries of specific diseases, and when they emphasize the management of a defined population over the management of one patient at a time. They also are most effective when they encompass prevention, promotion, and control strategies, and when they make explicit links to other governmental programmes and community-based organizations.

Policy-making and health care planning are ongoing processes. To support effective care strategies, policies and plans must be updated continually, based on ever-changing needs, priorities, and efficacious intervention strategies.

Finland

Reducing Stigma and Improving Care in Chronic Mental Disorders

The building blocks:

- Organize and equip health care team (health care organization)
- Raise awareness and reduce stigma (community)
- Provide complementary services (community)

Beginning in the early 1990s, rates of depression were on the increase as were suicides in Finland. An innovative project to curtail these growing concerns included plans to increase public awareness of the problem of depression, in addition to developing intersectoral relationships to help those suffering from its effects. Training courses were developed and implemented for health and social welfare professionals. Public campaigns were launched and community self-help groups were implemented for persons who had depressive symptoms. An internal evaluation found that public awareness of depression greatly increased over this decade; the topic is a regular theme in the mass media. In addition, health professionals reportedly address depression much more than they did before the project began.

The schizophrenia programme had goals of reducing long-term in-patient hospital stays for newly diagnosed and chronic patients by 50% over a 10-year period. This goal was met and surpassed. Psychiatric hospital stays declined by 60% for newly diagnosed patients and by 68% for patients with chronic schizophrenia. The programme included families of patients and incorporated new mental health treatment approaches. Multidisciplinary crisis teams worked in the communities to keep patients safe and free from hospitalization. The programme was a nation-wide success in facilitating rapid de-institutionalization.

Lehtinen V, & Taipale V. Integrating mental health services – the Finnish experiment. International Journal of Integrated Care 2001; 1(3).

Promote consistent financing

Health financing is an important mechanism by which policies and plans translate into reality. Financing decisions based on principles of equity and effectiveness will ensure adequate health care access and coverage for all segments of the population. All financing components (funding, resource allocation, contracting, and reimbursement) should be used as means for encouraging the implementation of innovative care strategies.

In all cases, but particularly for chronic conditions, financing is most effective when it is consistent across all divisions of the health care system. It must be integrated across traditionally disparate disease categories such as HIV/AIDS and diabetes, as well as levels of care and care settings such as primary health care and hospital-based care. Finally, financing must be structured so that resources can be maintained over time. (For more information about financing health care, please see pages 77–85 of this report.)

Develop and allocate human resources

Education authorities have the ability to enhance care for chronic conditions through augmenting health care workers' training. For example, medical and nursing school curricula can be upgraded to better address the needs of patients with chronic conditions. Thus, decision-makers in Ministries of Education play an important role in improving care for chronic conditions and decision-makers in Ministries of Health should not overlook this important connection.

In addition to upgraded curricula, mandated continuing education for health professionals in the specific area of chronic conditions can greatly advance health care for this problem. Incentives and quotas are useful to attract and create an optimal mix of health care professionals needed to meet the demands of chronic health problems.

Botswana

Government Leadership in Addressing Chronic Conditions

The building blocks:

- Provide leadership and advocacy (policy environment)
- Enhance and allocate human resources (policy environment)

Botswana is experiencing a population increase, reduced fertility rate, and an increase in chronic conditions such as cancer, diabetes, and hypertension. An increase in deaths from stroke as a complication of hypertension has been observed. More people with chronic conditions are seeking treatment, countrywide. To address the problem, the government of Botswana has adopted a multifaceted approach. In 2002, the Ministry of Health established a team responsible for noncommunicable disease surveillance, prevention, and control. In addition, the escalating burden on HIV/AIDS has resulted in a shift in training for health care workers once trained only in acute care.

Source: Botswana Ministry of Health, Community Services Division, Epidemiology and Disease Control Unit, 2002.

The concept of allocation and development of human resources extends beyond direct service providers. Policy and service planners, researchers, information technology designers, and support personnel are needed to improve care for chronic problems. New categories of health care workers such as self-management counsellors should be explored as they can assist in meeting the growing needs in chronic conditions care.

India

Integrated NCD Management and Prevention

The building blocks:

- Integrate policies (policy environment)
- Provide leadership and advocacy (policy environment)
- Enhance and allocate human resources (policy environment)

Cardiovascular and cerebrovascular diseases, diabetes, and cancer are emerging as major public health problems in India. Apart from a rising proportion of older adults, population exposure to risks associated with certain chronic conditions is increasing. Obesity is increasing, physical activity is declining, and tobacco use is a substantial problem in the country.

Although it is commonly believed that noncommunicable diseases are more prevalent in higher income groups, data from India's 1995–1996 national survey showed that tobacco intake and alcohol misuse are higher in the poorest 20% of the income quintile. As a result, the government of India is anticipating that the prevalence of tobacco-related conditions will increase in lower socioeconomic groups in the coming years.

The government has adopted an integrated noncommunicable disease management programme. The main components of this programme are:

- ⊕ Health education for primary and secondary prevention of NCDs through mobilizing community action, including mass media
- ⊕ Development of treatment protocols for education and training of physicians in the diagnosis and management of NCDs
- ⊕ Strengthening/creation of facilities for the diagnosis and treatment of CVD and stroke, and the establishment of referral linkages
- ⊕ Promotion of the production of affordable drugs to combat diabetes, hypertension, and myocardial infarction
- ⊕ Development and support of institutions for the rehabilitation of people with disabilities
- ⊕ Research support for:
 - epidemiological studies on CVD, stroke, diabetes
 - multisectoral population-based interventions to reduce risk factors
 - the role of nutrition and lifestyle-related factors
 - the development of cost effective interventions at each level of care

Source: Planning Commission, India, 2002.

Support legislative frameworks

Legislation and regulations can reduce the burden of chronic conditions. For example, legislation that mandates seatbelt use, speed limits, and allows prosecution of impaired drivers is critical for the prevention of disabling injuries that often become chronic problems. In addition, controls on health threatening products reduce the burden associated with chronic conditions. Age eligibility laws and local statutes that restrict tobacco and alcohol sales to youth are effective, as are laws that limit or ban tobacco advertising. Regulations for informative food labelling should be considered as well.

Legislation also can protect the rights of people with chronic conditions. Human rights can be promoted in health care via access to care and voluntary treatment. Regulatory frameworks can be developed and enforced that protect health care institutions and workers. Anti-discrimination laws for housing and employing persons with chronic conditions also can be adopted.

Strengthen partnerships

Within the policy environment, strong partnerships among government sectors have the potential to influence health and chronic conditions. Agriculture, labour, education, and transportation sectors are important ones to consider because they have tremendous possibilities for influencing health and preventing chronic problems, but do not always do so in a positive manner. As examples, agricultural policies based solely on commercial objectives do not necessarily parallel national health and nutrition needs; transportation policies could do more to promote physical activity and better safety.

It is imperative to work with different sectors to identify which policies simultaneously maximize population health status while addressing economic needs. Non-government health sectors, such as private health care providers and charities can be influential as well.

Peru

Improving Care for TB through Policy Support

The building blocks:

- Provide leadership and advocacy (policy environment)
- Promote consistent financing (policy environment)
- Encourage quality through leadership and incentives (health care organization)
- Organize and equip health care team (health care organization)

In Peru, TB is a national priority. The Peru TB programme increased the proportion of infectious cases treated under DOTS from 70 percent in 1990 to 100 percent by 1998, with a cure rate over 90 percent. In the programme, medications are free of charge, and food is an incentive for low-income patients to adhere to treatment. Rapid success of this programme was possible because the country had trained nurses in place, to which political commitment, sufficient resources for drugs, and a dynamic leadership were added.

Source: Scaling up the response to infectious diseases: A way out of poverty. World Health Organization, 2002

Connections with district, municipal, or local governments and community entities such as religious groups, schools, and employers should also be examined and strengthened where necessary. Professional, patient, and family NGOs should be considered important partners in improving care for chronic conditions.

Islamic Republic of Iran

Addressing Chronic Conditions in Primary Health Care

The building blocks:

- Strengthen partnerships (policy environment)
- Provide leadership and advocacy (policy environment)
- Develop and allocate human resources (policy environment)
- Promote coordination and continuity (health care organization)
- Organize and equip health care teams (health care organization)

The health policy of the Islamic Republic of Iran has been based on primary health care since 1979 with particular emphasis on the expansion of health networks and programmes in rural areas. In towns and smaller villages, the Health Centre performs its functions with the help of a large number of Health Houses that are the first points of contact for persons in the community. Each Health House serves a population of about 1500, and *behtarz* (i.e., health workers) have the responsibility for providing care. Rural Health Centres consist of general practitioners, midwives, and dentists. These Health Centres supervise, support, and accept referrals from the Health Houses. Urban health centres mainly perform their functions with the help of Health Posts.

District hospitals in towns offer services to cases referred from rural as well as urban Health Centres. District hospitals are responsible for specialized, hospital, and outpatient curative services.

Many regions recently have integrated clear standards and guidelines on diabetes and hypertension. Primary activities in the Health Houses and the Health Posts are finding cases in the community that have not been receiving care and providing follow-up care especially in cases of tuberculosis, malaria, and mental disorders. Recently, hypertension and diabetes were also included in some communities.

The Ministry of Health and Medical Education shares the responsibility for provision of health services and medical training throughout the country. In addition, active involvement of the community is encouraged for the planning and implementation of health services.

Over the past 15 years, life expectancy in the Islamic Republic of Iran has increased by 13 years for males and 15 years for females. Similarly, maternal and infant mortality rates have decreased to less than ¼ of what rates were 15 years ago. Primary health care coverage is available for more than 90% of the population and this is significantly higher than the negligible coverage rates in the early 1980s. These achievements in health care occurred in the presence of an ongoing demographic and epidemiological transition in the country.

Source: Ministry of Health and Medical Education, Islamic Republic of Iran, 2001.

The Philippines

National Health Sector Reform

The building blocks:

- Integrate policies (policy environment)
- Provide leadership and advocacy (policy environment)

Increasing life expectancy, urbanization, and lifestyle changes have brought about a considerable change in the health status of the Philippines. Globalization and social change has influenced the spread of non-communicable or lifestyle/degenerative diseases by increasing exposure to risk. As the country's per capita income increases, the social and economic conditions necessary for the widespread adoption of risky behaviour gradually emerge. This in turn has brought a considerable challenge to the country's health policy and health system to address growing lifestyle/degenerative diseases amidst the unfinished agenda of communicable diseases.

The Health Sector Reform Agenda of the Philippine Department of Health is improving health services to ensure a more efficient delivery of Public Health Programmes. A targeted group is the under-served population. Health sector reforms are occurring across the entire health system.

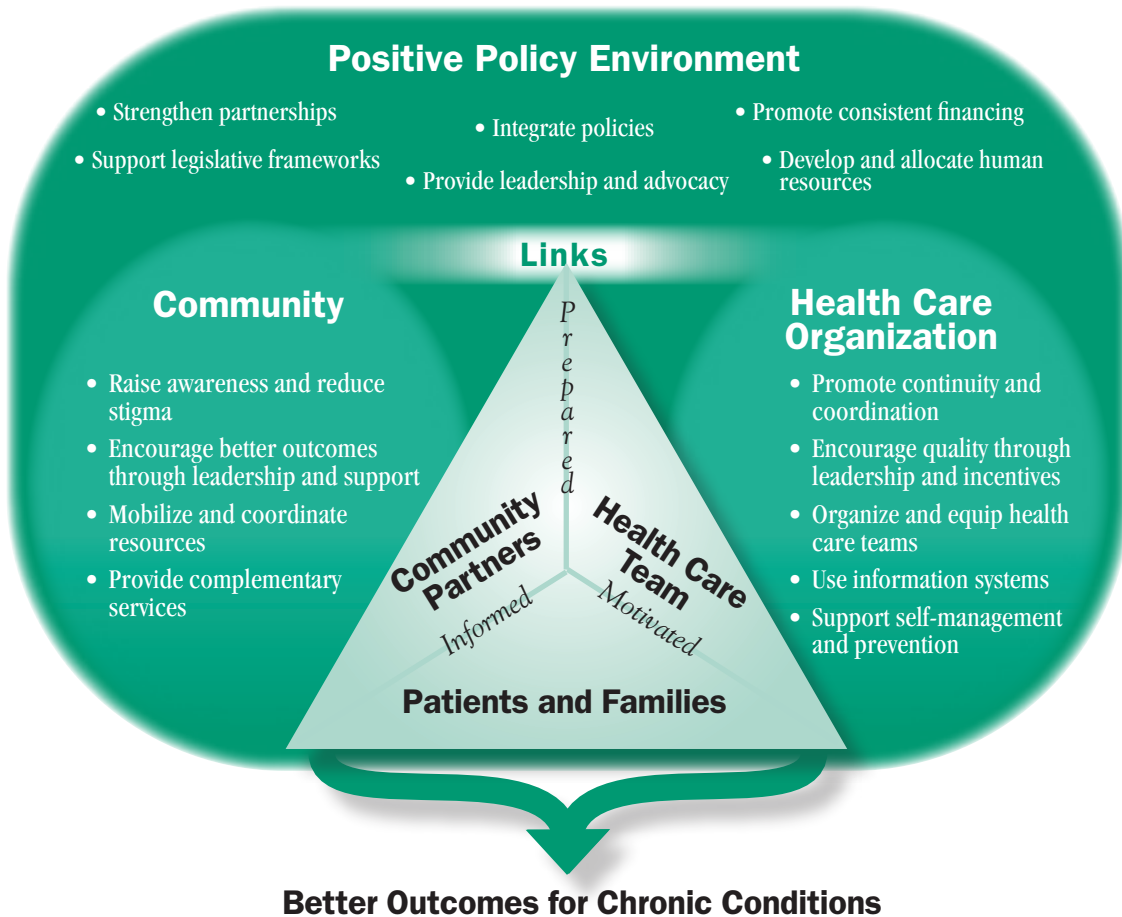
Concerning chronic conditions, reform activities have focused upon:

- ⊕ guidelines and clinical pathways
- ⊕ surveillance systems
- ⊕ registry systems
- ⊕ community-based approaches
- ⊕ research
- ⊕ health financing

These activities are tailored to the unique needs of different chronic conditions, including cardiovascular disease, cancer, diabetes, asthma, and musculoskeletal disorders.

Source: Philippines Ministry of Health, 2001.

Innovative Care for Chronic Conditions Framework



Summary

Decision-makers and other leaders in health care are in positions to initiate changes in health systems to address care for chronic conditions. To be most effective, leaders need to consider influencing the micro-, meso-, and macro-levels of the system. Change can be started with small steps, using various building blocks described in this section. A complete system overhaul is not necessary, although the more building blocks that can be integrated into a health care system, across the micro-, meso-, and macro-levels, the greater the expected benefits.

When building blocks are organized into conceptual frameworks, planning and change processes may become clearer to leaders. Comprehensive models for health care systems are optimal because they broaden the way people think about problems, and because when implemented, they produce better outcomes. In the case of chronic conditions, new, expanded models that include policy-level building blocks promise a brighter future for health care leaders and patients alike.



Taking Action to Improve Care for Chronic Conditions

NO HEALTH SYSTEM IS EXEMPT from addressing the growing epidemic of chronic conditions, and this mandate holds despite health care resource limitations. Every system has limited resources, and even those with seemingly high resources are faced with the dilemma of allocating assets and planning for the future health care of their populations. Moreover, despite a country's economic prosperity, some groups and regions within every country have inadequate access to care.

Decision-makers in policy and services face similar and uncertain futures regarding care for chronic health problems. The overall challenges they face, from supporting a change in thinking towards chronic care to ensuring consistent financing are similar; however, the solutions to health care problems may differ based on resource realities in each country. Nevertheless, success in re-orienting health care systems will depend on the leadership and informed guidance of decision-makers and the degree to which current leaders continue to invest solely in the acute care model.

The eight essential elements, below, describe suggestions for action based upon resource availability. However, a single country may have geographic areas or settings that span the resource spectrum from low to high. In these situations, the individual decision-maker must prioritize the actions that are most appropriate for his or her unique circumstances. Settings with high levels of resources should ensure that low- and mid-resource suggestions are implemented in addition to the high-resource suggestions for action.

Regardless of resource level, every health care system has the potential to make significant improvements in caring for chronic conditions. Resources are necessary, but

not sufficient for success. Leadership combined with a willingness to embrace change and innovation will have far more impact than simply adding capital to already ineffectual health care systems. To improve the care for chronic conditions, decision-makers need:

- ⊕ knowledge about gravity of the chronic conditions problem
- ⊕ leadership to do something about it
- ⊕ a clear assessment of their current health care situation
- ⊕ a plan for action

Where to Begin

Eight Essential Elements for Improving Health Care for Chronic Conditions

1. Support a Paradigm Shift

What Decision-Makers Need to Know

Health care is organized around an acute, episodic model of care that no longer meets the needs of many patients, especially those with chronic conditions. Decreases in communicable diseases and the rapid ageing of the population have produced this mismatch between health problems and health care, and chronic conditions are on the rise. Patients, health care workers, and most importantly, decision-makers must recognize that effective chronic condition care requires a different kind of health care system. The most prevalent health problems such as diabetes, asthma, heart disease, and depression require extended and regular health care contact. Appropriate management often involves medications and always requires that patients make lifestyle adjustments to manage their persistent health problems. Health care systems that are based upon an acute care model cannot meet these demands.

Where are You Now?

- ⊕ Can your health system provide medications in addition to supporting patients' efforts to manage their chronic problems?
- ⊕ What will happen if you allow health care to continue to operate solely from an acute care paradigm?
- ⊕ How will shifting the paradigm from acute to chronic care improve the health of your population?

What You Can Do

Consider using these building blocks from the ICCCC Framework:

- *Policy*: Provide leadership and advocacy
- *Policy*: Integrate policies
- *Organization*: Ensure quality through leadership and incentives
- *Organization*: Organize and equip health care team
- *Community*: Raise awareness and reduce stigma

○ Low level of resources

In these settings, health care resources (financial and human) are scarce. Comprehensive care for chronic conditions is completely absent or very limited. Coordination and continuity of health services are lacking. Services (where available) are fragmented and designed in response to acute problems. Computers are rarely available. Though most commonly encountered in low income countries, this resource scenario is not limited to them; many high-income countries also have populations (e.g. rural populations and indigenous groups) with this health care profile.

◐ Medium level of resources

In these settings, more resources are available for health care, although they are limited. In certain settings, like urban hospitals or pilot programmes of community care, care for chronic conditions is less fragmented, but these centres are few and inadequate for providing care for chronic conditions to the total population. Primary care providers are largely unaware and untrained in continuity of care for chronic conditions. Computers may be available, but typically are located in urban settings. Admission and discharge data from clinics and hospitals may be the only data available in information systems.

● High level of resources

This resource scenario is largely in economically developed settings that have adequate resources for health care. Specialized settings may have innovative programmes for chronic conditions. However, despite the relative availability of resources, the majority of health care settings still use an acute, episodic care model. Computers and information systems are common, although the indicators they monitor are used primarily for financial purposes.

Action Examples

- Share this document with other decision-makers to initiate a discussion about making changes in your health care system.
- Assemble information on the problem of chronic conditions in your setting.
- Sensitize policy-makers and health authorities to the growing burden of chronic conditions, and the existence of effective strategies for managing them.
- ◐ Use the media as a forum for educating and promoting new attitudes in the general public, via publicity, advertising, and regular programming.
- ◐ Use readily available powerful and credible voices to spread the message about chronic conditions.
- Encourage the spread of new ideas through local demonstration projects of innovative care models and strategies.
- Use mass marketing strategies to persuade the population to think differently about chronic conditions.

2. Manage The Political Environment

What Decision-Makers Need to Know

Policy-making and service planning inevitably occur in a political context. Political decision-makers, health care leaders, patients, families, and community members, as well as the organizations that represent them, need to be considered. Each group will have its own values, interests, and scope of influence. For transformation towards care for chronic conditions to be successful, it is crucial to initiate bi-directional information sharing and to build consensus and political commitment among these stakeholders at each stage.

Where Are You Now?

- ⊕ Do you have mechanisms for consulting with those who can influence the political process of health care change?
- ⊕ Do you educate stakeholders concerning the benefits of chronic conditions management?
- ⊕ To what extent do you incorporate multiple stakeholder perspectives into your health care planning?

What You Can Do

Consider using these building blocks from the ICCC Framework:

- *Policy*: Provide leadership and advocacy
- *Health Care Organization*: Ensure quality through leadership and incentives
- *Community*: Encourage better outcomes through leadership and support
- *Community*: Raise awareness and reduce stigma

Action Examples

- Educate and inform patients, families, and other influential people on the growing burden of chronic conditions, and the existence of effective strategies for managing them in the country's context.
- Build dialogue with key leaders in the government, health care organization, and community to better understand their values and interests.
- Use health care opinion leaders and community leaders to advocate for change in local contexts.
- Identify the organizations and associations that represent diverse interests in the health care debate.
- Include stakeholders in policy formulation and service planning.
- Develop political leadership and commitment to reorient health care towards chronic conditions.
- Assemble systematic reviews on the costs and effects of chronic conditions management.
- Conduct local research to demonstrate the cost-effectiveness of innovative care models and strategies.

3. Build Integrated Health Care

What Decision-Makers Need to Know

Health care systems must guard against the fragmentation of services. Care for chronic conditions needs integration to ensure shared information across settings and providers, and across time (from the initial patient contact, forward). Integration also includes coordinating financing across different arms of health care (e.g., inpatient, outpatient, and pharmacy services), including prevention efforts, and incorporating community resources that can leverage overall health care services. The outcome of integrated services is improved health, less waste, less inefficiency and a less frustrating experience for patients.

Where are You Now?

- ⊕ To what extent are segments of your health care system integrated?
- ⊕ If you allow fragmentation of services, what is the cost? What is the benefit?
- ⊕ What strategies have you used in the past to integrate successfully fragments of your system into a whole?

What You Can Do

Consider these building blocks from the ICCC Framework:

- *Policy*: Integrate policies
- *Policy*: Strengthen partnerships
- *Health Care Organization*: Use information systems
- *Community*: Mobilize and coordinate resources

Action Examples

- Ensure that policies, plans, and financing structures are up to date and reflect consistent messages about chronic conditions.
- Develop basic patient registries – as simple as paper and pencil notebooks – and basic information systems.
- Upgrade information systems to increase coordination across public and private health care settings, providers, and time.
- Develop information sharing strategies across health care organizations and communities.
- Link health care settings via a common information system.

4. Align Sectoral Policies For Health

What Decision-Makers Need to Know

In government, diverse authorities create policies and strategies that affect health. The policies of all sectors need to be analysed and aligned to maximize health outcomes. Health care can be and should be aligned with labour practices (e.g., assuring safe work contexts), agricultural regulations (e.g., overseeing pesticide use), education (e.g., teaching health promotion in schools), and broader legislative frameworks.

Where are You Now?

- ⊕ To what extent do you work to link together government sectors, private sectors, non-government health sectors, and non-health related, nongovernmental organizations?
- ⊕ What are the advantages and disadvantages of developing relationships with other sectors?

What You Can Do

Consider these building blocks from the ICCC Framework:

- *Policy*: Integrate policies
- *Policy*: Strengthen partnerships

Action Examples

- Develop links to private sector health workers, including traditional healers.
- Develop links to non-health government sectors that have the potential to influence population health.
- Support regulation and legislation that curbs the marketing of public health risks (e.g., tobacco and alcohol).
- Implement population-based prevention activities in collaboration with other government sectors.
- Implement a multisectoral private/public governing body, which advocates for the promotion, prevention, and comprehensive management of chronic conditions.

5. Use Health Care Personnel More Effectively

What Decision-Makers Need to Know

Health care providers, public health personnel and those who support health care organizations need new, team care models and evidence-based skills for managing chronic conditions. Advanced communication abilities, behaviour change techniques, patient education, and counselling skills are necessary in helping patients with chronic problems. Clearly, health care workers do not have to possess physician degrees to provide such services. Health care personnel with less formal education and trained volunteers have critical roles to play.

Where are You Now?

- ⊕ What is the status of your training models and what approaches to the allocation of tasks among health care personnel are you promoting?
- ⊕ What are potential benefits of using a mix of health care personnel in your organizations and communities?

What You Can Do

Consider these building blocks from the ICCC Framework:

- *Policy*: Integrate policies
- *Policy*: Strengthen partnerships
- *Health Care Organization*: Organize and equip health care team
- *Health Care Organization*: Support self-management and prevention

Action Examples

- Promote basic skills training for health care workers, who help patients with chronic conditions.
- Where there are multipurpose health workers, study possibilities of reinforcing their decision-making via linkages with specialists.
- Educate health care workers via workshops and printed materials.
- Mandate continuing education on management of chronic conditions across a range of health care workers.
- Influence medical schools and other training programmes to promote chronic conditions management.
- Implement joint committees between the Ministry of Health and Ministry of Education to promote a common understanding of medical education needs.
- Develop a range of health care personnel (e.g., self-management counsellors and quality improvement specialists) to meet changing health care needs.
- Reallocate training resources in favour of a range of health care personnel.

6. Centre Care On The Patient And Family

What Decision-Makers Need to Know

Because the management of chronic conditions requires lifestyle and daily behaviour change, emphasis must be upon the patient's central role and responsibility in health care. Focusing on the patient in this way constitutes an important shift in current clinical practice. At present, systems relegate the patient to the role of passive recipient of care, missing the opportunity to leverage what he or she can do to promote personal health. Health care for chronic conditions must be re-oriented around the patient and family.

Where are You Now?

- ⊕ To what extent does your health care system emphasize the role of the patient and family in caring for chronic conditions?
- ⊕ How would your health care system be improved if a significant portion of care were transferred to the patient? Would money be saved? Would your system be more efficient?
- ⊕ What will happen if you continue to ignore patients' roles and responsibilities?

What You Can Do

Consider these building blocks from the ICCC Framework:

- *Health Care Organization*: Organize and equip health care team
- *Health Care Organization*: Support self-management and prevention

Action Examples

- Provide basic information about chronic conditions management to patients and families.
- Include self-management support instruction during health care interactions.
- Develop educational and skill-building workshops for patients and families on the management of chronic conditions.
- Use written educational materials to supplement self-management messages.
- Provide patients and families access to information and self-management support outside the health care setting, via telephone or Internet.
- Use computerized patient self-assessment for the generation of individualized self-management materials.

7. Support Patients In Their Communities

What Decision-Makers Need to Know

Health care for patients with chronic conditions does not end or begin at the doorway of the clinic. It has to extend beyond clinic walls and permeate patients' living and working environments. To successfully manage chronic conditions, patients and families need services and support from other institutions in the communities. Moreover, communities can fill a crucial gap in health services that are not provided by organized health care.

Where are You Now?

- ⊕ To what extent does your health care system rely on different community-based services to support care for chronic conditions?
- ⊕ Does your health care system have methods for exchanging information and interacting with community-based services?
- ⊕ Do your health care workers routinely refer patients with chronic conditions to community-based services?
- ⊕ Are your community resources adequately supported to help address needs that are not met by health care organizations?

What You Can Do

Consider these building blocks from the ICCC Framework:

- *Community*: Encourage better outcomes through leadership and support
- *Community*: Raise awareness and reduce stigma
- *Community*: Mobilize and coordinate resources
- *Community*: Provide complementary services

Action Examples

- Support and involve community groups and NGOs in providing care for chronic conditions.
- Establish a structure whereby health care organizations can exchange information concerning policies and strategies with community-based services.
- Support the roles of community organizations in policy-making and service planning.
- Develop patient information sharing strategies across health care organizations and communities.
- Ensure employers are informed about chronic conditions management. Take steps to support prevention and self-management efforts in the workplace.

8. Emphasize Prevention

What Decision-Makers Need to Know

Most chronic conditions are preventable. Additionally, many of the complications of chronic conditions can be prevented. Strategies for reducing onset and complications include early detection, increasing physical activity, reducing tobacco use, and limiting prolonged, unhealthy nutrition. Prevention should be a component of every health care interaction.

Where are You Now?

- ⊕ To what extent does your health care system emphasize prevention of onset or complications of chronic conditions?
- ⊕ If prevention strategies were discussed at every health care contact, what impact would you anticipate on the health of your citizens?
- ⊕ What predictions would you make about the prevalence of chronic conditions if prevention were ignored in your health care system?

What You Can Do

Consider these building blocks from the ICCC Framework:

- *Policy*: Integrate policies
- *Policy*: Strengthen partnerships
- *Policy*: Support legislative frameworks
- *Health Care Organization*: Organize and equip health care team
- *Health Care Organization*: Support self-management and prevention
- *Health Care Organization*: Use information systems
- *Community*: Provide complementary services

Action Examples

- Ensure that prevention of chronic conditions is addressed in primary health care visits.
- Provide health workers with information and basic skills to help patients minimize risks associated with chronic conditions.
- Support regulation and legislation that curbs the marketing of public health risks (e.g., tobacco and alcohol).
- Support population-based prevention activities.
- Monitor risk factors and identify persons at risk for developing chronic conditions.
- Assist providers through education and tools to “put prevention first”.
- Ensure every patient encounter addresses prevention.
- Align provider incentives so that prevention efforts are rewarded.

How to Finance: Ensuring Adequate and Sustainable Financial Support for Innovative Care

Financing is one important means to implement the eight essential elements described above. In general, appropriate financing for health care for chronic conditions should be guided by principles that are consistent with those for a mainstream health care system (see WHO's *World Health Report 2000* for a complete review of financing health systems):

- ⊕ People should be protected from catastrophic financial risk due to illness
- ⊕ The healthy should subsidize the sick
- ⊕ The rich should subsidize the poor, at least to an extent

Notwithstanding these general principles, chronic conditions pose unique characteristics that bear upon financing, and these special features should be considered.

A Range of Services is Needed to Manage Chronic Conditions

The continuum of care for chronic conditions includes prevention, long-term maintenance treatment, management of acute symptom exacerbation, rehabilitation, and palliative or hospice care. For some patients, ongoing social services in the community are also required. These different forms of services are typically delivered across a range of settings, and often by several distinct health care teams. As a result, services are often needlessly duplicated with significant waste of scarce economic resources.

Despite the range of required services, it is important to remember that more expensive interventions are not necessarily better. In most health care systems, opportunities exist to improve the use of resources through careful examination of the services required. The current practice of managing chronic conditions may appear to be expensive, especially for developing countries, but it should not obscure the fact that low-cost interventions are available – and in many cases, the first-line treatment – for a number of conditions.

Many of the noncommunicable diseases, including cardiovascular disease, diabetes, mental illnesses, and cancers, can be addressed by relatively low-cost interventions, especially using preventive actions related to diet, smoking, and lifestyle.

*Macroeconomics and Health: Investing in Health for Economic Development
Report of the Commission of Macroeconomics and Health, 2001*

The Needs of Patients with Chronic Conditions are Long-Term and Predictable

Patients with chronic conditions are likely to use health care services on a regular and expected basis, as compared to the unpredictable needs of patients with acute problems. As a result, voluntary, private insurance schemes may try to avoid insuring these “high risk” patients, or charge higher insurance premiums. If insurance premiums rise too high, patients may elect to forego this type of financial protection, thus placing themselves and their families at risk for financial catastrophe or higher risk of loss of quality of life due to untreated chronic conditions.

Resource Allocation for Chronic Conditions Challenges the Historical Status Quo

Chronic conditions share fundamental features, and place similar demands on health care systems. Yet all too frequently, financing for disease-specific vertical programmes is at the expense of comprehensive, coordinated care, both by taking up resources (financial, human and time) and by directing attention away from the day-to-day problems of caring for common problems presented by chronic conditions. More importantly, many high-cost acute care medical interventions can be delayed or prevented by better management of chronic conditions. In fact, if the innovative care framework for chronic conditions is implemented, demand for acute care services may actually decline.

To implement innovative care for chronic conditions, it is necessary to re-evaluate traditional health care resource allocation lines. Integrated financing reforms imply that traditionally separated budget lines – for example, for HIV/AIDS and diabetes – be integrated to promote effective and efficient health care.

Problems perpetuated by the status quo of resource allocation

The problems	The facts
Allocation of resources to non cost-effective interventions	Many chronic conditions interventions are effective and affordable, but they are not being used.
Allocation of resources to health systems that perpetuate fragmented, episodic care	Health care that is designed around episodic care is unable to respond effectively to the needs of patients with chronic conditions.
Allocation of resources to several diseases with a fragmented approach	Chronic conditions are no longer considered in isolation. Awareness is increasing that similar strategies can be equally effective in treating many different conditions.
Disproportionate expenditure to select subgroups	In many countries, health expenditures are concentrated on affluent or urban areas, or on tertiary hospitals.
Lack of sustainability of donor-funded infrastructures and dependency on external resources	Several countries depend on donors for a large share of total expenditure on health. In some cases, donors may inadvertently support a fragmented approach to chronic conditions through the support of certain conditions and the exclusion of others, and due to the time-limited nature of some donor subsidies.

Economic arguments, such as those provided in this report, can convince decision-makers of the need to generate new resources, or shift existing resources, to care for chronic conditions. Decision-makers may also want to know the short-term costs involved in making this change. Using a realistic prevalence rate and the recommended number of patient contacts in a year, the time cost for health care personnel can be obtained. The medication cost for a number of chronic conditions can also be estimated. Indirect costs, such as investments in information systems, training, and community outreach are other important components that can be considered.

Although some may see this as a daunting task, in reality, the rational use of health resources for chronic conditions may not be that expensive. Indeed, the experiences of several developing countries demonstrate that it is possible to improve the health status of the population at a very low cost.

Rwanda

In *Rwanda*, pilot prepayment schemes, coupled with external aid, are allowing health centres to cover services for HIV/AIDS patients. The annual premium of FRw 2,500 (US\$ 7.80) entitles a family of up to seven members to membership for one year. Members benefit from all services and essential drugs provided at the health centre, ambulance transport to the district hospital, and a limited benefit package at the district hospital. This pilot programme shows that community prepayment based on solidarity values, complemented with external aid, can ensure access to care for individuals with complex and costly chronic conditions. Prepayment schemes in the three pilot sites have resulted in:

- ⊕ Increased use of health services, including prevention
- ⊕ Improved financial accessibility to health services
- ⊕ Improved quality of care

Source: www.unaids.org

Strategies for Generating Resources for Chronic Conditions

The scarcity of resources for health care is a problem in most settings. Nevertheless, the *Commission on Macroeconomics and Health (Macroeconomics and Health: Investing in Health for Economic Development; Report of the Commission of Macroeconomics and Health, 2001)* concluded that it is feasible, on average, for even low- and middle-income countries to increase their budget expenditures for health. The Commission estimated that these countries could increase their expenditures by one percent of their GNPs by 2007, and by two percent of their GNPs by 2015. While these amounts may not be sufficient to address the full spectrum of health care needs, they would represent important and meaningful steps in the right direction.

There are several financing mechanisms that can be considered in generating resources for chronic conditions' care.

Universal prepayment schemes

Universal prepayment schemes such as general taxation and social insurance are the most progressive, stable, and sustainable source of health care finance. In high and middle-income countries, where the formal sector has a significant size, contributions to social security are also a sustainable source of funding.

Costa Rica

The government of *Costa Rica* has been successful in achieving universal health care coverage through prepayment mechanisms and health sector reforms, which began in 1994. These reforms have extended coverage to the previously uninsured (mostly poor) 10 percent of the population. Virtual contracts (Management Commitments) have been implemented to improve efficiency and quality, which have allowed the government to achieve universal coverage with only a three percent additional budget outlay. The health sector reform has established a new model of care with an integrated approach, which anticipates demand and encourages community-based efforts. This model is based on a primary health care strategy to ensure timely, comprehensive, and continuous care to the entire population and includes a targeted package of services aimed at prevention, detection, and treatment. By mutual agreement, the financing-purchasing entity and the service provider specify their expected results and the resource allocation mechanisms.

Source: www.paho.org

Community financing

In poor countries where additional sources of funding are urgently needed, community financing schemes are a viable option for providing financial protection and access to basic health care for the poor. These schemes provide more equitable access than user fees, are better suited for the needs of patients with chronic conditions, and are relatively sustainable.

The effectiveness and sustainability of community financing schemes can be enhanced through:

- ⊕ Well-targeted subsidies to pay for premiums of poor populations
- ⊕ Pooled re-insurance schemes to enlarge the effective size of small risk pools
- ⊕ Investment in effective prevention and disease management strategies
- ⊕ Capacity building for managers of local community financing schemes
- ⊕ Strengthening of links with formal financing and provider networks

Preker, AS, Carrin, G, Dror, D, Jakab, M, Hsiao, W, Arhin-Tenorang, D. Effectiveness of community health financing in meeting the cost of illness. Bulletin of the World Health Organization 2002, 80(2), 143–50.

Guinea-Bissau

In *Guinea Bissau*, the Abota prepayment system provides access to primary care at the village level and to a package of essential drugs, as well as free services at higher levels of referral. Health care is provided voluntarily by trained members of the village. Each village's committee (lowest level of decentralization in the country) administers the Abota system. The strengths of the strategy include:

- ⊕ Affordability. This scheme is affordable because the contribution is set at the village level and considering seasonal incomes.
- ⊕ Community support.
- ⊕ Revitalization of village health posts.

Since the programme's inception, access to basic health care has been improved considerably, and near universal membership has been documented in participating villages.

Chabot J et al. National community health insurance at village level: the case from Guinea Bissau. Health Policy and Planning, 1991; 6,1: 46–54

Excise taxes

Excise taxes for harmful products (e.g., tobacco and alcohol) are an effective mechanism to discourage consumption, and have the added benefit of generating new funding for chronic conditions.

In many countries, opportunities to increase cigarette prices via excise taxes, increase government revenue, and improve health have been overlooked. There is a wide discrepancy in the minutes of labour required to purchase a pack of local brand cigarettes: from 7 minutes in *Taiwan, China* to 92 minutes in *Kenya*. Around the world, cigarettes have failed to keep up with increases in the general price level of goods and services, rendering them relatively more affordable in the year 2000 than they were in 1991.

Guindon GE, Tobin S, & Yach D. Trends and affordability of cigarette prices: ample room for tax increases and related health gains. Tobacco Control 2002; in press.

USA and China

The *State of Oregon in the USA* has achieved impressive declines in per capita consumption following the implementation of a 1996 voter-supported initiative to raise tobacco taxes and to authorize funding of a statewide tobacco prevention and education programme. Between 1996 and 1998, per capita cigarette consumption declined 11.3% (or 10 packs per capita) in Oregon. Similarly, the *States of California and Massachusetts* have shown that implementing comprehensive statewide tobacco control programmes can result in substantial reductions in tobacco use. Between 1992, the year prior to a voter-approved petition to raise tobacco taxes and to fund a statewide mass-media antismoking campaign, and 1996, per capita consumption declined 20 percent in Massachusetts. California's per capita consumption declined by 16 percent for the same period.

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Excise taxes are *not only* for developed countries. To the contrary, the World Bank estimates that a price rise of 10 percent on a pack of cigarettes will reduce demand for cigarettes by about four percent in high-income countries. In low- and middle-income countries, where lower incomes tend to make people more responsive to price changes, the demand is expected to decrease by about eight percent. Moreover, children and adolescents are more responsive to price rises than older adults, so excise taxes would have a significant impact on onset of tobacco use among youth in developing countries.

In *China*, conservative estimates suggest that a ten percent increase in the cigarette tax would decrease consumption by five percent and increase revenue by five percent. This tax increase would be sufficient to finance a package of essential health services for one-third of China's poorest 100 million citizens.

Centers for Disease Control and Prevention. *Best Practices for Comprehensive Tobacco Control Programs—August 1999*. Atlanta GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, August 1999

Prabhat Jha and others, 1999, *Curbing the Epidemic: Governments and the Economics of Tobacco Control* (Washington: World Bank).

Private resources

Increasingly, private sector resources are being considered as viable funding sources for public sector health care. These resources may be generated from individuals, as in the case of India below. Businesses that are in the position to donate needed medical equipment or essential drugs, or that may determine that investing in population health will not only be a social good, but will also be good for business, are an additional resource.

India

In *India*, some states have initiated innovative financing schemes to mobilize private resources for the public health care sector. For example, Kerala has established an innovative measure of raising resources for cancer control initiated through unique community involvement. It was announced to the public that 25 percent of their contributions to a development bond would be used for cancer screening and control. This resulted in an unexpected positive response, which translated into 700 percent more funding than was anticipated. The amount earmarked for cancer screening and control was equivalent to nearly 10 years of the sanctioned budget.

Purohit, BC. *Private initiatives and policy options: recent health system experience in India*. *Health Policy and Planning*, 2001; 16(1):87–97

Donor funding

Even with increased domestic funding, many low-income countries will continue to rely upon external donors for a portion of their health budgets. In these cases, it is crucial for country decision-makers to advocate for innovative care strategies that address chronic conditions.

Uganda

In *Uganda*, the government identified mental health as one of its priority areas. Treatment of mental disorders was included in the Uganda Minimum Health Care Package (UMHCP) both within the Health Policy and the Health Sector Strategic Plan. The presence of people within the government, who were committed to a mental health agenda, was important to achieve this goal. The donor community was convinced and mental health remains in the UMHCP and continues to receive donor funding.

Report of the Mental Health Policy Project: Working Group Meeting on Financing and Mental Health.
WHO/MSD/MPS/01.2

Making the Most of Existing Resources

Decision-makers can enhance outcomes for chronic conditions by applying existing resources to more equitable and efficient care. By managing chronic conditions more comprehensively, acute symptom exacerbations can be minimized, thus resulting in greater health care efficiency for the system.

Many high-cost, acute care interventions can be delayed or prevented by better management of chronic conditions.

Adopt the Innovative Care for Chronic Conditions Framework

Implementing at least some of the building blocks for action, as described in Section 3, is a good way to start. Better coordination of health care workers, well-aligned policies, linkages to the community, investments in prevention, and provision of evidence-based treatment at the most cost-effective level of care are some effective methods for achieving substantial improvements in caring for chronic conditions.

Assemble local evidence

In many settings, it is vitally important to develop context-specific evidence for implementing innovative care strategies. Information is needed at the macro level to evaluate overall

funding strategies; at the meso level to assess organizations' financial solvency and performance; and at the micro level, to assess costs and effects of interventions.

Align incentives

Health care workers' routine practices for making appointments, diagnosing chronic conditions, recommending and administering treatments, offering prevention and self-management advice, and referring patients greatly affect health care utilization, efficiency, and quality. Therefore, incentives for workers should be established such that health care workers maximize quality of care while minimizing costs. In particular, incentives should function to promote preventive services and self-management.

Peru and USA

Because chronic conditions frequently demand adherence to long-term therapies, specialized patient incentives to promote adherence can be considered. In *Peru*, for example, food is given as an incentive for low-income patients to adhere to TB treatment. In *San Francisco, USA*, a small cash incentive is dispensed to patients with HIV/AIDS who use adherence support services at least once a week.

Scaling up the response to infectious diseases: A way out of poverty. World Health Organization, 2002
Bamberger, JD, Unick, J, Klein, P, Fraser, M, Chesney, M, & Katz, MH. *Helping the urban poor stay with antiretroviral HIV drug therapy. American Journal of Public Health. 2000; 90(5): 699–701.*

Action Examples for Financing Innovative Care

Legislation and policy	<ul style="list-style-type: none"> ⊕ In countries where public spending on health is very low, commit additional domestic financial resources. ⊕ Raise taxes on harmful products (tobacco, alcohol) to reduce the prevalence of unhealthy habits and therefore the spread of chronic conditions.
Insurance	<ul style="list-style-type: none"> ⊕ Use prepayment systems that protect users from financial catastrophe and spread risk across the population. Where prepayment is not immediately feasible, one alternative is community-based health insurance. ⊕ View user fees as a funding strategy that is unlikely to be equitable or sustainable for the needs of people with chronic conditions. ⊕ Adopt a comprehensive benefit package that includes, but is not limited to, preventive care services, self-management support, acute and chronic care services, rehabilitative care, emergency care services, and community-based care.
Efficiency	<ul style="list-style-type: none"> ⊕ Use financial incentives to encourage quality and efficiency. ⊕ Align financing mechanisms so that delivery of services occurs in the most appropriate and cost-effective setting.
Systemic quality	<ul style="list-style-type: none"> ⊕ Include incentives to promote continuity and coordination of care by primary care workers. ⊕ Incorporate appropriate mechanisms for monitoring and reporting quality-of-care measurements, including assessments of structure, process and outcome, access, and patient satisfaction.
Payment systems incentives	<ul style="list-style-type: none"> ⊕ Give incentives to maximize the quality of care while minimizing costs: promote preventive services and self-management.
Private sector	<ul style="list-style-type: none"> ⊕ Collaborate with the private sector to optimize the use of available resources. ⊕ Consider using pluralistic purchasing agreements with private and public providers based on a common set of financial rules. ⊕ Embrace fair competition based on access, service, and quality could improve health services for people with chronic conditions. ⊕ Implement accreditation and continuous monitoring of health care performance.
Delivery	<ul style="list-style-type: none"> ⊕ Consider implementing networks of organizations, which provide a coordinated continuum of services to a defined population, and which are held clinically and fiscally accountable for population outcomes.
Health reforms	<ul style="list-style-type: none"> ⊕ Use reform initiatives as an opportunity to improve financing for chronic conditions, such as: <ul style="list-style-type: none"> • Resource allocation and reimbursement schemes; • Development and operation of primary health care; • Organization of district, integrated health care systems and networks; • Collaboration of private providers in delivering health care, particularly for the poorer populations.

When to Initiate Change: Proven Methods for the Rapid Spread of Innovative Care

Health system changes that have the potential to significantly influence the development and management of chronic conditions can begin immediately. A strategy for implementing rapid change is available.

The Breakthrough Series

The Breakthrough Series (BTS) is a proven strategy for rapidly changing the way that health care organizations provide services and interventions. The BTS strategy is a general template for making changes, but it specifically outlines the critical steps for implementing innovative health care programmes.

The Institute for Healthcare Improvement (IHI) developed the concept of the BTS in 1995. The purpose was to bring together groups of health care organizations that share a commitment to making system changes within their organizations. These groups, called “collaboratives,” consist of 20 to 40 different health care organizations that work together to improve a specific clinical or operational area for a particular health problem. The time frame is 6 to 13 months and participants follow a cycle of “plan, do, study, act” to yield improved outcomes. Under the guidance of an IHI panel of national experts, the collaborative teams study, test, and implement the latest scientific knowledge available to accelerate improvements in their health care organizations.

To date, the BTS collaborative model has been applied to a variety of chronic conditions. Diabetes, back pain, congestive heart failure, depression, and asthma have been the focus of several BTS endeavours with demonstrated improvements across numerous operational and clinical outcomes.

One example of a BTS implementation comes from Clinica Campesina, a clinic in the USA that serves a population of 15,000 patients. Forty percent of the clinic’s patients are Hispanic, 50% are uninsured, and 100% are medically underserved. Diabetes management was identified as an area ripe for improvement. The BTS method was used to promote rapid change in the management of this chronic condition. A reduction in the average patients’ HbA1c level from 10.5 to 8.5 was observed by the end of the study period. This outcome is significant because a decrease of even one percentage point in HbA1c means a 15% to 18% reduction in mortality, heart attack, and stroke, and a 35% reduction in cardiovascular complications. Of note, these clinical improvements occurred in Clinica Campesina without the input of any additional resources.

Summary

Given the currently available information about the prevention and management of chronic conditions and their complications, the failure to use this knowledge to change health care systems is unjustified and reckless with the future of our populations. Countries and their decision-makers can continue the misguided course of episodic and unplanned care, or these leaders can direct the re-orientation of their health care systems to improve overall population health. Greater social and economic prosperity will follow as a result.

This section provided specific strategies for creating innovations in the care of chronic conditions. Eight essential elements for improving care were described. The micro-, meso-, and macro-level “building blocks” from the ICCC framework that can be used to support these elements were identified. Examples of specific actions to be taken by countries or regions with different levels of resource availability were outlined. Decision-makers have a clarified role with a strategy for *where to begin* making changes to improve care for chronic problems.

Decision-makers also have guidelines on *how to finance* care for chronic conditions. Strategies to ensure that financial support is adequate and sustainable were presented, including ways to generate new financial resources and to optimize existing financial supports. *When to change* is now, and the BTS method for implementing rapid improvements in health care organizations was described.

The evolution of health care systems can advance rapidly with the leadership of informed decision-makers. The goal is to embrace a new overarching framework that allows innovation in the care of chronic conditions. This framework supports a shift in thinking about care for persistent health problems and will dramatically advance efforts to solve the problem of managing diverse patient demands given limited resources. Through innovation, health care systems can maximize their returns from scarce and seemingly non-existent resources by shifting their focus from an acute to a chronic care model.

While the solution to improving caring for chronic conditions is complex, it can be simplified by using the building blocks in the different levels of the health care system and ensuring financing for these changes. Decision-makers should implement changes where feasible among the micro-, meso-, and macro-levels of the system; begin by using some of the building blocks. These changes will support the addition of more building blocks over time and ultimately will complete the ICCC framework for improving outcomes for chronic conditions. Those who embrace innovation experience the benefits today, and ensure success for the future health and economic prosperity of their countries.

Annex:



Innovative Approaches for Care: The Evidence from Case Studies to Randomized Trials

AS DESCRIBED EARLIER in this report, creative programmes to improve the management of chronic conditions are developing throughout the world. However, while programme development is vital, scientific evidence that supports the effectiveness of creative approaches of caring for chronic conditions is essential. Systematically acquired evidence allows the determination of whether an intervention, such as a test, therapy, or programme produces better outcomes than alternatives. Through such evidence-based determinations, health care is more effective, efficient, and less wasteful.

Evidence for innovative approaches in chronic conditions is in the early stages of accumulation and most programme evaluation projects have come from developed countries. Moreover, not all of the available evidence is considered equal: for example, case studies do not provide the same level of validity as do randomized trials. Examples from the literature on innovative programmes have been selected for presentation in this section. It is not an exhaustive review. Nevertheless, the data are convincing and everyone interested in improving care for chronic conditions can learn something from these studies.

Innovative approaches and new strategies for managing chronic conditions have a variety of positive effects across a range of outcome variables. Evidence demonstrates innovative programmes successfully:

- ⊕ Improve biological disease indicators
- ⊕ Reduce deaths
- ⊕ Save money and health care resources
- ⊕ Change patients' lifestyles and self-management abilities
- ⊕ Improve functioning, productivity, and quality of life
- ⊕ Improve the processes of care

Innovative Approaches Improve Biological Indicators

Blood Glucose is Controlled in Diabetes

Self-management for diabetes is extremely challenging because there are numerous behavioural changes that patients must integrate into their daily lives. Self-monitoring of blood glucose levels, medication adherence and adjustments, regular checks for foot problems, and ongoing dietary and physical activity regimens become every day concerns. In fact, for this chronic condition, patients and families, as opposed to health care providers, are responsible for more than 95 percent of care.

Behavioural interventions to facilitate self-management skills have demonstrated efficacy across a number of biological markers for diabetes. Noted are reductions in glycated hemoglobin levels, dietary fat and overall calorie intake, weight, and blood glucose levels. Blood pressure control improves as well.

Danish general practices compared an innovative and comprehensive diabetes care programme to usual practice. The programme included providers receiving feedback about their performance, reminders for regular diabetes visits, decision support, and self-management support. After 6 years, patients in the intervention group had significantly lower glucose and cholesterol levels than did patients in usual care.

Anderson RM et al. *Patient Empowerment. Results of a Randomized Controlled Trial. Diabetes Care* 1995; 18:943–9.

Wilson W, Pratt C. *The impact of diabetes and peer support upon weight and glycemic control of elderly persons with NIDDM. American Journal of Public Health* 1987; 77:634–5.

Diabetes Control and Complications Trial Research Group. *The effect of intensive treatment of diabetes on the development and progression of long term complications in IDDM. N Engl J Med* 1993; 329:977–86.

Aubert RE, Herman W, Waters J et al. *Nurse case management to improve glycemic control in diabetic patients in a health maintenance organization: a randomized controlled trial. Annals of Internal Medicine* 1998; 129(8):605–12.

McCulloch DK, Price MJ, Hindmarsh M, Wagner EH. *Improvement in Diabetes Care Using an Integrated Population-Based Approach in a Primary Care Setting. Disease Management* 2000; 3(2):75–82.

Sadur CN et al. *Diabetes Management in a Health Maintenance Organization: Efficacy of care management using cluster visits. Diabetes Care* 1999; 22(12):2011–7.

Olivarius NF, Beck-Nielsen H, Andreasen AH, Horder M, Pederson, PA *Randomised controlled trial of structured personal care of type 2 diabetes mellitus. British Medical Journal* 2001; 323:970.

Blood Pressure, Heart Rate, and Cholesterol are Significantly Reduced in Cardiovascular Disease

Patients with cardiovascular disease usually can benefit from adherence to a prescribed regimen of daily medications, a consistent exercise programme, and treatment of the risk factors including high cholesterol, high blood pressure, smoking and excess weight. Each of these tasks requires patients to change behaviours and behavioural interventions are indicated. Overall, research indicates that behavioural self-management interventions are effective in helping patients meet these goals.

A 1996 meta-analysis examined the impact of behavioural or psychosocial treatment approaches on disease outcomes in patients with coronary artery disease. More than 3,000 patients (2024 treatment, 1156 control) across the selected studies yielded the following findings:

- ⊕ Treated patients had greater reductions in systolic blood pressure (-0.24 effect size difference)
- ⊕ Treated patients had greater reductions in heart rate (-0.38 effect size difference)
- ⊕ Treated patients had greater reductions in cholesterol level (-1.54 effect size difference)
- ⊕ Untreated patients had significantly greater mortality risk (1.70 odds ratio)
- ⊕ Untreated patients had significantly greater cardiac recurrence risk (1.84 odds ratio).

Linden W, Stossel C, Maurice J. *Psychosocial interventions for patients with coronary artery disease: a meta-analysis.* *Arch Intern Med* 1996; 156:745–52.

Innovative Approaches Reduce Deaths

Heart Disease Deaths Decrease by 41%

A review of 23 studies, involving more than 3,000 patients with coronary artery disease, found that patients who received behavioural/psychosocial interventions significantly lowered their risk of dying or of having a nonfatal heart attack. Specifically noted was a 41 percent reduction in cardiac mortality and a 46 percent reduction in nonfatal cardiac events.

Linden W, Stossel C, Maurice J. *Psychosocial interventions for patients with coronary artery disease: a meta-analysis.* *Arch Intern Med* 1996; 156:745–52.

Innovative Approaches Save Money and Health Care Resources

Exercise Training: Prolongs Life, is Cost-Effective

Patients with stable, but chronic heart failure participated in a 14-month, moderate exercise training programme. Compared with patients in a control group, patients in the exercise group lived an average of 1.82 years longer. Taking into account the cost of the training program, the cost savings from the reductions in hospitalization, and wages lost due to the training time, every life-year saved was at a cost of \$1,773.

Georgiou D, Chen Y, Appadoo S, Belardinelli R, Greene R, Parides MK, Glied S. *Cost-effectiveness analysis of long-term moderate exercise training in chronic heart failure.* *Am J Cardiol.* 2001; 87(8):984–8.

Unnecessary Testing Declines

Low back pain is one of the most frequent, costly, and disabling of all adult chronic health problems. Clinical practice is not in line with current recommendations for diagnostic testing and interventions resulting in health care service overuse. An innovative care program included telephone triage to reduce inappropriate visits and/or tests, non-surgical options, incorporation of 3-minute back exam, and consultation before ordering diagnostic tests. In addition, employers were encouraged to institute transitional work policies and physicians were encouraged to reduce bed rest recommendations and time off from work orders. Results demonstrated:

- ⊕ decreased use of myelograms by 23 percent over one year
- ⊕ reduced the number of standard views for plain x-rays from 5 to 3 and decreased use of plain films by 30 percent
- ⊕ decreased ratio of early lumbar testing not followed by lumbar surgery from 4:1 to 3.4:1
- ⊕ decreased the percentage of patients inappropriately receiving physical therapy by 30 percent

The Institute for Healthcare Improvement's Breakthrough Series Collaborative on Providing More Effective Care for Low Back Pain.

Programme Saves \$4 for every \$1 Spent

Low-income asthma patients experienced improved health status and health care costs were lowered in an innovative programme that taught physicians new skills in communication and disease management. Emergency room visits declined 41% for the patients of physicians who participated in the programme. The cost-effectiveness analysis accounted for the cost of newly prescribed medications and the training of the physicians. The results were direct savings to the government health care fund (Medicaid) of \$3 to \$4 for every incremental dollar spent providing condition management information and support to physicians.

Rossiter LF, Whitehurst-Cook MY, Small RE, Shasky C, Bovbjerg VE, Penberthy L, Okasha A, Green J, Ibrahim IA, Yang S, Lee K. The impact of disease management on outcomes and cost of care: a study of low-income asthma patients. Inquiry 2000; 37(2):188–202.

Treatment Costs and Hospital Admissions Decline

An innovative self-management training programme in India for patients with chronic asthma resulted in improvements in health status and reductions in hospital and emergency room use. Training consisted of four skills training sessions in addition to usual care. Patients were randomly assigned to two groups. Results follow:

- ⊕ work days lost: 18 vs. 34 (self-management group vs. control)
- ⊕ hospitalizations: 6 vs. 13
- ⊕ emergency room visits: 12 vs. 22
- ⊕ total annual costs: Rupees 5,263 vs. 6,756

Ghosh CS, Ravindran P, Joshi M, Stearns SC. Reductions in hospital use from self management training for chronic asthmatics. Soc Sci Med. 1998; 46(8):1087–93.

The financial impact of an innovative asthma self-management programme is significant.

Components of the programme emphasized patient education and training in symptom management, medication adherence, and lifestyle modification. A cost-benefit analysis in 47 patients for one-year before and one-year following the intervention resulted in the following:

- ⊕ asthma related treatment costs reduced \$472 per patient
- ⊕ hospital admissions costs decreased from \$18,488 to \$1538 per patient
- ⊕ lost income as a result of asthma reduced from \$11,593 to \$4589 per patient
- ⊕ the programme cost (\$208) to benefit ratio was 1 to 2.28

Taitel M, Kotses H, Bernstein IL, Bernstein DJ, Creer T. A Self-Management Program for Adult Asthma. Part 1: Development and Evaluation. *Journal of Allergy and Clinical Immunology* 1995; 95:529–40.

A multidisciplinary, nurse directed programme created to improve the management of patients with congestive heart failure consisted of patient and family education, diet regimen, medication review, and social service consultation. Outcomes were examined 90 days post intervention with the following findings:

- ⊕ 56.2% reduction in hospital readmission for heart failure problems
- ⊕ 28.5% reduction in readmission for all other causes
- ⊕ significantly smaller percentage of patients with more than one readmission relative to control patients (6.3% vs. 16.4%)
- ⊕ lower costs of care (\$460 less per patient) relative to control patients

Rich MW, Beckham V, Wittenberg C, et al. A multidisciplinary intervention to prevent the readmission of elderly patients with congestive heart failure. *N Engl J Med* 1995; 333:1190–5.

An innovative and comprehensive outreach programme for patients with asthma was evaluated. Programme components included: individual instruction in asthma management, a stepped care treatment programme (designed by a nurse, paediatrician, and allergist), and regular telephone contact by a nurse to ensure compliance with the treatment regimen. Results from 53 patients (ages 1–17) from 6 months to 2 year follow-up indicated:

- ⊕ 79% reduction in emergency ward admissions
- ⊕ 86% reduction in hospital admissions
- ⊕ approximately \$87,000 savings in annualised costs

Greineder DK, et al. Reduction in Resource Utilization by an Asthma Outreach Program. *Archives of Pediatric and Adolescent Medicine* 1995; 149(4):415–20.

Emergency Room Visits are Reduced

A three session educational programme created for patients seen in the emergency room with asthma-related problems yielded positive outcomes. The programme (implemented by a nurse) stressed medication compliance, methods to prevent attacks, smoking cessation, and relaxation techniques. One hundred and nineteen patients received the intervention and 122 patients received standard medical care. Over a 12-month period, patients who had participated in the innovative programme had significantly fewer emergency visits (68 per 100 persons) than control patients (220 per 100 persons). The cost of the educational intervention (\$85/person) was offset by the reduction in emergency room charges (\$628/person).

Bolton MB et al. The Cost and Effectiveness of an Education Program for Adults Who Have Asthma. *Journal of General Internal Medicine* 1991; 6(5):401–7.

Innovative Care Helps Patients Change Lifestyles and Self-Manage Conditions

Patients Stop Smoking

A nurse managed, home based programme for coronary risk factor modification used in-patient hospital interventions for smoking cessation in addition to exercise training and diet-drug regimen for hyperlipidemia. Also included was home-based management via telephone contact. Results from an evaluation of 585 patients demonstrated that, relative to patients in a control group who received standard hospital care, patients in the innovative programme successfully modified targeted risk factors resulting in:

- ⊕ 70% smoking cessation rates (vs. 53% in the control group)
- ⊕ significantly lower plasma LDL cholesterol levels
- ⊕ greater functional capacities (9.3 vs. 8.4 METS)

DeBusk RF, Miller NH, Superko HR et al. A case-management system for coronary risk factor modification after acute myocardial infarction. Annals of Internal Medicine 1994; 120:721–9.

Patients Learn Self-Care

Innovative cancer programmes that include educational components (e.g., information about diagnosis and course of treatment) increase knowledge and promote better self-care practices among patients. Not only do these programmes diminish symptoms of anxiety and distress; they improve patients' adherence to medical recommendations.

Richardson JL, Shelton DR, Krailo M, and Levine AM. The effect of compliance with treatment on survival among patients with hematologic malignancies. Journal of Clinical Oncology 1990; 8(2):356–64.

Jacobs C, Ross RD, Walder IM and Stockdale FE. Behaviour of cancer patients: a randomized study of the effects of education and peer support groups. American Journal of Clinical Oncology 1983; 6:347–53.

Patients in Peru and Haiti Self-Manage Complex Regimens

Individuals with little formal education and few material resources can successfully manage complex medication regimens for drug-resistant tuberculosis or HIV/AIDS when provided with self-management support and careful follow-up. In these innovative interventions, the patients' role in management of his or her condition was emphasized and behavioural skills were taught.

Farmer P, Leandre F, Mukherjee JS, Claude M, Nevil P, et al. Community-based approaches to HIV treatment in resource-poor settings. Lancet 2001; 358:404–9.

Innovative Approaches Result in Increased Functional Abilities, Productivity, and Quality of Life

Patients can do More Activities

The chronic condition of arthritis has attracted a significant amount of interest from innovative programme designers and researchers. Results from a number of studies demonstrate the significant impact of self-management interventions for patients with this chronic condition. Consist-

ently, the following outcomes are achieved from innovative self-management programmes:

- ⊕ reductions in pain and fatigue
- ⊕ improvement in activity levels, aerobic capacity and exercise endurance
- ⊕ diminished levels of disability and functional limitations
- ⊕ improved self-reported health status

Lorig K. and Holman H. *Arthritis self-management studies; A twelve year review. Health Education Quarterly. 1993; 20:17–28.*

Lorig KR, Sobel DS, Stewart AL, et al. *Evidence Suggesting That a Chronic Disease Self-Management Program Can Improve Health Status while Reducing Hospitalization. Medical Care 1999; 37:5–14.*

Noreau L, Martineau H, Roy L, Belzile M. *Effects of a modified dance-based exercise on cardiorespiratory fitness, psychological state and health status of persons with rheumatoid arthritis. Am J Phys Med Rehabil 1995; 74(1):19–27.*

Kovar PA, Allegrante JP, MacKenzie CR, Peterson MG, Gutin B, and Charlson ME. *Supervised fitness walking in patients with osteoarthritis of the knee: a randomized, controlled trial. Annals of Internal Medicine 1992; 116(7):529–34.*

Patients Feel Better Mentally and Physically

Multifaceted interventions that include relaxation, coping skills training, visualization training, and problem solving components produce significant decreases in cancer related symptoms including anxiety, pain, fatigue, coughing, vomiting and nausea.

Fawzy FI, Cousins N, Fawzy NW, Kemeny ME, Elashoff R, and Morton D. *A structured psychiatric intervention for cancer patients. Archives of Gen. Psychiatry 1990; 47:720–5.*

Arathuzik D. *Effects of cognitive-behavioural strategies on pain in cancer patients. Cancer Nursing 1994; 17(3):207–14.*

Lorig and colleagues examined the impact of a peer led Chronic Disease Self-Management Program (CDSMP) on patients with a variety of chronic conditions including heart disease, lung disease, stroke or arthritis. Peer leaders with 20 hours of training facilitated the programmes at community sites where each group had 10–15 participants. The programme was seven weekly sessions of 2.5 hours duration. The emphasis was on self-management skills including symptom control, health behaviours, emotional regulation, communication with health professionals, and problem solving skills. Results of the study indicated significant reductions in emergency room and outpatient visits, improved health behaviours, reduced symptoms, and improved health status. Reductions in service utilization and emotional distress are evident for at least two years following the programme.

Lorig KR, Ritter P, Stewart A, Sobel D, Brown B, Bandura A, Gonzalez V, Laurent D, Holman H. *Chronic Disease Self-Management Program: 2 Year Health Status and Health Care Utilization Outcomes. Medical Care 2001; 39:1217–23.*

Missed Work/School Days are Reduced

A number of studies have demonstrated the impact of innovative self-management programmes on work and school productivity. Typically, learning and implementing self-management skills produce:

- ⊕ fewer missed days from school
- ⊕ less work absenteeism
- ⊕ higher productivity levels

Bolton MB et al. *The Cost and Effectiveness of an Education Program for Adults Who Have Asthma. Journal of General Internal Medicine 1991; 6(5):401–7.*

- Mayo PH et al. Results of a Program to Reduce Admissions for Adult Asthma *Annals of Internal Medicine* 1990; 112(11):801–802, 864–71.
- Kotses H, Bernstein IL, Bernstein DJ, et al. A Self-Management Program for Adult Asthma. Part 1: Development and Evaluation. *Journal of Allergy and Clinical Immunology* 1995; 95:529–40.
- Evans R III, Gergen PJ, Mitchell H, et al. A randomized clinical trial to reduce asthma morbidity among inner-city children: results of the National Cooperative Inner-City Asthma Study. *J Pediatr* 1999; 135:332–8.
- Greineder DK, et al. Reduction in Resource Utilization by an Asthma Outreach Program. *Archives of Pediatric and Adolescent Medicine* 1995; 149(4):415–20.
- Wilson SR, Latini D, Starr NJ, et al. 1996. Education of Parents of Infants and Very Young Children with asthma: A Developmental Evaluation of the Wee Wheezers Program. *Asthma* 1996; 33:239–54.
- Clark NM, Feldman CH, Evans D, et al. The Impact of Health Education on Frequency and Cost of Health Care Use by Low Income Children with Asthma. *Journal of Allergy and Clinical Immunology* 1986; 78:108–15.

Workers Keep their Jobs

A randomized controlled trial conducted by the RAND Corporation assessed Quality Improvement programmes for depression in managed care practices. The interest was whether these innovative approaches improved the quality of care, health outcomes, and employment in patients with depression. The intervention used local experts and nurse specialists to provide clinician and patient education. Nurses also provided medication follow-up or trained psychotherapists provided care. Because of this innovative programme, quality of care, mental health outcomes and retention of employment improved over a one-year period. Overall, medical visits did not increase.

- Wells KB, Sherbourne C, Schoenbaum M, Duan N, Meredith L, Unutzer J, Miranda J, Carney M, Rubenstein LV
Impact of disseminating quality improvement programs for depression in managed primary care: A randomized controlled trial. JAMA 2000; 283(2):212–20.

In a similar innovative project, a primary care-initiated quality improvement programme for depression was successful. Forty-six primary care clinics and 1,356 patients participated in this randomized controlled trial. The innovative approach consisted of special training for physicians and nurses, educational and assessment materials, and either nurse initiated medication follow-up or nurse initiated cognitive behavioural therapy. Results of the programme indicate that, relative to usual care, costs increased. However, 24 months following participation, patients receiving the new programme had significantly fewer days with significant depressive symptoms and they were employed a significantly greater number of days than patients receiving usual care.

- Schoenbaum M, Unutzer J, Sherbourne C, Duan N, Rubenstein LV, Miranda J, Meredith LS, Carney MF, Wells K
Cost-effectiveness of Practice-Initiated Quality Improvement for Depression: Results of a Randomized Controlled Trial. Journal of the American Medical Association 2001; 286:1325–35.

Innovative Approaches Result in Better Processes of Health Care

Four Hundred Years of Waiting Time is Saved

The United Kingdom's National Health Service (NHS) has made remarkable improvements in the continuity of care for patients with cancer. Two NHS goals are to promote excellent care and to support innovative redesign of care processes for the benefit of patients. Estimates are that the project has saved 400 years of waiting time for patients with breast, lung, bowel, prostate, and ovarian cancer. In addition, over 200 ways to improve services were identified and many of the improvements occurred with relatively few new resources.

Mayor S. Pilot projects show cancer treatment can be speeded up. BMJ 2001; 322:69.

Patients Get the Care They Need

A new approach for managing diabetes in an integrated health care system in the USA is highly successful in improving the access to essential education about the management of this chronic condition and quality of diabetes care, in general. The programme was comprehensive and involved both patients and providers. It consisted of practice guidelines, medical screening, provider reports, diabetes education, focused clinic visits, easy access to care and reminder systems. Results indicated significant improvements in preventive screening, improved access to diabetes education, and lowering of glyco-hemoglobin values.

Freidman N, Gleeson J, Kent M, Foris M, Rodriguez D, Cypress M Management of diabetes mellitus in the Lovelace Health Systems' EPISODES OF CARE program. Eff Clin Pract 1998; 1(1):5-11.

Screening Rates Improve

A large HMO in the USA is using a population-based approach to improve outcomes for its 13,000 patients with diabetes. This innovative programme assists primary care teams to improve the delivery of diabetes care. Based on an integrated chronic care model, the programme includes an "on-line" registry of patients, evidence-based guidelines for routine diabetes care, improved support for patient self-management, and practice re-design that incorporates group visits. Results evidence improvements in the following areas:

- ⊕ retinal screening rates increased from 56% to 70%
- ⊕ renal screening rates increased from 18% to 68%
- ⊕ foot exam rates increased from 18% to 82%
- ⊕ glycosylated hemoglobin rates increased from 72% to 92%

Sadur CN et al. Diabetes Management in a Health Maintenance Organization: Efficacy of care management using cluster visits. Diabetes Care 1999; 22(12):2011-7.

Summary

Innovative approaches and creative programmes for improving the management and outcomes associated with chronic conditions have been developing around the world. These innovations in care range from education and self-management training to integrating volunteers and community lay persons to provide services. Creative programme developers have used innovative formats to deliver new programmes, including group visits, telephone follow-up, and home-based strategies.

The evidence, from case studies to randomized trials, is compelling even in the earliest stages of development. To date, many of the “building blocks” of the ICCC framework have been evaluated. However, the full framework (i.e., policy, organization/community, and patient levels) has yet to be tested comprehensively and many components of it have not been examined outside of developed countries. Local settings must begin to develop their own evidence base for caring for chronic conditions.

