SETTING THE STAGE TO ADDRESS THE DUAL CHALLENGE OF MDGs AND NCDs

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Abstract: The purpose of this discussion paper is to assist countries in exploring synergies in service-delivery and disease dynamics that can positively affect both noncommunicable diseases (NCDs) and the Millennium Development Goals (MDGs). The paper examines the challenges countries face in addressing both infectious and noncommunicable diseases, and highlights examples of integrated interventions in addressing this double burden of disease.

Many low- and middle-income countries are faced with a rising burden of NCDs while working to improve health outcomes to meet health-related MDGs. This dual challenge takes place in an environment of increasingly limited resources, which is why the efficient integration of prevention, diagnosis and treatment of NCDs with MDG-related activities will be, in many instances, the best option these countries will have to address such challenges.

Brazil's Family Health Program and Turkey's Health Transformation Program provide useful examples to draw on, and have been highlighted in this paper. Both programs have demonstrated impressive results, which can serve as an impetus for countries to take action.

Keywords: MDGs, Noncommunicable Diseases, NCDs, Double Burden of Disease, Service Delivery

Disclaimer: The findings, interpretations, and conclusions expressed in the paper are entirely those of the authors, and do not represent the views of the World Bank, its Executive Directors, or the countries they represent.

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EXECUTIVE SUMMARY

Many developing countries face the challenge of reducing child mortality, improving maternal health, and combating HIV, tuberculosis, and malaria to meet the health-related Millennium Development Goals (MDGs). At the same time, their health burdens are compounded by a rise in noncommunicable diseases (NCDs), which already account for 37 percent of disability-adjusted life years (DALYs) in low-income countries (LICs), a figure which will rise to 55 percent by 2030.

Aside from the suffering involved, this double burden is costly for economies, health systems, employers, and individuals — and it disproportionately impacts the poor. Over the next 20 years, NCDs alone are expected to cost several trillion dollars to the global economy (some estimates mention approximately US$30 trillion), potentially pushing millions of people below the poverty line. It is imperative that governments act and address both MDGs and NCDs in their development agendas as efficiently and effectively as possible.

There is considerable scope for integrating NCD interventions with MDG actions, as NCDs and MDGs frequently have risks and solutions in common, and there is often a reciprocal relationship between them. Some countries are already driving important initiatives in this regard — developing guidelines and protocols for NCDs, expanding existing initiatives to include greater focus on NCD control and management, and strengthening current programs to manage the chronic aspect of infectious diseases.

These steps have resulted in significant reductions in major indicators on the burdens of disease. One example of success is Brazil’s Family Health Program, which has significantly improved care, particularly for those with diabetes and hypertension. It emphasizes training of health workers in health promotion and NCD prevention and has led to the improvement of maternal and child health, as well as reduced hospitalizations for chronic diseases. A further example is Turkey’s Health Transformation Program, which implements activities in response to both MDGs and NCDs — substantially improving the country’s health status in recent years.

In the context of limited resources, the World Bank encourages the integration of NCD interventions with MDG actions wherever possible without diverting funding, particularly at the primary health care level, in line with its goals of ending extreme poverty and promoting prosperity. This integration will often require a multisectoral response — and the Bank’s expertise in cross-sectoral work can help in finding ways to tackle the double burden of disease to reduce death and disability.

The intention of this discussion paper is to encourage countries to explore areas where they might build and benefit from such integration. The paper also aims to shine a spotlight on the obstacles that stand in the way of greater integration between NCD interventions and MDG actions — including the lack of information at the country level on the procedural, medication, and human resource costs involved in adding on to existing interventions. This information gap must be solved before the Bank and national governments can accurately develop a robust methodological framework to identify synergy spaces in which MDG interventions can be marginally modified or adapted to accommodate NCD interventions. Nonetheless, it is hoped that this work will encourage countries to explore areas where they might benefit from integration of actions on MDGs and NCDs.
# ABBREVIATIONS AND ACRONYMS

<table>
<thead>
<tr>
<th>Abbreviation</th>
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<tr>
<td>AMPATH</td>
<td>Academic Model Providing Access to Healthcare</td>
<td>HTP</td>
<td>Health Transformation Program (Turkey)</td>
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<td>ARTs</td>
<td>Antiretroviral Therapies</td>
<td>IHME</td>
<td>Institute for Health Metrics and Evaluation</td>
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<td>Bank</td>
<td>The World Bank</td>
<td>KEMSA</td>
<td>Kenya Medical Supplies Agency</td>
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<td>BMI</td>
<td>Body Mass Index</td>
<td>KEPH</td>
<td>Kenya Essential Package of Health</td>
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<td>CVD</td>
<td>Cardiovascular Disease</td>
<td>KMTC</td>
<td>Kenya Medical Training College</td>
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<td>DALYs</td>
<td>Disability-Adjusted Life Years</td>
<td>LAC</td>
<td>Latin America and the Caribbean</td>
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<td>DHS</td>
<td>Demographic Health Survey</td>
<td>LIC</td>
<td>Low-Income Country</td>
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<td>DHMTs</td>
<td>District Health Management Teams</td>
<td>LIMC</td>
<td>Lower-Middle-Income Country</td>
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<td>EAP</td>
<td>East Asia and Pacific</td>
<td>MDG</td>
<td>Millennium Development Goal</td>
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<td>ECA</td>
<td>Europe and Central Asia</td>
<td>MoH</td>
<td>Ministry of Health</td>
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<td>ESW</td>
<td>Economic and Sector Work</td>
<td>MENA</td>
<td>Middle East and North Africa</td>
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<td>FEMME</td>
<td>Foundations to Enhance Management and Maternal Emergencies</td>
<td>NASCOP</td>
<td>National AIDS and STI Control Program</td>
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<td>FHP</td>
<td>Family Health Program (Brazil)</td>
<td>NCD</td>
<td>Noncommunicable Disease</td>
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<td>FHEP</td>
<td>Family Health Extension Project (Brazil)</td>
<td>NGO</td>
<td>Nongovernmental Organization</td>
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<td>FMoH</td>
<td>Federal Ministry of Health</td>
<td>NPCDCS</td>
<td>National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases and Stroke (India)</td>
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<td>GBD</td>
<td>Global Burden of Disease</td>
<td>OECD</td>
<td>Organisation for Economic and Co-operative Development</td>
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<td>GDM</td>
<td>Gestational Diabetes Mellitus</td>
<td>OR</td>
<td>Odds Ratio</td>
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<td>HICs</td>
<td>High-Income Country</td>
<td>PEAS</td>
<td>Plan Esencial de Aseguramiento en Salud (Essential Health Insurance Package) (Peru)</td>
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<td>HPV</td>
<td>Human Papillomavirus</td>
<td>PHC</td>
<td>Primary Health Care</td>
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<td>HEP</td>
<td>Health Extension Program (Ethiopia)</td>
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<td>PHC</td>
<td>Primary Health Care</td>
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<td>SA</td>
<td>South Asia</td>
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<td>SIS</td>
<td>Comprehensive Health Insurance (Seguro Integral de Salud) (Peru)</td>
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<td>SSA</td>
<td>Sub-Saharan Africa</td>
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<tr>
<td>STI</td>
<td>Sexually Transmitted Infection</td>
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<td>TB</td>
<td>Tuberculosis</td>
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<tr>
<td>TRC</td>
<td>Truth and Reconciliation Commission (Peru)</td>
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<td>TTLs</td>
<td>Task Team Leaders</td>
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<td>UN</td>
<td>United Nations</td>
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<td>WDF</td>
<td>World Diabetes Foundation</td>
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<td>WHO</td>
<td>World Health Organization</td>
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<tr>
<td>YLL</td>
<td>Years of Life Lost</td>
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*Note that all dollar amounts are US dollars.*
INTRODUCTION

The purpose of this discussion paper is to assist countries in exploring synergies in service-delivery and disease dynamics that can positively affect both noncommunicable diseases (NCDs) and the Millennium Development Goals (MDGs).

At present, there is little understanding of the underlying issues involved in the synergies between NCDs and MDGs, and how they translate into actionable knowledge that can be applied at country level to optimize the allocation of limited resources to improve health outcomes. This paper discusses the imperatives countries face in responding to the dual challenge posed by the rise of NCDs and the MDGs agenda. It provides insights on the innovative approaches that several countries are adopting to address this challenge — with the aim of stimulating a conversation that brings about greater synergies.

The methodology followed to develop this report included a review of the evidence on synergistic interventions to address MDGs and NCDs — including published literature, ongoing experiences of pilots at country level, and the Bank’s tacit knowledge. It should be noted that, in addition to the absence of NCDs cost data, the limited information the team was able to gather at the country level — within the means mobilized for the task — on the procedural, medication, and human resource costs involved in integrating action on MDGs and NCDs, prevented this work from achieving its original aim: namely, providing a methodological framework to identify possible synergy spaces in which MDG interventions can be modified or adapted to accommodate NCD interventions.

The primary audiences for this work include Bank staff as well as policy makers at country level, development partners, and other decision makers involved in the formulation and implementation of policies that impact NCDs and MDGs. Other audiences include stakeholders such as nongovernmental organizations (NGOs) and private sector groups that are involved in exploring the synergies between NCDs and MDGs to improve health outcomes.

The paper is structured in three chapters:

- **Chapter 1, A Tiger with Two Heads: the Dual Challenge of MDGs and NCDs**, sets out a conceptual framework for the report, the global and regional contexts, and the imperative for action — emphasizing the need for a multisectoral approach in dealing with MDGs and NCDs to achieve better health outcomes, as well as the economic and regulatory rationale for intervention.

- **Chapter 2, The Challenge at the Country Level**, provides an overview of three countries — Ethiopia, Kenya, and Peru — with a focus on the current stage of primary health care and the efforts underway in these countries to address MDGs and NCDs. This chapter serves as a starting point for discussions at the country level.

- **Chapter 3, Success Stories and Lessons in Addressing the Dual Challenge**, provides pointers for the way forward in integrating interventions to address MDGs and NCDs, drawing on case studies of two countries — Brazil and Turkey — which have made important progress.

For many countries, addressing NCDs will require a complete overhaul in their way of dealing with health priorities, which is a long-term goal. This paper concentrates rather on setting the stage to discuss the space for synergies achievable by leveraging MDGs initiatives, as an initial step that can benefit both the MDG and the NCD agenda. This work also recognizes that adequate focus is crucial to avoid compromising the significant gains being made toward achieving the MDGs. It is hoped that this work will bolster the Bank’s contribution to the global discussion on these two agendas — and reaffirm its role in helping shape cost-effective interventions to maximize health impacts and reduce death and disability.
A rising tide of noncommunicable diseases (NCDs), along with persistently high incidence of communicable diseases, represents a growing burden of disease that is particularly challenging for low- and middle-income countries. Alongside this, many countries are struggling to achieve the health-related Millennium Development Goals (MDGs), such as reducing child mortality, improving maternal health, and combating HIV/AIDS, malaria, and tuberculosis (TB). There is considerable scope for integrating both agendas, as NCDs and MDGs frequently have risks and solutions in common, and there is often a reciprocal relationship between them.

**CONCEPTUAL FRAMEWORK: SYNERGIES BETWEEN MDGS AND NCDS CONSIDERED FROM DIFFERENT PERSPECTIVES**

Synergies between MDGs and NCDs can be considered from three different perspectives: (1) synergies in disease dynamics; (2) population-based synergies; and (3) synergies at the service-delivery platform at the primary health care (PHC) level.

1. **Synergies in Disease Dynamics**

There is, in particular, a strong relationship between NCDs and MDGs 4, 5, and 6.¹ For example, poor maternal health and undernutrition increase the risk of NCDs such as diabetes and cardiovascular diseases (CVDs) in future generations. Infectious diseases such as the human papillomavirus (HPV) cause cervical cancer, and the use of tobacco increases the risk of TB. Meanwhile, certain NCDs, such as untreated gestational diabetes, can threaten maternal life (figure 1.1). These disease dynamics provide an opportunity to address MDGs and NCDs in a synergistic approach.

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¹ MDG 4: Reduce under-five mortality rate by two-thirds between 1990 and 2015.
MDG 5: Reduce the maternal mortality ratio by three-quarters between 1990 and 2015.
MDG 6: Combat HIV/AIDS, TB, malaria, and other diseases.
2. **Population-Based Synergies**

Both NCDs and MDGs have risk factors, which may require population-level actions — most of which require a multisectoral approach (figure 1.2). In this context, governments can take advantage of some of the already-existing initiatives being used to address MDGs at this level, to introduce activities to prevent NCDs. For example, awareness campaigns can underscore the fact that children who suffer from undernutrition in their earlier years are at higher risk of developing obesity and other NCDs in their adult life.

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*Source: Authors, 2013.*
Figure 1.2 Addressing NCDs Requires a Multisectoral Approach

3. Synergies at the Service-Delivery Platform at the PHC Level

Common service-delivery platforms at the PHC level can and should be exploited to address both MDGs and NCDs. Such synergies present an opportunity to deliver more integrated and comprehensive health care services (although some interventions will exclusively benefit one or the other agenda); take advantage of already-existing programs; and learn from past experiences. For example, the scope of immunization programs can be expanded from children to girls and include HPV vaccines that protect against cervical cancer. Furthermore, HIV patients can be screened for hypertension and elevated blood sugar levels to prevent cardiovascular diseases and diabetes. These synergies in service delivery at the PHC level allow governments to focus on both agendas, at lower cost.

THE GLOBAL PICTURE

The demographic and epidemiological transition in many countries has rapidly transformed the global health landscape. The rise in NCDs is a consequence of population aging, as well as of urbanization, globalization, and an increase in risk factors such as unhealthy diet, tobacco, excess alcohol consumption, physical inactivity, and air pollution (Cotlear 2011). NCDs cause earlier deaths in LMICs, and thus are likely to have more severe economic consequences than in high-income countries (HICs) (Nikolic et al. 2011).

Source: Authors, 2013.

2. Synergies also exist at the secondary level, but this report focuses primarily on the PHC level.
Globally, NCDs are the leading cause of morbidity and poor health. They also negatively impact economies, health systems, and households (WHO 2011b). Economies suffer reduced labor supply and output, tax revenues, and returns on human capital investments, coupled with increases in public health and social welfare expenditures. Health systems face greater consumption of health care, higher medical costs, and demands for more effective treatments. Households and individuals suffer increased disability and death, reduced income, and higher or catastrophic health expenditures (Nikolic et al. 2011). NCDs account for 37 percent of disability-adjusted life years (DALYs) in low-income countries (LICs) (figure 1.3). By 2030, this will increase to 55 percent, making NCDs the largest share of the disease burden and the leading cause of healthy years lost across all income groups (Ibid.).

Figure 1.3 Projected DALYs by Cause, 2008 and 2030

NCDs are costly to treat, which may result in economic hardship for individuals (Ibid.). Untreated, they may adversely affect earning potential, leaving individuals unable to escape the poverty trap. The burden of chronic diseases is disproportionately carried by the poor, who are least able to afford it, and therefore face a larger risk of impoverishment (Oxford Health Alliance 2005). In addition to a reduction in labor supply (and labor outputs), NCDs impact economic growth. They involve loss of output for employers, lower tax revenues, lower returns on human capital investments, and increased public health and social welfare expenditures (Nikolic et al. 2011). Egypt, for example, loses production of about 12 percent of national GDP overall due to chronic health conditions; consequently aggregate labor supply is approximately 19 percent below the potential (Rocco et al. 2011). Annex I explores in more detail the economic rationale for action on NCDs.

The MDGs, too, remain a major challenge despite remarkable progress in recent years. For instance, although under-five mortality in developing countries decreased by 28 percent between 1990 and 2008, only 10 of the 67 countries defined as having high child mortality rates are currently on track to meet their
Many countries are unable to afford an increase in demand for health care, yet need to address their MDGs while grappling with the increase in NCDs. It is critical that policy makers and their partners determine how best to find synergies and translate these into policy, to improve the health of populations everywhere.

### REGIONAL SNAPSHOTs

All the world's regions face the challenge of the double burden of disease, in varying degrees.

#### South Asia

Loss of life from many communicable diseases is much lower than 20 years ago, while diabetes and other NCDs are on the rise. In Bangladesh and Pakistan, ischemic heart disease is more than 100 percent more prevalent than 20 years ago. Across the South Asia region as a whole, DALYs from NCDs and communicable diseases were 62 percent and 28 percent, respectively, in 2010 (IHME and World Bank 2013e). Anticipated growth in the overlap of these populations further highlights the need for simultaneous and synergistic action to address NCDs and the conditions referred to in the MDGs (Engelgau et al. 2011).

#### Middle East and North Africa

NCDs now kill more people prematurely than infectious diseases in the Middle East and North Africa (MENA) Region, causing far more disability. While there have been significant gains in addressing infections like malaria, disability from diseases such as diabetes and depression has increased over the last 20 years. The largest increase in DALYs in the two decades prior to 2010 was in drug-use disorders. Lower back pain, ischemic heart disease, other musculoskeletal disorders, and diabetes were also prominent. HICs like Bahrain, Qatar, and the United Arab Emirates reported higher rankings in DALYs from depression and anxiety (IHME and World Bank 2013d).

#### East Asia and the Pacific

In the East Asia and Pacific (EAP) Region, the leading causes of health loss during the last two decades were NCDs, reflecting the changing global trends. The burden from HIV/AIDS has increased in some countries (Cambodia, Malaysia, Thailand, and Vietnam) but decreased in others (China, Indonesia, and the Philippines). The region also saw a rise in ischemic heart disease and diabetes, as well as significant growth in road injuries. Of the 25 leading causes of the disease burden in the region, cancers showed the biggest increase in terms of DALYs, rising 86 percent between 1990 and 2010. (IHME and World Bank 2013a)

#### Europe and Central Asia

The epidemiology in Europe and Central Asia (ECA) also follows global trends. The burden of disease from communicable, maternal, nutritional, and newborn causes has dropped, though risk factors such as diet, high blood pressure, alcohol use, smoking, high body mass index (BMI), and physical inactivity resulted in a rise in NCDs. However, HIV/AIDS has become more prevalent, and was the seventh-leading cause of DALYs in 2010. Depression ranked fourth in ECA (compared to ranking eleventh globally), while ischemic heart disease was the top cause of DALYs in 2010 (IHME and World Bank 2013b).

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3. Given the slow progress in achieving the MDGs, the World Bank, UNICEF, the United States Agency for International Development (USAID), and the government of Norway decided in September 2013 to commit US$1.15 billion in funding over the next three years to accelerate progress toward MDGs 4 and 5.
Sub-Saharan Africa

The vast majority of countries in Sub-Saharan Africa (SSA) are confronting multiple epidemiological crises, with high levels of communicable diseases being matched by the growing rates of NCDs. Malaria, TB, and HIV/AIDS have long garnered most attention, but NCDs such as obesity and heart disease pose major threats, with ischemic heart disease and stroke the first- and third-leading causes of DALYs, respectively, in 2010 (IHME and World Bank 2013f). The Sub-Saharan context is discussed in more detail in annex IV of this paper.

Latin America and the Caribbean

In 2010 the leading causes of disease in Latin America and the Caribbean (LAC) were NCDs. The HIV/AIDS burden increased in several countries, but in 2010 age-standardized rates of HIV/AIDS began dropping. Premature death and disability in newborns decreased, but several LMICs in the region still experience substantial newborn and communicable diseases. Over the last 20 years, ischemic heart disease, mental disorders, diabetes, and other chronic diseases have become leading contributors to DALYs. Road injuries went up 27 percent. Depression ranked among the top five leading causes of DALYs in 13 countries (IHME and World Bank 2013c).

ADDRESSING POLICY MAKERS’ CONCERNS

The need to incorporate NCDs into the development agenda is now greater than ever, and is increasingly recognized by policy makers at the global and country levels. For example, recommendations issued by the World Health Organization (WHO) to tackle NCDs, presented in the 2010 to 2013 Global Action Plan, include several objectives to harmonize development aid and strategies for poverty alleviation through leveraging existing programs. The plan highlights the importance of reviewing health programs for opportunities to integrate the prevention and control of NCDs into service delivery (World Health Organization 2013b).

Given the World Bank’s comparative advantage in multisectoral challenges such as NCDs, country policy makers have asked for the Bank’s advice. The Bank is expected to play a critical role in providing advice on country policy priorities and on the development of an effective response to the challenges presented by NCDs. At the UN High Level Meeting on NCDs in September 2011, when country policy makers discussed policy priorities in facing the challenges of the double burden of disease, they stated they were facing a “tiger with two heads.” A declaration on NCDs resulted, with governments committing to integrate NCD prevention and control into MDG programs, by leveraging existing HIV programs in particular (UN 2011).

Policy makers and the donor community fear that responding to NCDs in LMICs may divert valuable resources needed to address health-related MDGs. While there are significant trade-offs between the NCD and MDG agendas, there is some common ground, and LMICs could exploit the synergies to maximize the impact of their responses to both agendas. This is important for populations’ health, but also for economic reasons. Over the next 20 years, NCDs are expected to cost more than US$30 trillion (48 percent of global gross domestic product [GDP] in 2010), pushing millions below the poverty line (Bloom et al. 2011). Indeed, the World Economic Forum’s Global Risks report (2010) identifies NCDs as the second-greatest risk to the global economy. The economic consequences of inaction make it imperative that governments act and address NCDs in their development agendas as efficiently and effectively as possible.
Within the Bank, there has also been strong demand from various regions to provide guidance for policy recommendations in this critical area. A regional consultation in March 2012 revealed general agreement about the importance of breaking the current polarization around the MDG and NCD agendas, and of moving away from working in silos — both in the Bank’s operational work and at country level. Participants agreed that the Bank can and should play a significant role to bridge this dialogue gap, given its comparative advantage of working across regions and sectors.

Considering the economic consequences of NCDs for countries and households, addressing NCDs is very much in line with the Bank’s new goals: (i) ending extreme poverty by 2030; and (ii) promoting shared prosperity to boost the incomes of the poorest 40 percent of the population in each country (World Bank 2013a). The Bank’s Health, Nutrition, and Population (HNP) Unit has a particular opportunity to contribute to maximize efficiencies to reduce death and disability.

Both MDGs and NCDs require multisectoral responses for better health outcomes. Given the Bank’s technical expertise in different sectors, it is uniquely positioned to respond to the dual challenge posed by MDGs and NCDs. Examples are well known in the case of MDGs, but have been less explored for NCDs. NCDs develop from a complex combination of genetic, behavioral, and environmental circumstances; thus, actions to address them require the involvement of several sectors beyond the health sector (Meiro-Lorenzo et al 2011). Sectors that often influence multiple NCDs include education, agriculture, urban planning, energy, finance, industry, and transport. For example, multisectoral actions that may be used to impact a population's health outcomes positively are the taxation of tobacco, alcohol, and high-calorie foods, combined with health education, easier access to healthy foods, and the development of lower sodium products by the food industry.

**EXAMPLES OF INTERSECTIONS**

Given the urgency of addressing the growing burden of NCDs, an NCD Alliance was founded by four international NGO federations representing the main NCDs (cardiovascular disease [CVD], diabetes, cancer, and chronic respiratory disease). The alliance created a network uniting over 2,000 civil society organizations in more than 170 countries. Its mission is to combat NCDs by placing health at the center of all policies. To this end, it identified areas of intersection between NCDs and MDGs, which are shown in figure 1.1 above. These links are explained in detail in annex I.

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Illustrating an opportunity for simultaneously addressing health-related MDGs and NCDs, box 1.1 shows the links between HIV/AIDS and cervical cancer.

**Box 1.1 HIV/AIDS and Cervical Cancer**

Globally, there are about 500,000 new cases of cervical cancer each year — and 250,000 deaths from the disease (WHO 2013a). Almost 80 percent of cases occur in LICs, where cervical cancer is the second most common cancer in women. Of these, 99 percent are linked to genital infection with HPV, the most common viral infection of the reproductive tract (Santesso et al. 2011). In Sub-Saharan Africa, cervical cancer is the most common cancer among women, with an estimated 92,000 diagnoses and 57,000 deaths in 2012 — nearly half as many as were caused by complications related to pregnancy and childbirth (World Bank 2013e).

HIV care and treatment have been found to be closely linked to cervical cancer diagnosis and treatment. A study that assessed HIV infection and the control of cervical cancer found that HIV-infected women with cervical cancer had significantly more advanced disease than those who were not infected with the virus (Maiman et al. 1993). Results indicated that HIV may predispose women to cervical neoplasia and adversely affect the prognosis of those with invasive cervical cancer. Conversely, because of common risk factors, women with cervical cancer are more likely to be HIV-infected in populations where the prevalence of HIV is significant. HIV-positive patients with invasive cervical carcinoma have more advanced states of disease and, controlling for state, a poorer prognosis than HIV-negative patients.

Countries with high cervical cancer rates also had lower life expectancy, fewer doctors, more infants with low birthweight, and more adults with TB and HIV. Efforts to improve HIV primary care programs incorporating antiretroviral therapies (ART) can have a significant positive impact on women’s health. Services to screen and treat cervical cancer are thus essential (Myer et al. 2005).

It should be noted that the relationship between NCD treatment and interventions toward achieving the MDG targets is a bidirectional one — each can impact the other. This is shown in box 1.2.
Box 1.2 Exploring NCD Initiatives to Address MDGs: The Alternate Relationship

While this work looks primarily at interventions to maximize MDG activities and resources to address NCD conditions, the converse relationship also provides some useful areas for investigation. Certain modifications in NCD conditions and risk factors have also been shown to reduce the burden of disease of health-related MDGs (in terms of such measures as DALYs, years of life lost [YLL], and healthy life years [HLY], as examples).

While not common, programs exploring NCD initiatives impacting MDG targets do exist in LMICs. Evidence has shown the relationship between risk factors such as maternal obesity on neonatal deaths, particularly in SSA. Cresswell and others (2012) conducted an analysis of 27 national datasets in SSA from Demographic Health Surveys to assess the impact of maternal obesity on the increased odds of neonatal deaths, after adjusting for confounding factors. The analysis found that maternal obesity was a significant risk factor for neonatal deaths. The odds ratio (OR) of neonatal mortality increased as maternal BMI increased, suggesting that interventions targeting maternal health and weight would yield more positive outcomes for MDG 4 (reducing child mortality).

The bidirectional relationship between MDGs and NCDs, particularly TB and diabetes, was examined in a program implemented by the World Diabetes Foundation (WDF) in China and India, from July 2011 to July 2013. The program included collaboration between the WDF and the Indian and Chinese National TB Programs as well as the China Diabetes Association. The program established and trained for bidirectional screenings to track both diseases (WDF 2013).
CHAPTER 2 – THE CHALLENGE AT COUNTRY LEVEL

As discussed in the previous chapter, many low- and middle-income countries (LMICs) are grappling with the dual challenge of meeting health-related MDGs and containing the rise of NCDs. This chapter focuses on the challenge at country level, through brief situational analyses of three countries — Kenya, Ethiopia, and Peru — whose experience provides useful insights for many other LMICs. These countries' governments (as well as the World Bank task team leaders supporting them) have expressed interest in strengthening synergies between actions on MDGs and NCDs.

The analysis of these three countries aims to provide an overall understanding of the current situation at country level, with particular focus on the PHC level. This analysis highlights recent efforts in these countries to strengthen the response to MDGs and NCDs, as well as possible improvement opportunities.

KENYA

Kenya is a LMIC with a population of approximately 43 million. In 2012, its GDP was US$40.7 billion. GDP per capita was US$1,737 (purchasing power parity) (World Bank 2013d). Average life expectancy is 60 years, placing the country at the start of a demographic transition. The population continues to rise rapidly (World Bank 2010a). In 2011 Kenya spent an annual US$36 per capita (at current exchange rates) on health care. Total health expenditure as a percentage of GDP was 4.4 percent, with 5.9 percent of general government spending allocated to health (WHO 2013c).

Kenya provides a vivid example of the dual MDGs-NCDs challenge. The country has made important investments in health and expanded access to health facilities, which have contributed to improving its overall health status relative to the region. Today, nearly 90 percent of the population lives within five kilometers of a primary health facility. User fees for PHC were recently abolished, and maternity care is free in all public facilities. Nonetheless, Kenya is still far off from meeting its health-related MDGs:

- **MDG 4: Reduce the under-five mortality rate by two-thirds, between 1990 and 2015.** The under-five mortality rate (per 1,000 births) decreased by 26 percent from 98.2 in 1990 to 72.9 in 2012, but this is not yet enough to meet the goal by 2015 (UN 2013).
- **MDG 5: Reduce maternal mortality ratio by three-quarters between 1990 and 2015.** The maternal mortality rate of 400 maternal deaths per 100,000 live births in 1990 has decreased by only 10 percent to 360. (UN 2013).
- **MDG 6: Combat HIV/AIDS, TB, malaria, and other diseases.** There is still a high incidence of new HIV infections, though it decreased from 0.66 (per year per 100 people age 15 to 49) in 2001 to 0.45 in 2011. Mortality from TB is low (WHO 2013c).

In addition to the battle to meet MDGs, Kenya has to deal with a high burden from NCDs, as seen in figure 1.4. A recent report by the Kenyan Ministry of Health (MoH) states that CVD, cancers, respiratory and digestive diseases, diabetes, and psychiatric conditions present a heavy disease burden in the country, together representing 50 to 70 percent of all hospital admissions during the policy period — and up to half of all inpatient mortality (MoH 2013).

According to a Global Burden of Disease study (IHME and World Bank 2013f), Kenya’s major risk factor was childhood underweight, contributing to 2,400 DALYs per 100,000 from diseases such as diarrhea, lower respiratory tract infections, meningitis, nutritional deficiencies, and some tropical diseases.
Kenya’s policy makers are keenly aware of the dual MDGs-NCDs challenge and have already taken important steps to tackle it. In particular, the Kenya Health Sector Strategic Plan (KHSSP 2012–2017) proposes additional preventive and curative interventions for NCDs at the different levels of health service delivery. These include health promotion and education, institutional screening, community screening, rehabilitation, workplace health and safety, and food safety and quality. These proposals could go a long way toward closing the current gaps in the provision of services for both NCDs and MDGs at PHC facilities.

The preliminary research undertaken for this paper suggests that most services for NCDs are available only at hospital level, with PHC centers often providing little more than counseling to NCD patients. And although PHC centers do provide a range of health care services related to MDGs, several key services are available only at hospital level — including ART for HIV, and sexually transmitted infection (STI) test kits. For children, rotavirus immunization is not included on the National Essential Medicine List (NEML) for any health care facility.

A critical area of focus for Kenya as it addresses the dual burden is the revision of the Kenya Essential Package of Health (KEPH), which was put in place in 2007 and defines a service package for all Kenyans based on the level of health care delivered and their stage in the human life cycle. The original KEPH included scarcely any initiatives on NCDs, and the health sector is in the process of updating it with the intention of including NCD interventions.

It should be noted that a major transformation is currently taking place in the Kenyan health system, with potentially significant implications for the country’s progress against MDGs and NCDs. Delivery of essential health services has been devolved to Kenya’s 47 counties, a step which is expected to improve service delivery and enhance accountability in the long run. However, there is some risk of disruption in services as the new system is established.

Supporting these shifts at the national policy level, key informants at Kenya’s National AIDS and STI Programme (NASCOP) report some ongoing activities at service-delivery level to integrate action on MDGs and NCDs. With space and manpower constraints, physicians tend to manage all chronic disease patients in the same clinic, hence the potential to integrate management of HIV/AIDS, diabetes, and hypertensive patients. An initiative by the subdistrict local MoH in partnership with the USAID-funded Family AIDS Care and Education Project, has since 2008 undertaken to pilot the feasibility for integrating HIV care into routine
PHC at lower-level facilities within subdistricts. In this pilot, integration did not seem to adversely affect quality of care or increase stigma as has been argued by some proponents of parallel standalone HIV care programs.

**ETHIOPIA**

Ethiopia, the second-most populous country in Sub-Saharan Africa, is an LMIC with a population of approximately 91 million people in 2012. Ranked the sixth-poorest country in the world, its 2012 GDP was US$41.6 billion (Workie and Gandham 2013), and US$1,108 (purchasing power parity) per capita. Life expectancy is 59 years, placing the country at the very slow start of a demographic transition (World Bank 2011). In 2011 Ethiopia spent US$17 per capita annually (at current exchange rates) on health care. Total health expenditure as a percentage of GDP was 5.0 percent, with 14.6 percent of general government spending allocated to health (WHO 2013c).

Like Kenya, Ethiopia provides a clear example of the dual MDGs-NCDs challenge at country level. Decentralization reforms since the late 1990s have yielded some improvements in health outcomes, as well as in key measures such as vaccination coverage rates and the TB case detection rate. Ethiopia is on track to meet most of its MDGs, although much work remains to be done:

- **MDG 4: Reduce under-five mortality rate by two-thirds between 1990 and 2015.** Between 1995 and 2011 the under-five mortality rate fell from 170 to 77 per 1,000 of the population under five years. Ethiopia is on track to achieve its target, but levels still differ by household wealth, mother’s education level, and location (Ethiopia Ministry of Finance and Economic Development 2010).

- **MDG 5: Reduce maternal mortality ratio by three-quarters, between 1990 and 2015.** Maternal mortality is still very high; it has decreased significantly from 880 per 100,000 live births in 1995 to 350 in 2010 (World Bank 2010b). However, Ethiopia is not on track to achieve its target of 267 deaths per 100,000 deliveries in time. High mortality is mainly due to delays in seeking skilled emergency obstetric care, in reaching the health facility, and in receiving effective intervention at the facility (Ibid.).

- **MDG 6: Combat HIV/AIDS, TB, malaria, and other diseases.** The country is on track to reach its targets to halt and start reversing the spread of HIV/AIDS; ensure universal treatment access; and halt and begin reversing malaria and TB spread by 2015 (Ibid.).

Child health produces the highest number of age-standardized DALYs, calling for further efforts to reach MDG 4 by 2015. The risk factor for most DALYs per 100,000 was childhood underweight, contributing to diarrhea, lower respiratory tract infections, meningitis, nutritional deficiencies, and neglected tropical diseases (3,500 DALYs per 100,000) (IHME 2013).

At the same time, NCDs are on the rise in Ethiopia. CVD and neuropsychiatric conditions account for the highest NCD disease burden (figure 1.5).
Ethiopia’s policy makers have taken important steps to integrate action on NCDs into the country’s health agenda. Ethiopia’s Federal MoH (FMoH) recently approved a National Strategic Action Plan (2014–16) to address NCDs, and assigned a well-resourced team to implement the plan. The plan recognizes that, along with maternal and child health and neglected tropical diseases, the prevention and control of NCDs is a top priority in the national health agenda (FMoH 2013).

The action plan is expected to accelerate progress made in recent years to create synergies between MDG and NCD interventions. In 2010, in response to Ethiopia’s growing NCD burden, specifically CVD, the FMoH devised new guidelines for urban health extension workers to help with early identification, referral, diagnosis, and public awareness on risk factors (Ethiopia FMoH 2010). These were inspired by the scale-up of HIV/AIDS services, “jump starting” high-quality, longitudinal care for increasingly prevalent chronic conditions like diabetes and CVD. In 2010, the FMoH, ICAP (at Columbia University, Mailman School of Public Health), and the Ethiopian Diabetes Association convened to strengthen NCD services by leveraging HIV/AIDS programs and implementation. It is assumed that the use of health workers has contributed to improved NCD outcomes (FMoH 2010).

Ethiopia’s Health Extension Program (HEP), a flagship program launched in 2003 by the government to improve health outcomes by targeting households and communities, will play an important role in the country’s efforts to tackle MDGs and NCDs in an integrated way. HEP delivers 16 clearly defined and free packages of preventive, promotional, and basic curative health care services under four major categories: disease prevention and control, maternal and child health, hygiene and environmental sanitation, and health education (Workie and Gandham 2013). The action plan on NCDs states that the HEP “will play a central role in promoting health of the community via health promotion and disease prevention focusing at the four major NCDs and their risk factors” (FMoH 2013).

A major challenge, however, is accessibility, with wide discrepancies between urban and rural areas. This is reflected in health indicators such as assisted delivery. In the last decade Ethiopia invested in large infrastructure projects to increase the number of health care facilities as part of the HEP, to address supply-side constraints and expand PHC coverage. However, utilization of facilities has remained low at 0.29 visits per capita in 2012 (Workie and Gandham 2013).
The very preliminary research undertaken for this paper pointed to several possible gaps in the provision of drugs and other medical inputs at the PHC level, both for NCDs and MDGs — gaps that the action plan would need to help address. In particular, these include the following:

- **Gaps related to NCDs.** There is limited provision of hypertension services at PHC centers, and most services are being offered at hospital level. Diabetes services are mainly being offered at the hospital, with a few exceptions at the PHC level. Myocardial infarction, stroke, and congestive heart failure treatment is limited. There are no services for tobacco and depression. It seems that cervical cancer services are also very limited, and are apparently only being tested in a few pilot hospitals.

- **Gaps related to MDGs.** Most services related to family planning, prenatal care, and child and health immunization appear to be available at the PHC level. Neonatal and infant supplements were not available at the specific health center visited, while rotavirus vaccine is not currently provided at any facility. ART, TB test kits, and injectable drugs for malaria treatment are only available at the health facility level.

**Peru**

Peru is an upper-middle-income country with an estimated population of 30 million in 2013. In 2012 Peru’s GDP was US$327.8 billion (calculated on the basis of purchasing power parity), or US$10,932 per capita. The population living in poverty fell from 48.6 percent in 2004 to 28.0 percent in 2011. The average life expectancy is 74.3 years, with fertility and mortality rates declining since the 1970s. Peru’s demographic and epidemiological transition is progressing slowly. In 2011 Peru spent an annual US$496 per capita on health care (based on purchasing power parity). Total health expenditure was 4.7 percent of GDP. Of general government spending, 15 percent was allocated to health (WHO 2013c).

NCDs dominate Peru's burden of diseases. Neuropsychiatric conditions contribute to 16.17 percent of DALYs, followed by CVD at 13.25 percent (figure 1.6); and greater effort is needed to address these. The risk factor contributing to the most DALYs was dietary risks leading to diabetes, CVD, and neoplasms (1,300 DALYs per 100,000) (IHME 2013). However, although Peru is on track to meet its MDGs, child health conditions still contributed 15.95 percent of total DALYs per 100,000 (Ibid.). Nutritional problems disproportionately affect the poor, with 30 percent of children under the age of five being stunted and 18 percent underweight (UNICEF 2009).

Against this backdrop, Peru’s progress against its MDGs is as follows:

- **MDG 4: Reduce the under-five mortality rate by two-thirds, between 1990 and 2015.** Peru has made significant progress and is on track to meet this target. Deaths of children per 1,000 births decreased by 77 percent, from 79.1 in 1990 to 18.2 in 2012. Peru is also on track to meet the goal of reducing chronic malnutrition among children under five years old, which fell from 28.1 percent to 18.1 percent between 2007 and 2012.

- **MDG 5: Reduce maternal mortality ratio by three-quarters between 1990 and 2015.** Peru is on track to meet this target, with 200 maternal deaths per 100,000 live births in 1990, down by 77 to 67 in 2010.

- **MDG 6: Combat HIV/AIDS, TB, malaria, and other diseases.** No data on HIV incidence are available for 1990, but the current rate of 0.03 new infections per year per 100 people age 15 to 49
is low. In the case of malaria, Peru is also on track and had a significant reduction of the number of registered cases from 51,500 to 29,300 between 2007 and 2010.

Figure 1.6 Main Sources of Burden of Disease in Peru for Both MDGs and NCDs (Percentages of DALYs, 2010).

<table>
<thead>
<tr>
<th>MDGs</th>
<th>NCDs</th>
</tr>
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<tbody>
<tr>
<td>MDG 4</td>
<td>15.95</td>
</tr>
<tr>
<td>MDG 5</td>
<td>0.42</td>
</tr>
<tr>
<td>MDG 6-HIV</td>
<td>1.83</td>
</tr>
<tr>
<td>MDG 6-TB</td>
<td>1.51</td>
</tr>
<tr>
<td>CVD</td>
<td>13.25</td>
</tr>
<tr>
<td>Neuro</td>
<td>16.17</td>
</tr>
<tr>
<td>Respi</td>
<td>4.67</td>
</tr>
<tr>
<td>Cancer</td>
<td>8.03</td>
</tr>
</tbody>
</table>

Source: IHME 2013.

Peru’s government is taking several important steps to address the challenge of NCDs while improving child and maternal health, particularly among poor and rural populations. At the center of these efforts is a far-reaching health reform initiative, launched in July 2013, aimed at guaranteeing universal health coverage (UHC). A series of legislative decrees in December 2013 give effect to this reform — including measures to promote integration between public and private health systems; extend coverage of pharmaceuticals to the whole population, particularly the poor; and establish health networks in all regions. The health reform is expected to increase public health expenditure significantly.

The recent health reform will supplement and expand existing state-backed institutions set up to broaden health care coverage, including the Contributive Social Security (EsSalud) and the Comprehensive Health Insurance (SIS). EsSalud, created in 1999, coordinates mandatory medical insurance for salaried workers, financed by a 9 percent payroll tax. Independent workers have the option to enroll. By June 2012, 9.5 million people (32 percent of the Peruvian population) were affiliated to EsSalud. The SIS was introduced in 2002 to offer a free basic package of priority services to those in poverty. A “complementary package” of services at public facilities was added in 2007. The SIS is fully subsidized for approximately 99 percent of beneficiaries and partially subsidized for independent workers and their dependents (World Bank 2012).

The health reform will also build on existing programs to improve maternal and child health in poor areas. These include the Program of Health Reform (PARSALUD), financed with the support of the World Bank, which has contributed to the reduction in maternal and infant mortality since the early 2000s. PARSALUD has built and equipped health facilities, and promoted training for essential health personnel in neonatal and obstetric functions, in the poorest municipalities of nine regions.

The preliminary research undertaken for this paper suggests that there are several gaps at the PHC level that the health reform will need to address. One is the shortage of physicians in rural areas and at PHC
level — a critical issue given that, in terms of Peru’s care protocols, almost all NCD-related services require a physician. In the last two decades Peru made a significant effort to reduce this shortage, especially among poor communities, but a significant gap remains (World Bank 2011c). There appear to be several current gaps in the provision of medical inputs at the PHC level. For MDGs, these include HIV test kits, which are not offered at health posts. For NCDs, a limited number of services are offered at PHC level, including screening equipment for hypertension, insulin for diabetes, aspirin for myocardial infarction, bronchodilators for asthma, papsmear kits, and hepatitis B vaccines. However, antidepressants and other medication purchased for mental illness had not yet been delivered to health facilities at the time of our research. Diabetes test kits are generally not available, but some NGOs such as CARE provide tests in poorest communities on a small scale.

Finally, ongoing efforts are underway to address Peru’s high incidence of neuropsychiatric conditions. The response includes one-on-one psychiatric or psychological counseling and drugs, previously unattainable for low-income, often indigenous, people. In 2006 an official mental health policy was approved that included a shift of services and resources from mental hospitals to community mental health facilities, as well as an integration of mental health services into PHC. In 2001, the establishment of the Peruvian Truth and Reconciliation Commission directed attention to the psychosocial damage caused by 20 years of armed conflict. The SIS has proposed integrating mental health into its program (Laplante and Holguin 2006).

* * *

In all three countries, despite current initiatives, more needs to be done in the prevention of NCDs. Small changes can have a great impact on decreasing the burden of NCDs. In Kenya, for example, the medical guidelines for MDG-related health care services state that these services can be provided by nurses. However, NCD-related conditions such as hypertension, diabetes, stroke, and depression require a physician to be present. Given the scarcity of physicians at the PHC level, a change in these guidelines would allow a nurse to conduct more preventive NCD services.

In Ethiopia, while MDG-related health care services are being provided at the PHC level, this is not the case for NCDs, which are mostly being provided at the hospital level. To effectively provide preventive NCD services, these services should also be offered at health posts and health facilities, the most accessible entry point to the health system.

In Peru, NCD protocols exist for most NCD-related conditions. However, almost all NCD services require a physician. This presents a challenge given the shortage of physicians in rural areas and in PHC. In the last two decades Peru made a significant effort to reduce this shortage, especially among poor communities, but a significant gap remains. Allowing nurses to provide preventive services could help to overcome this challenge.

All three countries are currently implementing initiatives that aim to improve health promotion, NCD treatment, or monitoring and evaluation of health programs — including the new Kenya Health Sector Strategic Plan 2012–2017 and the National Strategic Action Plan 2014–2015/16 in Ethiopia. Nonetheless, much remains to be done.
As the previous chapter shows, countries in a variety of geographies and starting positions are making concerted efforts to address the dual challenge of MDGs and NCDs, including through comprehensive health system reform. As the experience of Kenya, Ethiopia, and Peru makes clear, this is not an easy path. However, several countries have already made important strides in integrating their responses to health-related MDGs and NCDs. This chapter shines a spotlight on two such countries, Brazil and Turkey. (Annex III provides a global overview of selected NCD integration initiatives, spanning 11 countries.)

Over the past two decades, Brazil and Turkey have developed pioneering interventions to address NCDs and integrate NCDs into their broader health programs. Their experience, particularly their use of family health approaches to address NCDs, provides useful lessons for other countries.

**Brazil**

Nearly half of Brazil’s population was without health coverage before universal health reform was introduced in 1988. The Unified Health System (Sistema Único de Saúde) established coverage for more than 75 percent of the country’s population. This system contributed to the decline of the infant mortality rate from 88 to 50 per 1,000 live births, between 1980 and 1991.

Despite this reform, the 1996 Demographic Health Survey (DHS) data suggested that the urban poor experienced worse health outcomes than the rural poor, even though the urban poor had better vaccination rates and better access to health services. Children who belonged to poor families had a three-fold greater likelihood of dying before the age of five than children from wealthier families. Also, fertility rates of poor teenage girls were six-fold greater than those of wealthier teenagers. Poor girls also faced a much higher risk of maternal morbidity and mortality. In terms of vaccinations rates, the 1996 DHS found that even though poor urban children had better vaccination rates, the prevalence of diarrhea and acute respiratory infections were higher than those of children in the wealthier parts of Brazil. To improve this situation, a proactive community and family health delivery system was introduced to reorganize the delivery of public health services, particularly through Brazil’s Family Health Program (FHP) or Programa Saude de Familia (La Forgia 2008).

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5. There has not been a DHS survey in Brazil since 1996.
The Family Health Program

The FHP was introduced in 1994 as an expansion of the existing structure of the Programa de Agentes Comunitários, a training and deployment program for community health agents. The FHP organized teams of paid community agents as follows: one general practice or family health physician, one nurse, one or two auxiliary nurses, and one dental health professional. These teams then supervised community-based health workers, to integrate them into the architecture of the PHC system. The health agents acted under the supervision of nurses and physicians at the nearest public health clinic and were also assisted by staff at the state health secretariat. This led to the strengthening of the connection between the family health team and the community. These PHC teams worked together to accomplish priorities set by their municipality’s administration, which were in accordance with national and state priorities (Columbia University 2011).

Previously organized by service demands, the FHP adapted a system based on the supply of services, in the context of interdisciplinary and intersectoral interventions. For example, FHP teams assist individuals to find health care services, and navigate around the health system within a defined territory. The teams not only provide direct assistance, but also carry out health situational analyses in collaboration with community leaders, and organize their services in accordance with the population’s specific health profiles (Peres et al. 2006). The FHP also provides teams with medical, transport, and basic information technology equipment and sets out a standardized system of work and reporting requirements. Table 1.1 shows the large-scale success of the PHC integration model introduced through Brazil’s FHP.

<table>
<thead>
<tr>
<th>Table 1.1 Brazil, Family Health Program</th>
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<tbody>
<tr>
<td><strong>Number of country health workers</strong></td>
</tr>
<tr>
<td><strong>Population served</strong></td>
</tr>
<tr>
<td><strong>Background</strong></td>
</tr>
<tr>
<td><strong>Training</strong></td>
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<tr>
<td><strong>Responsibilities</strong></td>
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<td><strong>Program Impact</strong></td>
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Source: Columbia University 2011.

Under the FHP, Brazil responded to the health transition with measures to improve secondary prevention, developing plans to improve care, particularly for those with diabetes and hypertension. The FHP also carried out national screening campaigns to identify people with these diseases, making health promotion one of its priorities (World Bank 2005). The program’s emphasis on training health workers in health promotion and NCD prevention and treatment through popular education addressed the growing burden of NCDs. The MoH developed a variety of intersectoral health-promotion policies including policies on tobacco, drugs, food, and nutrition, and occupational health.

6. The Programa de Agentes Comunitários provided a more restricted package of services delivered primarily by community health workers. The FHP included a broader range of primary care services through health teams that also included health specialists (physician, nurse, and community health worker) (Zanchetta et al 2009)
To further improve the FHP, Brazil’s Family Health Extension Project (FHEP) was initiated with the aim to expand coverage of the FHP from 25 to 50 percent of the population. The activities implemented by the government to reach this goal included the following:

- **Promoting primary health care interventions that were most cost-effective and beneficial for the poor.** The FHEP prioritized actions that focused on both communicable diseases and NCDs that affected the poor.
- **Securing increased financing for the sector.** This was done by adding 14 percent of the MoH’s budget to the FHP, as well as approving new regulations, which strengthened institutional arrangements to facilitate FHP expansion. Additionally, states and municipalities that complied with regulations could qualify for higher federal transfers.
- **Strengthening management requirements for municipalities.** States and municipalities were required to develop health plans and sign performance agreements specific to tailored targets. If they complied, they would be “certified” by the MoH to receive an increase in per capita payments.
- **Drafting a human resource policy.** This supported the strengthening and development of skilled personnel in the key categories (La Forgia 2008).

**Results**

These new FHP expansion activities led to the improvement of maternal and child health through an increase in utilization (for example, prenatal visits) and results (vaccination coverage) as well as quality of spending (reduction in hospital admissions for conditions sensitive to primary care, such as acute respiratory infection and diarrhea). Furthermore, the FHEP was linked to a decline in hospitalization related to chronic diseases (La Forgia 2008). During the period 1999 to 2007, hospitalizations in Brazil for ambulatory, care-sensitive chronic diseases — including CVD, stroke, and asthma — fell at a statistically significant rate that was almost two-fold that of the rate of decline in hospitalizations for all other cases. In municipalities with high FHEP enrollment, chronic disease hospitalization rates were 13 percent lower than in municipalities with low enrollment (Macinko et al. 2010).

**TURKEY**

In the mid-2000s Turkey shifted its public health priorities to maternal and child health in an attempt to address the MDGs, while at the same time focusing on poverty reduction and the enhancement of education. According to a report conducted by the Interagency Group for Child Mortality Estimation, Turkey has made significant improvements in all MDG indicators, most notably in infant mortality (UNICEF 2013). In 1990, the infant mortality rate was 66.2 per 1,000 live births. In 2010, this rate dropped to 14.0 infant deaths per 1,000 live births, thus achieving MDG 4. Maternal mortality has also declined by 5.5 percent annually between 2001 and 2011 (Tatar et al. 2011). These results are associated with general improvements in the socioeconomic situation as well as the recent policy initiatives to improve the health system (WHO 2011b).

At the same time, however, NCDs were on the rise, making up 70 percent of all mortality cases in 2000. Obesity (BMI over 30) among adults significantly increased from one in five in 1998, to one in three in 2010. The rate of obese women is also on the rise, with the highest prevalence of obesity in western Turkey where 42 percent of women have a BMI over 30 (Ozgul et al. 2011). Nevertheless, there has been success in Turkey’s response to other NCDs. Anti-tobacco measures have resulted in the decline in smoking prevalence from 47.0 percent in the mid-1980s to 27.4 percent in 2008 — the largest decline of all OECD countries (OECD 2010b). To continue to address the rise of NCDs, Turkey implemented a reform of its health care system called the Health Transformation Program (HTP), discussed below.
Components of the Health Transformation Program

The HTP was a comprehensive sectoral program, which aimed to improve governance, efficiency, and quality in the health care sector. Phase I (2003–08) focused on tracking health impact outcomes, outputs, and structures, making monitoring and evaluation a critical issue identified by the MoH. Phase II (2009–14) prominently features health promotion and disease prevention, due to the increased budget allocation for these activities. The implementation of family medicine became a key priority for the reform program in Turkey. Furthermore, the use of public services expanded and improved through patient and client feedback mechanisms. Investments in health systems infrastructure and expansion of the workforce also improved coverage for preventive, diagnostic, and PHC service. Table 1.2 lists the components included in the main HTP financing structures.

<table>
<thead>
<tr>
<th>Table 1.2 Turkey, Health Transformative Program Financing Components</th>
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<tbody>
<tr>
<td><strong>Increased public spending in line with GDP growth</strong></td>
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<tr>
<td>Public spending on health increased from 8% in 2000 to 13% in 2008</td>
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<tr>
<td><strong>Consolidation of previously fragmented health-financing pools</strong></td>
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<tr>
<td>Various social health insurance schemes were consolidated into one single scheme managed by the Social Security Institution</td>
</tr>
<tr>
<td><strong>Social Security Institution strategies to ensure collection of premiums</strong></td>
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<tr>
<td>Mandatory enrollment and contribution to social insurance system</td>
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<tr>
<td><strong>Progress on purchasing arrangements</strong></td>
</tr>
<tr>
<td>Risk pools were consolidated to ensure Social Security Institution was the key purchaser of health services through MoH contracts</td>
</tr>
</tbody>
</table>

Source: WHO 2011c.

Activities of the Health Transformation Program

As a response to both MDGs and NCDs, various activities were implemented under the HTP (Turkey MoH 2011). These are set out in table 1.3. It should be noted that, initially, the main focus of the HTP was on MDGs, and this was reflected in the fact that payment mechanisms for PHC providers were linked primarily to MDGs. Although NCD services were provided from the outset, in recent years they have received greater focus as part of an integrated set of activities.

<table>
<thead>
<tr>
<th>Table 1.3 Activities Implemented in Turkey under the HTP in Response to MDGs and NCDs</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Overall program components</strong></td>
</tr>
<tr>
<td>Training of family physicians</td>
</tr>
<tr>
<td>Standardize guidelines for community health centers</td>
</tr>
<tr>
<td>Guarantee satisfaction of citizens</td>
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<tr>
<td><strong>Maternal and child care</strong></td>
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<tr>
<td>Offer sexual health and reproductive programs</td>
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<tr>
<td>Prepare women for pregnancy and motherhood through follow-up and counseling</td>
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<tr>
<td>Encourage breast feeding</td>
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<tr>
<td>Extend neonatal screening program nationwide</td>
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<tr>
<td>Increase rate of hospital delivery by supporting intensive care units</td>
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<tr>
<td>Expand immunization program</td>
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<tr>
<td><strong>Communicable diseases</strong></td>
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<tr>
<td>Implement “Stop TB Strategy Goals”</td>
</tr>
<tr>
<td>Initiate the “Measles and Rubella Elimination and Congenital Rubella Syndrome Prevention Program”</td>
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<tr>
<td>Administer effective and proper drugs for malaria control, nearing disease elimination</td>
</tr>
<tr>
<td>Develop communicable disease notification system</td>
</tr>
</tbody>
</table>
- Prepare a national action plan for pandemic, avian, and H1N1 influenza

| Chronic diseases | • Develop national prevention and control program for CVD  
|                 | • Develop national prevention and control program for diabetes  
|                 | • Implement the national chronic respiratory disease prevention and control program  
|                 | • Promote early screenings diagnosis against cancer through activities and training |

| Mental health | • Provide community-based mental health services  
|              | • Implement services for abused and neglected children  
|              | • Provide services for elderly health |

| Health promotion | • Activities to reduce early mortality and disability  
|                 |   o Healthy diet  
|                 |   o Promote physical activity  
|                 | • Address leading risk factors and underlying health determinants  
|                 |   o Implement bans and tobacco tax  
|                 |   o Spread awareness of alcohol and implement National Alcohol Control Program  
|                 | • Strengthen sustainable health care systems  
|                 | • Support large-scale development agenda |

| Other programs | • Improve emergency health service  
|               | • Develop strategic action plan on preventive oral and dental health  
|               | • Implement healthy environmental programs  
|               | • Promote occupational health and safety  
|               | • Develop action to address climate change |

Source: Turkey MOH 2011

**Results**

The successes of the HTP have resulted in an overall improvement in health status in recent years. Accomplishments of the ten-year anniversary of the implementation of the country’s universal health coverage include the substantial decrease in infant mortality from 34 per 1,000 live births in 1998 to 17 in 2008, as well as the decrease in the under-five mortality rate from 61 per 1,000 live births in 2003 to 24 in 2008. The country still faces the burden of disease caused by CVD, cancers, and infectious diseases (minus HIV/AIDS) (WHO 2010). In addition, WHO acknowledges that there is still work to be done in addressing both the MDGs and the growing burden of NCDs. Additionally, policy makers acknowledge that diseases such as diabetes, CVD, and other NCDs need to be aligned with the scope of universal health coverage implementation (The Lancet 2013).

---

The examples of Brazil and Turkey show that PHC interventions can be very effective for improving both MDG- and NCD-related health outcomes. Providing preventive services at the PHC and community level through nurses and community workers, or implementing national screening campaigns to identify people at risk, makes it possible to capture a broader population, which otherwise might not have sought preventive services. Furthermore, this moves preventive service provision — which is often provided at the costly hospital level — to the health facility level. Finally, all initiatives of this kind help to avoid high treatment costs in the long run.
We should note, however, that our analysis of global programs identified one major issue that limits the implementation of activities involving synergies — namely, the absence of NCD costing data to inform the cost-effectiveness of specific NCD interventions. While there is abundant costing information around MDG interventions, there is a dearth of literature on current global initiatives on integration and synergy. None of the initiatives listed in annex II include information on the procedural, medication, or human resource costs to carry out cost-effectiveness analyses or to determine the marginal cost of adding onto existing interventions. An initial aim of this work was to inform the dialogue around the costing of NCD interventions, but the absence of costing data prevented this — and underlined the need for the Bank to carry out in-depth analytical work to generate such data at country level.
CONCLUSION: A ROADMAP FOR ACTION FOR THE WORLD BANK

The data set collected in Kenya, Ethiopia, and Peru in the context of this work does not lend itself to specific policy recommendations. This would require a more extensive and representative data collection, informed by in-country discussions with policy makers. The lack of cost data to inform the cost-effectiveness of particular NCD interventions is another obstacle to specific policy recommendations. However, even with the limited information collected in Kenya and Ethiopia, one can identify some opportunities for further action to develop synergies between the NCDs and MDGs agendas. For example, more could be done to include screening for hypertension, cervical cancer, and diabetes at the PHC level. Work in Brazil and Turkey shows that action on this front is clearly feasible — and is already delivering good results.

As the work on universal health coverage (UHC) gains momentum both globally and within the Bank, adjustments are being made in service-delivery models and financial protection schemes — aimed at addressing both the backlog in meeting the health MDGs in many LMICs, and the serious threat posed by NCDs. These shifts, which are evident in all three of the countries profiled in chapter 2 of this paper, will require that the Bank pursue serious efforts in fostering synergies between actions on MDGs and NCDs. This will become an imperative, as, unfortunately, this dual challenge is taking place in a context of constrained resources — a context requiring policy makers to demonstrate value for money.

Going forward, the Bank can assist countries in addressing this agenda, by taking the following steps:

- Carrying out in-depth analytical work on NCD cost data, which is clearly lacking at country level. This is an area where other partners are looking to the Bank for engagement.
- Documenting and sharing experiences taking place in several countries, by developing case studies and disseminating them widely both within the Bank and at country level through regional events.
- Establishing an “innovation fund” to stimulate thinking and action on this front, and to pave the way for broader investment in this area.
- Building capacity at country level to gather intelligence and data on interventions to address the dual challenge — and on the impact of such interventions — to assist policy makers in making decisions based on locally generated evidence.
ANNEX I: THE ECONOMIC AND REGULATORY RATIONALE FOR GOVERNMENT INTERVENTION ON NCDS

It is important to deliberate on the appropriateness of government action on NCDs, which is tightly linked to the Bank’s mandates to reduce extreme poverty and boost shared prosperity, through addressing the disproportionate impact of NCDs on those in lower-income groups. The economic and regulatory rationale, in particular, must also be considered.

NCDs are costly to treat, which may result in economic hardship for individuals (Nikolic et al. 2011). Untreated, they may adversely affect earning potential, leaving individuals unable to escape the poverty trap. The burden of chronic diseases is disproportionally carried by the poor who are least able to afford it and therefore face a larger risk of impoverishment (OHA 2005). In addition to a reduction in labor supply (and labor outputs), NCDs impact economic growth. They involve loss of output for employers, lower tax revenues, lower returns on human capital investments, and increased public health and social welfare expenditures (Nikolic et al. 2011). Egypt, for example, loses production of approximately 12 percent of national GDP overall, due to chronic health conditions; consequently aggregate labor supply is approximately 19 percent below the potential (Rocco et al. 2011).

Many NCD interventions require public expenditures, and can thus be considered a public good. For example, mandatory national immunizations, such as hepatitis B vaccines, are a core public health service, providing protection from NCDs such as liver cancer. Public government action, through regulation and the funding of service implementation, can thus be justified to ensure maximum immunization coverage. Mandatory tobacco regulations in Brazil, South Africa, Thailand, Poland, Bangladesh, and Canada have contributed toward smoking reduction, dramatically impacting CVD mortality (Suhrcke et al. 2007). Regulation of salt reduction to decrease CVD also requires enforcement. Enforcement, surveillance of policies, and monitoring and evaluation necessitate the commitment of government resources (Adeyi et al. 2007).

Several NCD interventions requiring public action or finance are listed in the WHO list of “NCDs Best Buys” (2011). Public finance is required to (i) assure the optimal production of public goods; (ii) correct or offset market failure for health insurance; and (iii) subsidize consumers who are unable to pay for health insurance or finance out-of-pocket health expenses. Other interventions may require regulation only (for example, awareness and media campaigns, salt regulation, bans, tax increases, counseling, screening, and treatment). Financing core public health infrastructure requires both public and private sector involvement (Ibid.).

Externalities such as pollution and secondhand smoke are risk factors for NCDs and may be harmful to society as a whole (Suhrcke et al. 2005). Governments have had to legislate to minimize exposure, which would be beyond the reach of the private sector.

Governments are also able to inform on and regulate risk factors, allowing NCDs to be addressed comprehensively. Risk factors such as obesity are particularly responsive to social communicability, meaning that eating habits may be affected by the habits of those around one, playing a role in the context of NCDs (Engelau et al. 2011). Obesity can also be a result of insufficient and asymmetric information, as consumers may not be aware of the health risks in their consumption choices or about the addictive aspect of certain foods. Governments can address these issues through information and regulation, enacting laws that require nutritional labeling of foods, launching education campaigns, or taxing high-sugar foods. Information is a public good that is potentially undersupplied in the absence of government intervention.
Informational interventions supported by the government can, then, be sufficient to produce the desired change in behavior (Suhrcke et al. 2007).

Government intervention is thus necessary for the reduction of NCD-related death and disability, and for maximizing health gains.
ANNEX II: LINKS BETWEEN MDGS AND NCDS (NCD ALLIANCE 2010)

CVD AND HEALTH-RELATED MDGS

MDG 4: Proper maternal diet and exercise during pregnancy have positive impacts on health of the child and can reduce child mortality. Nutrition-related factors are responsible for over 35 percent of child deaths. Maternal smoking also dramatically increases a child’s risk of dying within the first week due to congenital heart disease. Infants of mothers who were heavy smokers (25 or more cigarettes a day) were twice as likely to have a cardiovascular birth defect compared to infants of mothers who did not smoke during pregnancy. Basic health interventions that educate people on healthy lifestyle choices can be effective in reducing mortality rates and improving child health, which have the potential to reduce the risk of factors associated with CVD.

MDG 5: High blood pressure, unhealthy eating, and smoking all have negative impacts on maternal health and can increase maternal mortality. Smoking, a high-risk factor for CVD, greatly increases the chance of complications during pregnancy. Women who smoke during pregnancy are at greater risk for pregnancy complications such as fetal death, miscarriage, ectopic pregnancy, and placenta previa, all of which can be fatal for the mother. Behavioral factors associated with CVD negatively affect health care spending, thereby placing barriers to improving maternal health. Unhealthy eating habits also contribute to maternal mortality as iron deficiency accounts for 115,000 (20 percent) maternal deaths a year. Maternal malnutrition is key to the intergenerational transmission of CVD risk factors. Both maternal undernutrition and overnutrition increase the risk of future risk factors associated with CVD for the child later in life. Specifically, studies have found that fetal undernutrition of females can increase their chances of developing CVD later in life.

MDG 6: Risk factors related to CVD can accelerate the death and disability of HIV/AIDS-infected patients. HIV-related heart disease is common but often attributed to other problems: pericardial effusion has become one of the most common AIDS-defining illness. CVD is also an important cause of death among patients with HIV infection. In many health systems, HIV infection has become a chronic illness requiring surveillance and monitoring. Studies suggest that HIV infection can double or triple the risk of a major cardiovascular event. Therefore, current prevention and treatment programs that encourage HIV-infected patients to take control of their health must also incorporate their increased risk of developing heart-related illness.

DIABETES AND HEALTH-RELATED MDGS

MDG 4: Untreated diabetes in mothers and children negatively impacts child health, potentially increasing child mortality. Children with untreated diabetes in low-income countries experience child life expectancy of less than one year. Diabetes also causes infant deaths as maternal diabetes is associated with low and very high birthweight babies, increasing the chance of the child dying before or during birth.

MDG 5: Pregestational and gestational diabetes mellitus (GDM) is associated with life-threatening delivery complications, increasing maternal mortality. Diabetes is a neglected cause of maternal mortality, as pregestational and GDM can cause maternal deaths during delivery. GDM affects the health of the mother and her child later in life, as mothers with GDM are more likely to develop type 2 diabetes, and offspring have a four- to eightfold increased risk of diabetes. Rising prevalence of obesity also means
that more women of reproductive age have diabetes. Both maternal undernutrition and overnutrition increases the risk of future diabetes for the child.

**MDG 6: Diabetes risk increases in HIV/AIDS patients through the use of some ARTs. It is also linked to hepatitis and TB.** The use of some ARTs can triple the risk of diabetes in people with HIV/AIDS. Diabetes also increases the risk of developing TB: diabetes patients are three times more likely than nondiabetic patients to develop TB when infected. A study in India showed that 15 percent of TB is attributed to diabetes. Patients who are infected with hepatitis have a higher risk of developing diabetes. Finally, diabetes and malaria are a deadly combination. A person with diabetes has a higher chance of suffering severe malaria, and a higher chance of mortality.

**CANCER AND HEALTH-RELATED MDGs**

**MDG 4: Childhood cancers in low-income settings contribute to higher under-five mortality rates.** Children are disproportionately affected by cancer. Although rare, 80 percent of all childhood cancers occur in low-income settings with poor cancer diagnostic tools. For example, Mali had the highest under-five mortality in 2007, reported at 21 percent. Most of these children die of infection with symptoms resembling those of leukemia (Howard et al. 2007). Advances in high-income countries have led to survival rates as high as 80 percent, but poor access to diagnosis and care in LMICs result in 160,000 largely avoidable deaths annually.

**MDG 5: Cancer control can help improve overall maternal health.** Contribution to services for women’s health by complementing and supporting sexual and reproductive health initiatives and the model of “universal access to reproductive health” will improve maternal health.

**MDG 6: Cancer control can complement HIV/AIDS and TB prevention.** HPV infection, the main risk factor for cervical cancer, can be prevented through similar and synergistic reproductive health initiatives as HIV/AIDS prevention activities. HIV/AIDS can also lead to HIV-related cancers, and tertiary prevention efforts in HIV/AIDS patients may therefore improve their life expectancy and quality of life. Cancer patients also have been found to be more vulnerable to TB. Cancers are among the leading global disease burdens and contribute more to the global burden of disease — and its social and economic costs — than other major global health concerns encapsulated in the MDGs.
### ANNEX III: OVERVIEW OF NCD-INTEGRATION INITIATIVES

<table>
<thead>
<tr>
<th>Country</th>
<th>Synergy</th>
<th>Duration</th>
<th>NCD Integration Activities</th>
<th>Implementer</th>
<th>Results</th>
<th>Sources</th>
</tr>
</thead>
</table>
| Brazil  | National — Family Health Program: Integrating CVD, diabetes, and other chronic diseases into child and maternal health and infectious disease programs | 1994 – present | **Promote national policies on the following:** | Brazil MoH | • Significant decline in Brazil’s infant mortality rate from 1990–2004  
• Decline in diarrhea-related mortality by 44%  
• Significant decline in avoidable hospitalization of young women  
• Significant decline (by 13%) in hospitalization related to chronic diseases (CVD, stroke, asthma) | La Forgia 2008  
World Bank 2005  
Columbia University 2011  
Macinko et al. 2010 |
| Turkey  | National — Health Transformation Program: Integrating NCD control and treatment into existing activities targeting MDGs 4 and 5 | 2000 – present | **Maternal and child health care** | Turkey MoH | • Decline in infant mortality from 34 per 1,000 live births in 1998 to 17 in 2008  
• Decline in under-five mortality rate from 61 per 1,000 live births in 2003 to 24 in 2008 | WHO 2011c  
Turkey MoH 2011  
WHO 2010  
Marquez and Farrington 2013 |
Communicable diseases
- Implement “Stop TB Strategy Goals”
- Initiate the “Measles and Rubella Elimination and Congenital Rubella Syndrome Prevention Program”
- Administer effective and proper drugs for malaria control, nearing disease elimination
- Develop communicable disease notification system
- Prepare a national action plan for pandemic, avian, and H1N1 influenza

Chronic diseases
- Develop national prevention and control program for CVD
- Develop national prevention and control program for diabetes
- Implement the national chronic respiratory disease prevention and control program
- Promote early screenings diagnosis against cancer through activities and training

Mental health
- Provide community-based mental health services
<table>
<thead>
<tr>
<th>Country</th>
<th>Pilot Type</th>
<th>Start Date – End Date</th>
<th>Actions</th>
<th>Implementation Details</th>
<th>Intermediate Process Indicators of the Program Include:</th>
<th>References</th>
</tr>
</thead>
</table>
| Botswana      | Provincial Pilot    | March 2009 – January 2011 | - Implement services for abused and neglected children  
- Provide services for elderly health  
- Use visual inspection acetic acid procedure to screen for cervical cancer  
- Expand cervical cancer screening and treatment and promotion of breast cancer education through leveraging HIV/AIDS platform and investments  
- Apply self-management programs from chronic NCDs to the care of HIV/AIDS | Botswana MoH and University of Pennsylvania Partnership  
- Screening of 11% of women found to have low-grade lesions  
- 61% of women screened had normal examination results  
- 27.3% of women screened referred for further evaluation | Marquez and Farrington 2013  
Ramogola-Masire et al. 2012                                                      |
| Kenya         | Provincial Pilot    | January 2006 – present | - Provide community-based health education and prevention of maternal-to-child transmission of HIV  
- Transition HIV clinics to more comprehensive chronic disease clinics  
- Treat HIV/AIDS and other patients with hypertension, diabetes, and cancer screenings and treatment | AMPATH  
- Reduction of mother to infant transmission by 3% in pilot program | World Bank 2011  
AMPATH 2012  
Henley 2012  
Were et al. 2011                                                                     |
| South Africa  | National – Diabetes and TB Service Integration | October 2012 – present | - Develop protocols for screening, counseling, and managing TB and diabetes  
- Establish service linkage between diabetes and TB facilities  
- Provide training to strengthen capacity in diagnosis of diabetes and TB cases, and case management | South Africa MoH and World Diabetes Foundation  
Intermediate process indicators of the program include:  
- 14 clinics strengthened with TB-diabetes management care  
- 36 nurses trained in TB-diabetes | World Diabetes Foundation 2013                                                  |
### Tanzania

| A) **Provincial** — Pilot — Linking communicable disease to NCD control programs | November 2011 – present
| 2007 – 12 |
|---|---|
| B) **National** — HIV care and treatment |

#### A) Linkage of communicable diseases to NCDs
- Facilitating diabetes detection and management
- Provision of treatment of eye and foot complications
- Nutrition counseling
- GDM management
- Management of other comorbid chronic diseases including HIV/AIDS and TB
- Training of health staff around diabetes (eye disease, diabetic foot, GDM, nutrition), hypertension, stroke, as well as HIV/AIDS, TB, and reproductive, maternal, and child health

| B) HIV care and treatment center expansion |

#### Tanzania MoH and World Diabetes Foundation

**USAID Health Care Improvement Project**

**Intermediate process indicators of the program include:**
- 460 health care providers trained
- 285 nurses trained
- 62 ophthalmic nurses trained
- 570 health workers trained
- 285 community health workers trained

**World Diabetes Foundation 2013**

Marquez and Farrington 2013

- Increase in adherence,
<table>
<thead>
<tr>
<th>Country</th>
<th>Initiative</th>
<th>Timeline</th>
<th>Description</th>
<th>Outcome</th>
<th>Reference</th>
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<tbody>
<tr>
<td>Uganda</td>
<td>A) <strong>National</strong> — Included palliative care into National Health Policy</td>
<td>1993 – present</td>
<td>A) Improve quality of life of AIDS and cancer patients by developing comprehensive palliative care programs with a community health approach</td>
<td>• Eight-fold increase in patients receiving diabetes care from start of project  • Increase in patients meeting blood pressure goals and fasting blood glucose targets from 49% to 54% within a nine-month period</td>
<td>Marquez and Farrington 2013</td>
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<tr>
<td></td>
<td>B) <strong>National</strong> — Improved HIV care and treatment</td>
<td>2007 – 12</td>
<td>B) Improve HIV care and treatment  • Routine screening of all adults for hypertension; dedicated clinic days for hypertension and diabetes  • Improve support for patient self-management  • Longitudinal documentation system to facilitate ongoing follow-up</td>
<td>Uganda MoH and USAID Health Care Improvement Project</td>
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<tr>
<td>Zambia</td>
<td><strong>National</strong> — Addressing female morality due to cervical cancer — Red Ribbon Blue Ribbon women’s health initiative</td>
<td>2006 – present</td>
<td>• Use visual inspection acetic acid procedure to screen for cervical cancer  • Expand cervical cancer screening, and treatment and promotion of breast cancer education through leveraging HIV/AIDS platform and investments</td>
<td>Zambia MoH</td>
<td>Marquez and Farrington 2013</td>
</tr>
<tr>
<td>Country</td>
<td>Initiative Description</td>
<td>Year</td>
<td>Activities</td>
<td>Implementation</td>
<td>Outcome</td>
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<tr>
<td>Bhutan</td>
<td>National — Integration of NCDs into National Policy and Strategy Framework on Prevention and Control</td>
<td>2009 – present</td>
<td>• Apply self-management programs from chronic NCDs to the care of HIV/AIDS</td>
<td>Bhutan MoH</td>
<td>never before been screened</td>
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<tr>
<td></td>
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<td></td>
<td>• Integrate “best buys” covering CVD, diabetes, cancer, and chronic obstructive pulmonary disease</td>
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<td></td>
<td>• Piloted programs such as five-year diabetes project promoting education, prevention, and care</td>
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<td>In urban Thimphu:</td>
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<td></td>
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<td></td>
<td>• 40% reduction in risk of stroke</td>
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<td>• 15% reduction in risk of myocardial infarctions</td>
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<td>World Bank 2011</td>
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<td>Wangdi 2013</td>
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<tr>
<td>Cambodia</td>
<td>Provincial Pilot — Integrated Care for HIV/AIDS, Diabetes, and Hypertension within Chronic Disease Clinics</td>
<td>2002 – 05</td>
<td>• Provision of free HIV services according to the national policy services related to diabetes were approximately US$0.50 per consultation fee</td>
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<td></td>
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<td>• Treatment for opportunistic infections as well as psychosocial treatment preparedness provided for HIV/AIDS</td>
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<td>• Treatment for diabetes with oral drugs and therapy provided for diabetic patients</td>
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<td>• Treatment for high blood pressure according to a protocol based on standard guidelines provided for hypertensive patients</td>
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<td>• Teams of counselors provided a series of activities complementary to medical consultations for both HIV/AIDS and diabetes patients</td>
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<td>• Counseling activities encouraging drug adherence and lifestyle</td>
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<td>Médecins Sans Frontières and Cambodia MoH</td>
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<td></td>
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<td></td>
<td>• Marked improvements in diabetes, hypertension, and HIV/AIDS outcomes</td>
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<td></td>
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<td></td>
<td>• 88% of HIV patients and 71% of diabetic patients were still alive and active upon seeking services in the two clinics</td>
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<td>• 68% of enrolled patients had reached blood pressure readings equal to or below the target to be considered nonhypertensive</td>
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<td></td>
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<td>• Expansion of patient inflow and</td>
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<td>Janssens et al. 2007</td>
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<tr>
<td>Country</td>
<td>Program Details</td>
<td>Year</td>
<td>Key Outcomes</td>
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</table>
| India   | **National Programme for Prevention of Cancer, Diabetes, CVD and Stroke (NPCDCS)**                  | 2010–11| - Peer-support groups were established for antiretroviral users and diabetic patients  
|         | **CVD, stroke, and diabetes**                                                                     |        | - Provision of life-saving drug at each district hospital in 100 districts     
|         |                                                                                                   |        | - Provision of opportunistic screening for diabetes and high blood pressure to all persons above 30 years including pregnant women of all age groups at 20,000 subcenters  
|         |                                                                                                   |        | - Provision of home-based care for bed-ridden cases                           
|         |                                                                                                   |        | - Support 700 community health centers for management of NCDs including health promotion activities  
|         | **Cancer**                                                                                       |        | - Provision of common diagnostic services, basic surgery, chemotherapy, and palliative care for cancer  
|         |                                                                                                   |        | - Support for chemotherapy drugs at each district hospital                    
|         |                                                                                                   |        | - Provision of day care chemotherapy facilities at 100 district hospitals      
|         |                                                                                                   |        | - Availability of mammography and laboratory investigations at 100 district hospitals  
|         |                                                                                                   |        | - 62 districts have functional NCD clinics                                     
|         |                                                                                                   |        | - Cardiac care units are fully functional in 39 districts                      
|         |                                                                                                   |        | - 21 states have been supplied with diabetes-screening supplies               
|         |                                                                                                   |        | - Chemotherapy service implemented in four districts                          
|         |                                                                                                   |        | - 95 trainers have been trained in CVD programs and Training of the Trainers programs  
|         |                                                                                                   |        | - 693 Medical officers have been trained in states                           
|         |                                                                                                   |        | - A total of 1.7 million persons have been screened for diabetes and hypertension  

Narain 2011
NPCDCS 2010
| Vietnam | National — Integrating Palliative Care into HIV/AIDS and Cancer Care | 2001 – present | • Provision of home-based palliative care for chronic, debilitating, and progressive cancer patients in 100 districts  
• Support for contractual manpower and equipment for management of cancer cases at 100 district hospitals (MoH and Family NPCDCS Welfare Operational Guidelines) | • Identified 7.2% of patients suspected to be diabetic, and 6.6% hypertensive |
| --- | --- | --- | --- | --- |
| Vietnam MoH | • Establish national palliative care steering committee, which includes health care leaders in both HIV/AIDS and cancer  
• Carry out situational analysis of palliative care needs  
• Develop and carry out a plan to build the “four pillars” of a national palliative care program which includes:  
1. Policy development around national palliative care guidelines  
2. Ensure availability of drugs and opioid analgesics essential to palliative care  
3. Educate clinicians and health care officials  
4. Implement palliative care clinical programs at facility level | Vietnam MoH | • Breakthrough in essential and palliative drug availability  
• Guidelines on palliative care and pain management for HIV/AIDS and cancer, including trainings to improve the quality of palliative care services at all levels | Krakauer 2007  
Krakauer 2010 |
While much of the health focus in Sub-Saharan Africa (SSA), has been, understandably, directed toward communicable diseases, particularly HIV/AIDS, tuberculosis, and malaria, there has perhaps been less acknowledgment that NCDs are becoming a significant burden in Sub-Saharan Africa, and road traffic injuries (RTIs) are rapidly emerging as a major cause of death and disability. By 2010, cardiovascular diseases (including heart attacks and strokes), diabetes mellitus, and road injuries were already among the top 15 causes of years of life lost (YLL) for the four SSA regions (1).

For some countries, such as Mauritius and the Seychelles, and some populations, such as those over 45 years of age, NCDs are now the leading cause of death. In 2008, the African region had the highest age-standardized mortality rate for NCDs of any region globally, and over the next ten years, the biggest rise in NCD deaths globally is expected there. Rapid urbanization, changes in dietary patterns, behavioral and biological factors, and major improvements in the prevention and treatment of communicable diseases, that particularly have averted premature deaths due to AIDS and are helping raise life expectancy, are contributing to a shift in disease patterns, increasing the relative importance of NCDs (cardiovascular diseases, cancer, chronic obstructive pulmonary disease, and diabetes) and injuries (2). Wealthy communities in this region experience higher risk of chronic diseases, while poor communities experience higher risk of communicable diseases and a double burden of communicable diseases and NCDs (3). NCDs are at least as common in the poor as in the more affluent groups (4), and the observed increase in obesity and hypertension with wealth are ominous in the fast-growing emerging economies of the region (5).

The care of chronic conditions threatens to overwhelm fragile health systems and send health and social care costs soaring — and to drive families and individuals further into poverty in the face of inadequate social protection. In Tanzania, for example, out-of-pocket health expenditures have been estimated to be a major contributor to poverty, with the burden on the poor and extreme poor being proportionally greater than on the non-poor (5).

What can be done?

There is increasing understanding of what are cost-effective interventions to combat NCDs, and much focus in recent years has been on identifying “best buys” (7–8). A combination of multisectoral population-level and high-risk individual approaches at the health system are proposed including a strong emphasis on fiscal and regulatory measures to incentivize reduction in tobacco and alcohol consumption and, where feasible in primary care, cardio-metabolic risk management and low-cost screening for cervical cancer.

How does Sub-Saharan Africa respond given its already resource-constrained environment, amidst other pressures?

**Capitalize on the interlinkages between conditions and on their common determinants and links to development.** Not much attention has been paid to the extent to which communicable diseases contribute to the NCD burden and to the potential common intervention strategies in Sub-Saharan Africa. The same underlying social conditions, such as widespread poverty, that limit access to proper nutrition and basic health services, impact both disease groups in terms of causation, comorbidity, and care. Frequently, both communicable diseases and NCDs coexist in the same individual, and one can increase the risk or impact
of the other. Many maternal illnesses and lifestyle behaviors, for example, can affect the child, including undernutrition and overnutrition, anemia, and tobacco use (9–10). Poor maternal nutrition before and during pregnancy together with smoking tobacco during pregnancy contributes to poor intrauterine growth, resulting in low birthweight, which in turn predisposes to metabolic disorders and NCD risk in later life (11). Gestational obesity is a strong predictor of future health, both of the mother, who may develop diabetes and cardiovascular diseases later in life, and the child, who also becomes at risk. Thus, the current poverty of much of Sub-Saharan Africa may result in an epidemic of cardiovascular diseases in middle age for those who survive (12). The problem is compounded by the dual epidemic of HIV/AIDS and tuberculosis; for example, low birthweight and malnutrition are more frequent in HIV-infected children (13).

Some infections cause or are related to NCDs; for example, cervical cancer, the most common women’s cancer in Africa, is caused by the human papillomavirus (HPV). Treatment of communicable diseases can also increase NCD risk: antiretroviral drug therapy (ART) for HIV is saving lives, but as the HIV-infected population ages, cardiovascular disease prevalence and mortality can increase significantly (14). NCDs or their risk factors can also increase the risk of infection; for example, smoking and diabetes each increase the risk of tuberculosis, and comorbidity of tuberculosis and diabetes can worsen outcomes for both diseases.

The reality of individuals with multiple illnesses and complex symptoms poses a major challenge to organize and deliver more integrated and comprehensive health care services (15). The good news is that some of the interventions to prevent NCDs are straight out of the communicable disease weaponry. The scope of immunization programs could be expanded to include not only vaccine-preventable diseases among children but also improve access to HPV vaccines for young girls that protect against HPV types that cause about 70 percent of cervical cancer cases, particularly now that the GAVI Alliance has decided to support the introduction of HPV vaccines at reduced prices (16). Screening for hypertension and elevated blood sugar levels can be administered among people diagnosed with HIV infection. The scope of maternal and child health programs could be strengthened to provide combined interventions to alleviate malnutrition and reduce smoking in pregnant women, increase the uptake of breastfeeding, monitor birthweight, promote healthy nutrition in families, identify and manage hypertension and diabetes in pregnancy, and promote smoke-free homes. Collaboration with reproductive and sexual health programs could promote not only the use of condoms and safe sex practices, but also raise awareness of early signs and symptoms of cervical and breast cancer and increase coverage of low-cost cervical cancer screening programs such as the visual inspection with acetic acid (VIA), which does not require laboratory facilities and can enable treatment of precancerous lesions with cryotherapy (17–18–19).

**Focus on common care needs, rather than disease categories** (20). There is growing cross-fertilization of care approaches between communicable diseases and NCDs, not just in chronic care models but also in palliative or end-of-life care (21). Care models from HIV/AIDS and tuberculosis are being extended or adapted to address other chronic conditions and comorbidities; for example, the DOTS (directly observed therapy, short course) framework for tuberculosis has been applied to the management of persons with diabetes mellitus in Malawi (22). Models already exist for collaboration with tuberculosis control programs for syndromic guidelines in primary care to also benefit patients with noninfectious respiratory disease such as asthma. Chronic care models more frequently used for the care of NCDs are also being applied to cover infectious chronic diseases. Projects using such models to integrate and improve quality of care for chronic conditions such as HIV, hypertension, and diabetes are underway in Uganda, Tanzania, and South Africa (23-24). In Zambia, with the support of the recently launched Pink Ribbon Red Ribbon (PPRR) women’s health initiative, the availability of cervical cancer screening and treatment — especially for high-risk HIV-positive women — and the promotion of breast cancer education are being expanded by leveraging existing
HIV/AIDS platforms and investments (25). There have also been moves to apply self-management programs from chronic NCDs to the care of HIV/AIDS (26).

**Capitalize on existing resources and capabilities.** There has been increasing enthusiasm for leveraging HIV resources, experience, and models for the prevention, care, and treatment of other chronic conditions (27–28–29). The case has been made for reconceptualizing primary health care as part of a continuum-of-care approach involving coordinated primary, secondary, and tertiary care as well as the community, having the patient at the center (30–31). Innovative strategies to expand the health system capacity to address multiple health challenges include “task-shifting” in clinical settings so that tasks performed by physicians are delegated to staff with lower-level qualifications or a person without a formal education who has been specifically trained to perform a limited task only (32). For example, the recent Global Forum for Government Chief Nursing and Midwifery Officers in May 2012 called for an enhanced role in NCD control for nurses and midwives (33). And given that women with hypertensive disorders in pregnancy (preeclampsia or gestational hypertension) have been found to have a substantially higher risk of developing diabetes and later cardiovascular risk factors (34), training nurses and midwives to identify and manage or refer these complications appropriately seems an effective approach to deal with maternal mortality risks and longer-term chronic conditions (35–36). There is also potential for more efficient use of existing resources; for example, common procurement and supply lines for getting essential drugs to remote clinics — irrespective of disease group — and scale-up of the use of new technologies, mobile phones, and electronic medical records to use in the care of patients with HIV/AIDS and chronic conditions, (for example in Uganda and Kenya [37–38]), and transfer of resources from TB and AIDS programs for care of patients with diabetes in Malawi (22). While traditionally the emphasis has been on the raising and pooling of funds, a significant additional step would be to link spending decisions in the health system to the practice of care and clinical guidelines to incentivize the coordination of care and improve the quality of services delivered (clinical guidelines for example on referral, use of diagnostics, or use of medicines).

**What are the barriers?**

In rethinking the approach, there are several risks to be avoided.

One is to avoid creating yet another silo or set of silos. While disease-specific programs have saved millions of lives, they have also made apparent the organizational, financial, and service-delivery limitations of health systems, as well as the need to focus on multisectoral policies and actions to address the underlying social determinants of health and to prevent illness (39–40). But thinking differently relies as much on the international community and donors as it does on country policy makers themselves. The promotion of NCD-specific policies and action plans perhaps requires more time for considering how these would fit with what already exists within a country to take a more tailored approach and avoid the risk of wasting resources and being unsustainable.

Another issue, related to the above, is to recognize the power and interest of relevant stakeholders. Any approach at integration or “diagonalization” of vertical programs with health systems may meet with resistance if it appears to take control away from donors and proponents of specific diseases (20) or if it undermines existing programs or fails to take account of lessons learned (41-39). Both potential negative impact (loss of funding and political attention) and positive impact (a greater commitment to investing in integrated health services for managing chronic diseases) have been seen as potential outcomes. In this lies some of the art and not just the science of public health, offering a golden opportunity for the international community to recast its support in Sub-Saharan Africa by focusing on strengthening local-level decision making and governance capacity in the health system and by facilitating the sharing of knowledge and experiences among countries.
Another is to avoid negative impact on more desirable goals. Worthy though it is for other more well-resourced disease-specific programs to offer to share some of their experience and practice (42), there is a danger that such patronage comes only on their terms, viewed through their lens, and an adaptation of an already-limited perspective. This may weaken rather than encourage and promote more coordinated and integrated disease control and management approaches. A year after her death, we do well to honor the memory of Barbara Starfield by keeping in sight her four pillars for effective health organization and delivery: first-contact care, continuity over time, comprehensiveness, and coordination with other parts of the health system (43).

An effective response would also need to include multisectoral policies and actions for dealing with disease-related risk behaviors, environmental factors, and their social and economic determinants in the entire population. Indeed, accumulated evidence at the international level indicates that measures such as some of those included in the WHO Framework Convention on Tobacco Control (FCTC) (for example, higher excise taxes to make tobacco products less affordable), are highly cost-effective for disease prevention and control, complementing and reinforcing medical care interventions (44). Significantly, Africa is fighting back. Some 42 African countries have already signed the 2003 WHO FCTC that binds them to a number of anti-tobacco measures.

WHO estimates that close to 250,000 people die each year on African roads, representing one-fifth of the world’s road deaths, and about 500,000 sustain nonfatal injuries. Sub-Saharan African countries, with an estimated death rate of 32.2 people per 100,000 population, have some of the highest road death rates in the world, although they possess only 2 percent of the world’s registered vehicles. As in the case of tobacco control, international experience makes it clear that making roads safer presumes the adoption of a multisectoral “safe system approach” to make a country response effective and sustainable.

This annex builds upon an earlier article published by the authors in the British Medical Journal (BMJ 2012; 345:e5812) and a follow-on report (Marquez and Farrington 2013).
ANNEX V: ORIGINAL AND REVISED SCOPE OF THIS WORK

This Economic and Sector Work (ESW) was originally developed with three main objectives in mind. The first was to incorporate risk factor analysis and the corresponding evidence-based interventions with service-delivery considerations, to define the scope of health interventions. The second was to provide an analysis of how health care service-delivery channels supporting existing MDGs initiatives can be leveraged to address NCDs. The third, related to the second objective, was to classify interventions according to the relative degree of synergy defined by negligible, moderate, and major additional cost. These objectives were formulated upon in-depth consultations with World Bank regional staff and TTLs, as they had expressed interest in identifying evidence-based interventions addressing this “tiger with two heads.”

Several changes along the way, however, resulted in the revision of the second and third objectives. Primarily, it became clear that there was a lack of NCD costing data to inform the cost-effectiveness of specific NCD interventions. While there is abundant costing information around MDG interventions, there is a dearth of literature on current global initiatives on integration and synergy. None of the initiatives listed in annex II include information on the procedural, medication, or human resource costs to carry out cost-effectiveness analyses or to determine the marginal cost of adding onto existing interventions. In seeking costing data, the team reached out to several international institutions, which confirmed the absence of such data. It was thus not possible to achieve the third objective discussed above.

Next, the projected resources turned out to be insufficient to address the broad scope of this work. Thus, the team had to limit the work program to only a desk review rather than more in-depth field research as originally intended. The number of country case studies also had to be reduced from six to three, namely Ethiopia, Kenya, and Peru. Only one junior consultant could be hired in each country to conduct primary data research to address the second and third objectives. The research in these three countries should thus be considered preliminary.
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The Contribution of Traditional Herbal Medicine Practitioners to Kenyan Health Care Delivery

Results from Community Health-Seeking Behavior Vignettes and a Traditional Herbal Medicine Practitioner Survey

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