Non-communicable diseases and health systems reform in low- and middle-income countries

Helen M. Robinson
Nossal Institute for Global Health, University of Melbourne

Krishna Hort
Nossal Institute for Global Health, University of Melbourne

www.ni.unimelb.edu.au
ABOUT THIS SERIES
This Working Paper is produced by the Nossal Institute for Global Health at the University of Melbourne, Australia.

The Australian Agency for International Development (AusAID) has established four Knowledge Hubs for Health, each addressing different dimensions of the health system: Health Policy and Health Finance; Health Information Systems; Human Resources for Health; and Women’s and Children’s Health.

Based at the Nossal Institute for Global Health, the Health Policy and Health Finance Knowledge Hub aims to support regional, national and international partners to develop effective evidence-informed policy making, particularly in the field of health finance and health systems.

The Working Paper series is not a peer-reviewed journal; papers in this series are works-in-progress. The aim is to stimulate discussion and comment among policy makers and researchers.

The Nossal Institute invites and encourages feedback. We would like to hear both where corrections are needed to published papers and where additional work would be useful. We also would like to hear suggestions for new papers or the investigation of any topics that health planners or policy makers would find helpful. To provide comment or obtain further information about the Working Paper series please contact; ni-info@unimelb.edu.au with “Working Papers” as the subject.

For updated Working Papers, the title page includes the date of the latest revision.

Non-communicable diseases and health systems reform in low- and middle-income countries
First Published – September 2011
Corresponding author: Helen M. Robinson
Address: The Nossal Institute for Global Health, University of Melbourne
hmro@unimelb.edu.au

This Working Paper represents the views of its author/s and does not represent any official position of the University of Melbourne, AusAID or the Australian Government.
SUMMARY

There is growing evidence that non-communicable diseases (NCDs) are a major health and socio-economic issue in low- and middle-income countries (LMICs). According to World Health Organization (WHO) estimates, deaths from cardiovascular disease, cancer, chronic respiratory disease and diabetes accounted for 63 per cent of global mortality in 2008, of which 80 per cent was in LMICs. The NCD burden is projected to increase: by 2030, NCDs will be the greatest killer in all LMICs. Thus, governments of these countries cannot afford to overlook policies in relation to NCDs.

Several cost-effective measures exist to prevent and control NCDs. These include both population-wide interventions such as tobacco control and targeted treatment for individuals at high risk. Experience from high-income countries that have been able to control NCDs shows that responses must be comprehensive and multi-sectoral, integrating health promotion, prevention and treatment strategies, and involving the community as well as the health sector. Such a multi-faceted approach requires well-functioning health systems. In the majority of LMICs, however, health systems are fragile and will need to be adapted to address NCDs appropriately, while also continuing to tackle communicable diseases.

We propose that the reform of health systems can occur in a four-phased approach in four areas: building political commitment and addressing health systems constraints, developing public policies in health promotion and disease prevention, creating new service delivery models and ensuring equity in access and payments. Several policy issues will also need to be addressed, including financing of NCD programs and the broadening of concepts of health and responsibilities for health.

Adapting health systems to respond to NCDs will require a change in mindset and practices in programming for health, as well as substantial financial resources. There is scope for development partners and global health initiatives to support LMICs in addressing NCDs.
INTRODUCTION

Non-communicable diseases (NCDs) like cardiovascular disease, cancer, diabetes and chronic respiratory disease, have been thought to be mainly diseases of industrialised nations. Now there is growing evidence that they are also a major health issue in developing countries. WHO (2011) estimates that deaths from the four diseases mentioned above accounted for 63 per cent of all deaths worldwide in 2008, and 80 per cent of these deaths occurred in LMICs. The social and economic consequences of deaths on this scale are only recently being recognised.

The decision to hold a United Nations High-Level Meeting on NCDs in September 2011 raised the profile of these diseases considerably. It has broadened the discourse around NCDs, from being framed as a health problem to an issue that is global in nature and of concern to socio-economic development. Still, most development partners, governments and global health institutions have largely overlooked NCDs when investing in health development in LMICs. It is estimated that less than 3 per cent of development aid is currently directed towards NCDs (see IHME 2010; Birdsall and Kharas 2010 for discussion). This apparent gap between the global burden of NCDs and the investments of development partners indicates the need for those in health development to understand better the implications of this burden and how to control and prevent NCDs.

Rising poverty, globalisation of trade and marketing, increases in urbanisation, the ageing of populations and changes in other social determinants all seem to be part of the complex and interrelated processes contributing to the rising burden of NCDs. Importantly, NCDs are largely preventable through the reduction of four risk factors: tobacco consumption, physical inactivity, harmful alcohol consumption and unhealthy diets. This aspect of prevention gives these diseases qualities and characteristics that make them particularly amenable to public policy interventions. These policy dimensions, and how they relate to health systems reforms in LMICs, are the focus of this paper.

The paper discusses health systems reform in LMICs and the public policies required to respond effectively to the rise of NCDs. It does so by:

1. reviewing what is known about the burden of NCDs in LMICs;
2. outlining the evidence available on how to address NCDs;
3. highlighting the central role of health systems in responding to NCDs and the implications for LMICs; and
4. suggesting a process by which health systems can be reformed, and the corresponding policy issues that need to be considered.

The paper is not intended to be a systematic review of all the literature related to the status and problems of NCDs in LMICs. Rather it aims to raise issues that will assist in translating discussions into action. It draws upon the following documents:

- World Health Organization (WHO) publications and resolutions (see Appendix A) issued between January 2000 and May 2011 (prior to 2011 World Health Assembly), including WHO 2011;
- publications of the World Bank related to NCDs in the Asian region, primarily the reports on NCDs in south Asia (Engelgau, El-Saharty et al 2011) and in China (World Bank 2011);
- publications related to the Global Burden of Diseases, Injuries, and Risk Factors study of WHO, funded by WHO and the Gates Foundation. This study produced the body of data that underpins most of the analysis, reports and publications used in this paper; and
- publications of the Lancet NCD Action Group and the Global NCD Alliance produced before June 2011, which present the current debates around NCDs and development.

---

1 This paper uses the term NCDs as it relates to the resolution of the UN High Level Meeting for NCDs (September 2011); while the definition has been contested as it omits other NCDs like poor vision and mental illness, it is the one used in the WHO’s Global status report on NCDs 2010, released in April 2010; this is taken up below in the section ‘Definitions’.

2 An informal collaboration of academics, practitioners and civil society organisations.
THE SCOPE OF THE PROBLEM
Definitions: What Do We Mean by ‘NCDs’?
There has been considerable debate in recent literature around what exactly constitutes a non-communicable disease (Sridhar, Morrison et al 2011). This paper uses the same definition of NCDs as used by the WHO in recent reports and publications (WHO 2011) and by resolutions of the World Health Assembly—namely that NCDs encompass four major health conditions: cancers, cardiovascular diseases, chronic respiratory diseases and diabetes. These diseases are grouped because of their strong relationship to four behavioural risk factors: use of tobacco, unhealthy diets, lack of physical exercise and harmful use of alcohol; and to four underlying metabolic or physiological factors that are measurable: excess body weight, high levels of serum cholesterol, high fasting plasma glucose levels and high systolic blood pressure. Table 1 lays out the relationships between the four NCDs and the various risk factors.

NCD-Related Mortality and Morbidity–The Current Situation
The Global Status Report on Non-Communicable Diseases (WHO 2011) describes the burden of NCDs in 2008. It establishes a comprehensive baseline of data on NCDs in the world for the first time. These data are largely drawn from the WHO Global Burden of Diseases, Injuries and Risk Factors Study, an ongoing project funded by WHO and the Gates Foundation. As such, it is important to understand the quality of the data.

As the Global Status Report states (pp. 3, 7 and 11), accurate data on causes of death are not always available in several countries. Appendix 4 of the report comments on the availability of recent data for each WHO member state and assesses the quality of that data. A review of this indicates that for the 43 countries categorised as low income, 91 per cent are reported as having either no data or no data since 2002; of the 54 countries categorised as low-middle income, slightly more than half did not have reliable or recent data. For high income countries, the same figure was 12 per cent. Of course these figures do not refer to information collected since 2008, but as stated in the report, there are “serious deficiencies in surveillance and monitoring of NCDs” in many LMICs, and data on NCDs, if they do exist, are not always integrated into national health information systems.

Despite the problems with data quality, the report still provides the best estimates on NCD mortality. The data presented show that NCDs are the leading cause of mortality worldwide, with 80 per cent of all NCD deaths occurring in LMICs (WHO 2011). In fact, NCDs are now the leading cause of death in all LMICs, apart from those in sub-Saharan Africa, where infectious diseases are the greatest killer (WHO 2011). Still, even in this region, it is projected that NCDs will overtake infectious diseases as the main cause of mortality by 2030 (WHO 2011). Presently, over 80 per cent of cardiovascular and diabetes deaths and almost 90 per cent of deaths from

Table 1 – Relationship between NCDs and Risks Factors

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>CVDs</th>
<th>Diabetes</th>
<th>Cancer</th>
<th>COPD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tobacco use</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Alcohol abuse</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Unhealthy diet</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Physical inactivity</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Obesity—BMI ≥ 30 kg/sq m</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Raised blood pressure</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Raised blood glucose—FPG</td>
<td>X</td>
<td>X</td>
<td></td>
<td>?</td>
</tr>
<tr>
<td>Abnormal blood lipids</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>?</td>
</tr>
</tbody>
</table>

3 Raised systolic blood pressure—mmHg
4 Fasting plasma glucose in mmol/L
5 Serum total cholesterol in mmol/L
chronic obstructive pulmonary disease occur in LMICs (WHO 2011). These figures dispel the myth that NCDs are a concern only of the developed world.

More importantly, mortality from NCDs in LMICs is occurring in younger age groups than in high-income countries, more often in the economically productive years of life. 29 per cent of NCD deaths in LMICs are among people under the age of 60 years, as opposed to only 13 per cent in high-income countries. For deaths under 70 years, the figures are even more striking: 48 per cent of all NCD deaths in LMICs compared to 26 per cent in high-income countries (WHO 2011).

Morbidity data for specific NCDs, like cancer or diabetes, are being revealed. It is estimated that in 2008 there were approximately 347 million adults in the world with diabetes (Danaei, Finucane et al 2011b) and around 12.7 million new cases of cancer (WHO 2011).

Future Burden of Disease
The burden of NCDs worldwide is expected to increase, the WHO projecting that NCD deaths will increase by 15 per cent between 2010 and 2020. Cardiovascular disease and cancer will be the main killers (WHO 2011). By 2020, mortality from NCDs is expected to be almost 75 per cent higher than that from communicable, maternal and child diseases (WHO 2011). The rise in mortality will be more acute in the WHO regions of Africa, South-East Asia, and the Eastern Mediterranean, where it is expected to be over 20 per cent (WHO 2011). The greatest number of deaths from NCDs will be in South-East Asia and the Western Pacific (WHO 2011). These increases in LMICs are thought to be largely explained by demographic factors—aging and population growth—as well as behavioural changes such as the spread of Western diets and increasingly sedentary lifestyles (Danaei, Finucane et al 2011a; Danaei, Finucane et al 2011b; Farzaadfar, Finucane et al 2011; Finucane, Stevens et al 2011).

Impact on Socio-economic Development
The rise of NCDs is more than a public health issue. It is increasingly being recognised as a socio-economic issue. The rising cost of treating NCDs is evident in the expanding health budgets in developed countries in recent years. There is also recognition of the growing economic and social costs associated with high levels of disability and loss of productivity resulting from NCDs.

NCDs can exacerbate poverty and increase health inequities and therefore put at risk the recent gains of social and economic development. NCDs and poverty form a vicious circle as a result of several factors:

- When family income is restricted, more nutritious foods are replaced by cheaper food options that are often high in sugar and fat, particularly in urban populations.
- The costs of treating NCDs can further impoverish already poor households because of the chronic nature of the diseases and the need to access drugs and health services over long periods. In addition, when NCD treatments are not part of the core services delivered by the public health system, individuals may need to seek services or drugs in the private sector at higher, up-front costs.
- Illness, disability or premature death from NCDs may prevent individuals from attending or seeking employment, leading to a loss of income for the household. Family members may also have to withdraw from income-earning activities or education to care for family members living with NCDs.
- Lack of information and public awareness means late presentation of most NCD patients in LMICs, making treatment much more expensive (treatments for late stages of diabetes, lung cancer or stroke that require more radical intervention and longer hospitalisation, for example).
- The poor live in settings where there is weak control over exposure to NCD risk factors such as tobacco and alcohol use, which may increase their risk of developing NCDs.

---

9 Refer to Appendix 2 for a list of countries in each World Bank income group.
10 Uncertainty interval 314-382 million, which is higher than previous estimates for 2010 of 285 million.
There is also a growing body of evidence that links the rise of NCDs to a lack of progress in achieving targets to alleviate the burden of communicable diseases such as AIDS and tuberculosis. Anti-retroviral therapy, for instance, may increase the risk of cardiovascular disease, while smoking is associated with 21 per cent of adult Tuberculosis (TB) cases (WHO 2011). Thus, tackling NCDs needs to be seen as a contribution to helping poor countries deal with problems related to poverty, particularly in relation to the consequences of premature death and increasing rates of disability. Governments cannot afford to overlook their policies in relation to NCDs.

RESPONDING TO NCDs
What Do We Know about What Works?

Given the chronic nature of NCDs, and the fact that they are largely associated with lifestyle factors such as diet and tobacco consumption, any response will need to comprise a judicious mix of health promotion, prevention strategies and treatment services. Interventions that aim to reduce the prevalence of risk, prevent NCD occurrence and re-occurrence in high-risk individuals, diagnose NCDs in early stages and provide appropriate care and treatment are all crucial. In addition, national policies in areas not traditionally thought of as having an impact on health outcomes, such as those related to agriculture or urban planning, have a major bearing on the behavioural risk factors linked with NCDs. This means that non-health actors will also need to be engaged when developing and implementing policies and programs to address NCDs.


1. tobacco control as outlined in the Framework Convention on Tobacco Control: increased taxes on tobacco products, enforcement of smoke-free workplaces, packaging and labelling of tobacco products with comprehensive health warnings supported by public education and comprehensive banning of tobacco advertising, promotion and sponsorship;
2. reduction of population-wide salt consumption: voluntary reduction of salt levels in processed foods and food additives, and sustained public education to encourage change in food choices;
3. promotion of physical activity: combining ‘upstream’ policy support with ‘downstream’ community-based activity in schools, workplaces and religious centres;
4. reduction of population-wide harmful alcohol consumption: increased taxes on alcoholic beverages, limiting access to retail alcohol and comprehensive banning of alcohol advertising, promotion and sponsorship; and
5. treatment with cheap and readily available drugs for individuals at high risk of cardiovascular disease: use of aspirin and selected off-patent drugs to lower blood pressure and cholesterol.

Other than evidence on specific interventions, experience from countries that have reduced NCD mortality and morbidity, such as Finland (Box), Wales and Australia, suggests that certain facilitating contextual factors are also important:

- community mobilisation;
- joint medical and political consensus on the problem and on the strategy to address it;
- ongoing collaboration between bureaucrats, politicians, community members, health professionals and media;
- linking of medico-technical and social science evidence; and
- integration of treatment and prevention activities into one sustained strategy.

The Organisation for Economic Cooperation and Development (2010b) recently undertook a review of its member country policies and actions on NCDs. The study found that a successful response to NCDs required the development of comprehensive strategies that are pervasive and sustained, and that involve the integration of a variety of actors and actions. These approaches did lead to improved prevention outcomes across NCDs and their risk factors. The OECD (2010b: 9) also found that strategies combining multiple interventions and
targeting different age, gender and population groups are more cost-effective because they exploit synergies between the various interventions. It went on to suggest that multi-pronged approaches may be up to twice as effective as the single most effective intervention carried out on its own. The impact of some of these interventions in developed countries is demonstrated by the decreasing trends in NCD burden or metabolic risk factors of NCDs reported in a series of articles in the Lancet (Danaei, Finucane et al 2011a,b; Farzaadfar, Finucane et al 2011, Finucane, Stevens et al 2011) and in Appendix 4 of the Global Status Report (WHO 2011).

Is Health Service Delivery for NCDs Different?
The characteristics of NCDs and the corresponding response required bear important implications for health systems. Table 2 highlights the key differences in health service delivery between a communicable and a non-communicable disease.

The chronic nature of NCDs means:

- Patients need long-term sustained health services from health professionals with different skills.
- Diagnosis and treatment can be technologically intensive.
- Drugs and technologies must be sustainably supplied over the long term.
- Community involvement is a key ingredient for promoting access to services and for advancing self-care. Furthermore, as was highlighted above, NCDs are best addressed through comprehensive and sustainable approaches, which integrate population-wide health promotion and NCD prevention measures with health care and treatment targeted at individuals at risk of or already with NCDs. Any response to NCDs will also require training of health workers and an effective surveillance and monitoring system. Such a multifaceted response demands a well-functioning health system.

Health systems in LMICs have been largely structured around infectious diseases, maternal and child health and acute care. This traditional model emphasises hospitals and service delivery that is planned around discrete events as opposed to one in which both prevention and treatment are regularly offered over a sustained period of time and in which individuals assume greater responsibility in managing their own care. This was made clear in the recent World Bank report on NCDs in China (World Bank 2011), which suggests that health sector reform is required in order to shift from a system geared towards combating acute and infectious diseases to one that is prepared also to tackle chronic diseases. This suggests that LMIC health systems are currently not equipped with the resources or capacity to mount the comprehensive response required to address NCDs.

---

4 Such as the GFATM’s country coordinating mechanism and GAVI’s interagency coordinating committee.
Indeed, the little information available on NCD programs in LMICs (for example Maher, Harries et al 2009) indicates that in most countries, the current response to NCDs is unstructured and inadequate, particularly in the primary health sector. Weaknesses exist in all six components of health systems. In a recent Lancet article, Samb, Desai et al (2010) outlined the health system constraints and challenges in LMICs that need to be addressed in order to respond to NCDs. These included:

1. inadequate financing for the complex public policies, population-wide primary care interventions and high-cost medical interventions required to address NCDs, as well as to provide financial protection to the poor who risk being further impoverished from the social and economic costs associated with NCDs;
2. unsuitable service delivery models, which are often over-centralised and characterised by poor referral systems, for NCDs that require coordination across a continuum of care;
3. shortages of adequately skilled health workers, particularly in rural areas, and lack of investment in training in NCDs;
4. weak governance structures and health sector plans or policies that hinder effective regulation, resource allocation and inter-sectoral collaboration; the hierarchical and centralised health systems in most LMICs also pose challenges to the involvement of communities, which is crucial for community-based interventions and self-management programs in addressing NCDs;
5. weak health information systems that lack integrated and coordinated collection of data on NCDs; and
6. weak supply management chains and procurement systems that result in undersupply or shortages, as well as in the high cost of drugs and medical products.

In addition, conclusions drawn from a series of studies of trends in NCD metabolic risk factors (blood glucose, cholesterol, blood pressure and body mass index) from 1980 to 2008 include: (1) health systems need to prepare for rising numbers of NCD cases, and (2) data collection on NCDs (mortality, morbidity and risk factors) needs to be enforced, strengthened and standardised (Danaei, Finucane et al 2011a, Danaei, Finucane et al 2011b, Farzaadfar, Finucane et al 2011, Finucane, Stevens et al 2011). These findings further support the crucial role of health systems in responding to NCDs and the need to address weaknesses in the systems.

### What We Know and Its Implications

Evidence presented so far in this paper shows:

- The NCD burden in LMICs is high and expected to increase.
- NCDs are more than just a health issue; they also impact on poverty and socio-economic development.
- Control of NCDs requires the implementation of comprehensive approaches integrating health promotion, prevention and treatment.
- These approaches, in turn, need to be underpinned by well-functioning health systems that are able concurrently to address both communicable and non-communicable diseases.

In most LMICs, there is a worrying gap: the linkages and coordination between prevention and treatment are either missing or very weak. Taking into account that health systems in LMICs are also largely fragile, mounting a comprehensive and multi-sectoral response to NCDs will thus require reforms in the way that health systems are perceived and managed nationally. At the same time, these reforms cannot be divorced from broader...
issues of financing, poverty alleviation and equitable access to primary health care services. Taken together, these needs pose an important challenge to policy makers. In the next section, we propose that health systems reforms be undertaken in a phased approach and outline the corresponding policy issues that will need to be addressed.

A FRAMEWORK FOR POLICY MAKERS

Elements of a Response

The characteristics of NCDs and evidence on what would comprise effective responses suggest that any approach needs to address simultaneously four areas:

(1) building political commitment and addressing health systems constraints—in particular, collecting country data that would justify prioritising and increasing investment in NCDs, and building a coalition of political support to act on this;

(2) re-orienting or developing new public policies in health promotion and disease prevention that address the population risk factors of NCDs and extend beyond the health sector and traditional allies to include agriculture, the food industry and transport and urban infrastructure;

(3) developing new service delivery models that integrate primary care, individual health promotion, long-term maintenance treatment and appropriate access to high technology diagnostic and treatment facilities in a continuum of care; and

(4) ensuring equity in access and payment for NCD services in an affordable manner that does not deflect resources away from communicable disease and maternal and child health.

An effective approach to NCDs should also integrate prevention and risk management for high-risk populations into a strengthened primary care delivery model. Currently how to achieve this integration is not sufficiently well understood by LMICs or their development partners. Neither is it comprehensively addressed in current health system strengthening approaches, which give less attention to the cost-effective opportunities that legislation and regulation may provide in behavioural change in both the general and high-risk populations. There is a risk that if prevention strategies, surveillance approaches and treatment are not planned in a coherent manner, not only will cost-effectiveness be at risk but measuring outcomes may also be more difficult. Both cost-effectiveness and monitoring change are key to the multi-sectoral policy response that is vital for control of NCDs.

Phases of Health Systems Reform

We suggest that reform to adapt health systems better, to NCDs in particular, can be thought of as occurring in four largely sequential phases of growing understanding and commitment, as outlined below. This approach helps to identify the policy issues associated with making such a shift. It can also be thought of as means of evaluating the degree of ‘readiness’ to deal positively with the complex challenges required by such a reform. The use of the term ‘phases’ is somewhat of an arbitrary convenience because the reform can be considered more as a continuum. The phases, however, are designed to mark transitions along a continuum: from a series of fragmented, less coherent responses to NCDs, to responses that are fully integrated into a sustainable system in which prevention and treatment are seen as parts of a holistic approach to health.

In the preliminary stage, Phase 1, there is both political and community recognition that NCDs pose an immediate challenge to improving national health outcomes. This phase is characterised by fragmentation and lack of political support or leadership. As a result, working groups, task forces, committees of experts or the like need to be established that include traditional health sector players as well as the more non-traditional actors required for a multi-sectoral response. In addition, a preliminary evidence base needs to be designed so that research and data collection can be commissioned and a business case for preventing and treating NCDs can be developed and tested. Movement through this phase to the next may require a narrower definition of the challenge of NCDs, say as a largely health issue, as a means of gaining support for a broader strategy for action.
In Phase 2, NCD programs may be seen as being developed in parallel or as additional to other health programs. During this period, there is an advanced understanding of the scope of the problem at the national level, with development of the broader vision required to scale activities and setting of longer term time frames for action. Parameters of the broader evidence base required for multi-sectoral change are defined. Population prevention activities are designed, while the basics of early diagnostics and treatment are established—perhaps as pilot or district trials. Reporting mechanisms and surveillance are set up, roles and responsibilities formalised and accountability frameworks established. Lastly, there is broader involvement in discussion and debate on evaluation and research priorities.

Phase 3 is characterised by visible signs of increased accountability and formalisation of approaches to NCDs vis a vis other health priority areas. It builds on Phase 2 through:

- further developing and refining the evidence base for NCD programs; and
- expanding partnerships and scaling up integrated NCD-focused service delivery in parallel with prevention activities and other health sector strengthening activities, including financial plans, human resource plans and performance measures.

The challenge here is to maintain the integration of prevention and treatment while expanding engagement of the more non-traditional players. This phase needs NCD prevention and treatment activities to be integrated and mainstreamed into primary health care models across both public and private sectors. There is also broad political and community engagement in NCD programs, and the needs of the poor are being monitored and addressed. The role of development partners in the programs is decreasing.

Lastly, Phase 4 achieves sustainability of service delivery, with integration of early diagnostic and treatment services into primary health care services nationally and identification of efficiencies in service delivery and plans across the whole sector, while continuing with prevention strategies. NCDs are seen as just one part of a fully functioning efficient health system. Funding sources for future services are known, particularly for poor and vulnerable groups, and development assistance for health is reasonably predictable. Future projections of demographic change and demand for services are also largely predictable, the burden of disease on the national population is understood and a strategy for resolving competing priorities has been developed.

While countries will vary in the time they take to move through each phase, the phases are sequential and are characterised by increasing integration of NCD services into strengthened health systems until they are a mainstream part of cost-effective, equitable and comprehensive service delivery. The phases in service delivery go hand in hand with activities that are designed to ensure that prevention and education are reducing NCD prevalence and thereby also demand for more expensive and intrusive interventions over time. Progression through the phases will depend on local factors such as national public policy settings concerning health financing and equitable access to primary care health services.

Based on the elements that need to be addressed in any response to NCDs, and the sequential phases that countries will go through in reforming health systems, a strategic framework can be developed that will help national policy makers and development partners to assess countries’ readiness to deal with the changes. This framework, presented in Table 3, outlines actions that would be taken in each of the four phases according to the elements listed previously: (1) building political commitment and addressing health systems constraints; (2) public policy in health promotion and disease prevention; (3) service delivery models; and (4) equity in access and payments.

According to the actions listed, NCD national programmers can apply the framework to individual country contexts to:

- assess the extent to which health policy and health systems are ready to adapt and provide the response needed for addressing NCDs;
- identify gaps where additional support or investment is needed; and
- identify areas where capacity building is required in order to address NCDs.

**Policy Issues to Be Considered in the Reform Process**

Underlying the actions listed in the framework, a number of policy issues need to be addressed to drive health...
systems reforms. These issues, reviewed below, must be taken into account when applying the framework and assessing health system’s readiness to respond to NCDs.

**Broadening and developing concepts of health and responsibilities for health**

Addressing NCDs challenges some of the prevalent ideas about health and responsibilities for health. Reducing the negative impacts of NCDs will require that new practices and attitudes be adopted in the initial phases of the reform, including:

- identification of the barriers to prevention and other health services, particularly for the poor;
- emphasis on the responsibility of other government and corporate sectors in promoting good health;
- use of taxation and economic policies to steer changes in population behaviour; and
- promotion of the Ministry of Health as an advocate for public health and a facilitator and intermediary in developing coalitions across public and private sector providers to support health changes.

**Developing a business case for investment in NCD control**

Political policy change is often most responsive to what are essentially economically framed arguments. An understanding of the economic and developmental impact that NCDs are likely to have on individuals, families, communities and national economies needs to be developed in the following areas:

- the complex role that NCDs play in determining health inequities within and between countries;
- the economic impact of healthy years lost to communities and national economies; and
- the impacts of not integrating prevention and treatment into one NCD strategy.

**Determining how to finance NCD programs**

The issue of ‘Who pays?’ needs to be assessed and an evidence base built to support policy making. There are several parts to the overall financing issue; some to be considered include:

- the proportion of health sector resources to be allocated to NCDs;
- monitoring of out-of-pocket expenses related to NCDs and their impact on individuals and households;
- determining costs of service delivery and cost-effectiveness of prevention and treatment options;
- the role of international donors and global financing partnerships in national NCD programs, and the potential impact of their operations on these programs; and
- taxation as a means of both prevention and resource mobilisation.

**Monitoring of NCD initiatives**

In comparison with the data collected on indicators for the Millennium Development Goals (MDGs), the lack of systematic data in LMICs on NCDs makes the tracking of trends, evidence-based policy making and research more difficult. In addition to improving data collection with regards to morbidity, mortality and users accessing services, it will also be necessary to monitor the impact of NCD population-wide interventions on health practices and finances, of both businesses and individuals.

**The political economy of public health policy**

Understanding the problems that silence and misinformation about NCDs in LMICs have on international, national and community priority setting is essential. The political dimensions of NCDs cannot be ignored in any analysis; the need to create grassroots social movements to raise the priority of NCDs requires a shift in political action concerning research and analysis.

**Specific health system strengthening policy needs**

The core issues of health system strengthening need to be taken into account in meeting the challenges of NCDs. Financing has been already mentioned above, but other issues include:

- how to redeploy human resources into primary care and equitably allocate human resources while maximising cost-effectiveness; and
### Table 3. Strategic Framework for Responding to NCDs

<table>
<thead>
<tr>
<th>Element</th>
<th>Phase 1</th>
<th>Phase 2</th>
<th>Phase 3</th>
<th>Phase 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Building commitment and addressing health systems constraints</td>
<td>• Broadened awareness of problem across government and community</td>
<td>• Strong commitment to NCD problem by key players</td>
<td>• Drug purchasing policies to meet NCD needs revised and refined</td>
<td>• National health plans and budgets have been aligned with strategy</td>
</tr>
<tr>
<td></td>
<td>• Identified partners—public private, academic, NGOs, CSO, external—to form alliances</td>
<td>• System for keeping individual health records has been decided</td>
<td>• Human resources plan for health revised to cover prevention, diagnosis and delivery of good quality NCD models</td>
<td>• Community is satisfied with services</td>
</tr>
<tr>
<td></td>
<td>• Develop advocacy strategy and business case</td>
<td>• Elements of a national NCD plan agreed</td>
<td>• Sources for new finances identified through taxes, efficiencies as part of national health budgets</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Baseline data for population using STEPs or mini-STEPs approach</td>
<td></td>
<td>• National NCD plan for next five years and cost for delivery of core services refined</td>
<td></td>
</tr>
<tr>
<td>2 Public policy in population health promotion</td>
<td>• Determine overall strategic approach inside and outside government</td>
<td>• Prevention strategy developed, partners identified</td>
<td>• Business and industry engaged as partners at the community level</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Evaluation and accountability framework agreed at high level</td>
<td>• Implementation of population strategies begun</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Strategy developed for legislation, taxation and regulation</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Strategy for mobilising community agreed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 Service delivery models</td>
<td>• Potential high risk populations identified by characteristics of gender, age, location, ethnicity</td>
<td>• Service delivery model developed for small-scale intervention for early diagnosis and treatment</td>
<td>• Lessons from Phase 1 and scale-up built on to expand coverage</td>
<td>• Treatment of NCDs fully integrated into mainstream primary health care services nationally and are sustainable</td>
</tr>
<tr>
<td></td>
<td>• NGO and community partners for service delivery identified</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Training needs for pilot delivery identified</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 Ensuring equity in access and payments for services</td>
<td>• Equity in access and costs to prevention and treatment services examined for high risk populations</td>
<td>• Appropriate low cost services developed and piloted for high risk groups with inequitable access or cost burden</td>
<td>• Measurement of equity of access and payments part of scale-up</td>
<td>• Ongoing monitoring of equity of access and payments</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Indicators</td>
<td>• Key partners are on board—inside and outside government</td>
<td>• Political will/leadership and advocacy are solid</td>
<td>• Expanded evidence base in place to support policy/decision making</td>
<td>• Patient satisfaction levels are measured</td>
</tr>
<tr>
<td></td>
<td>• Key messages and advocacy case are clear</td>
<td>• Community involvement is growing</td>
<td>• Longer-term strategy involving key partners is agreed</td>
<td>• Forward plan is fully funded and staffed</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Baseline data are collected and used effectively</td>
<td>• Prevention and treatment are covered for 75 per cent of high risk population</td>
<td>• Prevalence is tracked and declining across all major population groups</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Population prevention strategy ready for implementation</td>
<td>• Service delivery is evaluated for affordability, accessibility and quality</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Legislative/regulatory program on track</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Pilot service delivery models ready for implementation, including reliable individual, human resources, diagnostic processes</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
CONCLUSIONS

The growing burden of NCDs cannot be ignored, particularly in LMICs, where mortality and morbidity rates are currently high and projected to increase. NCDs bear important consequences for the health of populations, as well as for overall socio-economic development. To mitigate the devastating impacts of NCDs, it is crucial that effective responses be implemented urgently.

Experience from high-income countries that have made inroads into controlling NCDs, such as Finland, shows that to be effective, responses need to be comprehensive—integrating health promotion, prevention and treatment. This must involve a broad range of actors within and outside the traditionally conceived health sector. NCD responses also need to comprise both population-wide and targeted interventions, and simultaneously address both men and women, as well as different age and population groups. Given the chronic nature of NCDs, interventions related to both prevention and treatment will need to be delivered over sustained periods. All of these requirements demand a well-conceived public policy response, as well as robust health systems adapted to addressing both communicable and non-communicable diseases.

Health systems in most LMICs, however, are largely weak, with shortcomings in governance, financing, human resources, health information systems and supply and availability of drugs and technologies. Consequently, this paper has argued that health systems in LMICs need to be reformed in order to deliver comprehensive approaches that will halt and reverse the rising mortality and morbidity rates from NCDs.

The process of adapting health systems will no doubt be complex. In an attempt to clarify this, we have suggested that reforms will need to be targeted in the key areas of building political commitment and community involvement, public policy in multi-sectoral health promotion and disease prevention, service delivery models and equity in access and payment for NCD services. The framework offered here might assist national policy makers to assess health systems’ readiness to respond to the four NCDs. Taking the characteristics of the reform process into account, this paper also outlines the policy challenges that will need to be considered when implementing an approach that integrates prevention and treatment. It may not be unreasonable to expect that the need to develop a coherent response to NCDs in countries in resource constrained settings can also drive health sector reform more broadly. As such, the response to NCDs can become a ‘tool’ for reform for policy makers.

It is clear that adapting health systems to respond to NCDs will require a change in mindset and practices in programming for health, as well as substantial financial resources. Here, the role of development partners such as AusAID or the World Bank cannot be overlooked. Development partners that are considering how to allocate development assistance could consider supporting LMICs in:

- building or strengthening data collection and surveillance related to NCDs;
- quantifying the investment needed to address NCDs in order to build a strong case for investment;
- building capacity in implementing health promotion policies and interventions; and
- developing and testing service delivery reforms and pilots that combine health promotion, prevention and treatment, as well as providing a continuum of care.

Investments in these areas would not only benefit NCD programming, but also strengthen health systems and the health sector in ways that would benefit responses to many other diseases as well.

The more contentious issue is the extent to which a regional or global engagement in NCDs is warranted. As a result of the UN summit on NCDs, there has been considerable discussion about the role of various development partners. The Paris Agenda has already set the tone for greater coordination between partners and has put more responsibility for priority setting into the hands of LMICs. The nature of the relationships...
between various development partners is a rich area for research in itself. Tracking transaction costs and disbursement of funds together with developing a better understanding of the intended and unintended consequences of various health development projects and programs are all important.

The fact that aid directed to NCDs constitutes such a small proportion of current aid may provide an opportunity to develop better quality initiatives from better targeted and more coordinated efforts between development partners. The new form of development partnering envisaged in the principles set out in the Paris Declaration and Accra Agenda (OECD 2008), the establishment of the International Health Partnership, the H8 and so on, could form the basis of making this happen. Waage, Banerji et al (2010) in their recent article on focusing advocacy, improving targeting and the flow of aid in a post-2015 environment, indicate a need for a more holistic approach to development so that gaps between initiatives are not so obvious and, more importantly, that potential synergies between various initiatives are clearly identifiable. This suggests that there is also scope for global health initiatives to better address NCDs.
REFERENCES


APPENDIX A: Chronology of events leading up to the High Level Meeting on NCDs, 19-20 September 2011

**Part 1 – Adoption of United Nations General Assembly Resolutions 64/265, 65/1, 65/95 and 65/238**

<table>
<thead>
<tr>
<th>Date</th>
<th>Event Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>May 2000</td>
<td>The WHO Health Assembly adopts resolution WHA53.17, reaffirming that the global strategy for the prevention and control of NCDs is directed at reducing premature mortality and improving quality of life, and providing a global vision for tackling NCDs.</td>
</tr>
<tr>
<td>May 2003</td>
<td>The WHO Health Assembly adopts the WHO Framework Convention on Tobacco Control.</td>
</tr>
<tr>
<td>May 2004</td>
<td>The WHO Health Assembly endorses the Global Strategy on Diet, Physical Activity and Health.</td>
</tr>
<tr>
<td>September 2007</td>
<td>Heads of government of the Caribbean Community, meeting at a special CARICOM Summit on Chronic Non-Communicable Diseases (Port-of-Spain, 15 September) issue a declaration entitled 'Uniting to stop the epidemic of chronic NCDs'.</td>
</tr>
<tr>
<td>May 2008</td>
<td>The WHO Health Assembly endorses the action plan for the global strategy for the prevention and control of NCDs, which provides a roadmap for member states, the secretariat and international partners.</td>
</tr>
<tr>
<td>August 2008</td>
<td>Libreville Declaration on health and environment in Africa.</td>
</tr>
<tr>
<td>April 2009</td>
<td>A regional ministerial meeting held in Beijing issues recommendations that include accelerating actions to combat NCDs through health literacy, including the use of low-cost, simple but effective health education interventions.</td>
</tr>
<tr>
<td>May 2009</td>
<td>The ECOSOC/UNESCWA/UNDESA/WHO Western Asia Ministerial Meeting is held in Doha on 10 and 11 May. Participants adopt the Doha Declaration on Non-Communicable Diseases and Injuries, in which participants call for integration of evidence-based indicators on NCDs and injuries into the core monitoring and evaluation system for the Millennium Development Goals.</td>
</tr>
<tr>
<td>June 2009</td>
<td>Outcome declaration of the Americas.</td>
</tr>
<tr>
<td>July 2009</td>
<td>During the general debate of the United Nations Economic and Social Council’s High-level Segment (Geneva, 6-9 July) national and international leaders call on global development initiatives to take into account the prevention and control of NCDs. A ministerial declaration is subsequently adopted, in which there is a call for urgent action to implement the global strategy for the prevention and control of NCDs and the action plan.</td>
</tr>
<tr>
<td>November 2009</td>
<td>The Commonwealth Heads of State and Government, gathered at the Commonwealth Heads of Government Meeting in Port-of-Spain 27-29 November, issue a statement on Commonwealth action to combat NCDs.</td>
</tr>
<tr>
<td>March 2010</td>
<td>Parma Declaration of health ministers of European region of WHO.</td>
</tr>
<tr>
<td>May 2010</td>
<td>The United Nations General Assembly, at its sixty-fourth session, unanimously adopts resolution 64/265 on the prevention and control of NCDs. The resolution is cosponsored by 78 member States, as well as by Cameroon on behalf of the Group of African States.</td>
</tr>
<tr>
<td>May 2010</td>
<td>The WHO Health Assembly adopts resolution WHA63.13 on global strategy to reduce the harmful use of alcohol, as well as WHA63.14 on the marketing of food and non-alcoholic beverages to children.</td>
</tr>
</tbody>
</table>
July 2010 The United Nations Economic and Social Council adopts resolution 2010/8 on tobacco use and maternal and child health, urging member states to consider the importance of tobacco control in improving maternal and child health as part of their public health policies and in their development cooperation programs.

September 2010 The high-level plenary meeting of the sixty-fifth session of the United Nations General Assembly on the Millennium Development Goals adopts resolution 65/1. In the resolution, heads of state and government commit themselves to strengthening 'the effectiveness of health systems and proven interventions to address evolving health challenges, such as the increased incidence of non-communicable diseases'.

November 2010 The note by the Secretary-General transmitting the report by the Director-General on the global status of NCDs, with a particular focus on the developmental challenges faced by developing Countries, is discussed on 23 November 2010 at the United Nations General Assembly document A/65/362).

December 2010 The United Nations General Assembly, at its sixty-fifth session, unanimously adopts resolution 65/238 on the scope, modalities, format and organisation of the high-level meeting of the United Nations General Assembly on the prevention and control of NCDs.

December 2010 The United Nations General Assembly, at its sixty-fifth session, unanimously adopts resolution 65/95 on global health and foreign policy, which inter alia welcomes the decision of the United Nations General Assembly to convene a high-level meeting in September 2011, with the participation of heads of state and government, on the prevention and control of NCDs, and also welcomes plans to hold the First Global Ministerial Conference on Healthy Lifestyles and Non-Communicable Disease Control, in Moscow, on 28 and 29 April 2011.
Part 2. Consultative process leading up to the September 2011 meeting in New York

October 2010  WHO EMRO Consultation - Iran
November 2010  WHO EURO Consultation - Norway
February 2011  WHO consultation with Pacific subregion of WPRO - Fiji
February 2011  PAHO/WHO Consultation - Mexico
March 2011  WHO SEARO Consultation - Indonesia
March 2011  WHO WPRO Consultation - Korea
April 2011  WHO AFRO Consultation - Congo
April 2011  First Global Ministerial Conference on Healthy Lifestyles and NCD Control - Moscow, Russia
May 2011  World Health Assembly - Geneva, Switzerland
June 2011  UNGA - NGOs /civil society consultation - New York, USA
July 2011  ECOSOC meeting - Geneva, Switzerland
September 2011 High Level Meeting - New York, USA