The Growing Danger of Non-Communicable Diseases

Acting Now to Reverse Course

Conference Edition

September 2011

THE WORLD BANK

HUMAN DEVELOPMENT NETWORK

THE WORLD BANK

HUMAN DEVELOPMENT NETWORK

The Growing Danger of Non-Communicable Diseases

Acting Now to Reverse Course

September 2011

Contents

Executive Summary v
A Call to Action: The Mounting Development Challenge of NCDs 1
Changing Course: The Prevention Opportunity 5
Effective Response Requires Action Across Sectors 9
Conclusion 13
Endnotes 14

Figures

Figure 1 The Rising NCD Challenge in Developing Regions Includes Younger Populations 2
Figure 2 High Cost of NCDs to Economies, Health Systems, Households and Individuals Economies 3
Figure 3 Examples of Priority Interventions to Address NCDs 6
Figure 4 Proposed Expansion Path for an NCD Prevention Package in China 7
Figure 5 A Wide Range of Possible Policy Interventions 10

Acknowledgments

This report was prepared under the overall guidance of Cristian Baeza, Director, Health, Nutrition and Population (HNP), and Nicole Klingen, Sector Manager (HNP), in the World Bank's Human Development Network (HDN). The team which produced the report included Anne-Maryse Pierre-Louis, Montserrat Meiro-Lorenzo, Irina Nikolic, and Tonya Luana Villafana. The team is grateful for the substantial contribution of World Bank colleagues such as Patricio Marquez, Europe and Central Asia Region, Enis Baris, Middle East and North Africa Region, Joana Godinho, Latin America and Caribbean Region, Sameh El-Saharty, South Asia Region, Edward Bos, Africa Region, Daniel Cotlear and Abdo Yazbeck, HNP, and Phillip Hay, HD External Affairs. Selina Khan and Victoriano Arias, HNP helped with the manuscript.

Executive Summary

Heart disease, cancer, diabetes, chronic respiratory conditions, and other non-communicable diseases (NCDs) increasingly threaten the physical health and economic security of many lower- and middle-income countries. What makes the NCD challenge particularly daunting for many developing countries is that, compared to their higher-income counterparts, they will face higher levels of NCD at earlier stages of economic development, with fewer resources, and with less time to respond effectively.

Despite the magnitude of the challenge, there is considerable scope for action, especially if policy makers and communities mobilize broadly behind evidence and make prevention and targeted treatment of such diseases a priority. This calls for decisive action across a broad range of key areas in national life. The United Nations General Assembly's High-level Meeting on NCDs this year provides an excellent opportunity to mobilize global attention on the risks of the NCD challenge, and to strengthen efforts to curb this deepening crisis.

NCDs exact a heavy toll on individuals and their communities, and compound the difficulties many countries face in achieving their 2015 Millennium Development Goals (MDG). In Eastern Europe and Central and East Asia, NCD levels are alarming and above those in high–income countries. For instance in 2010 in China, a recent Bank study reports that more than 580 million people had at least one modifiable NCD risk-factor. By 2030, NCDs are expected to account for three quarters of the disease burden in middle-income countries, up from two-thirds today.

The change in mortality and disease levels will be particularly substantial in Sub-Saharan Africa, where NCDs will account for 46 percent of all deaths by 2030, up from 28 percent in 2008, and in South Asia, which will see the share of deaths from NCDs increase from 51 to 72 percent during the same period. More than 30 percent of these deaths will be premature and preventable. These lower-income countries will, at the same time, continue to grapple with the widespread prevalence of communicable diseases such as HIV, malaria, tuberculosis, and mother and child conditions, and so face a "double burden" of disease not experienced by their wealthier counterparts.

The potential cost of NCDs to economies, health systems, households and individuals in middle- and lower-income countries is high. In many middle- and lower-income countries, NCDs are affecting populations at younger ages, resulting in longer periods of ill-health, premature deaths and greater loss of productivity that is so vital for development. For instance, in Egypt, a recent World Bank study found the country's aggregate labor supply to be some 19 percent below its potential, driven by lost employment and reduced numbers of hours worked by those reporting chronic conditions; this implied an overall production loss of roughly 12 percent of the country's GDP.

Most countries lack the means to "treat their way out" of the NCD challenge. Rising trends in NCD prevalence and treatment costs will force countries to make deliberate and often very difficult choices in creating strategies to address NCDs in a sustainable way. In all countries, but particularly in those that are still facing major challenges to achieve the MDGs, such strategies should strongly emphasize prevention, alongside cost-effective, fiscally sustainable and targeted treatment.

The good news is that there is considerable scope for action across sectors to address the challenge of NCDs. Prevention works well when allied with strong political

and community leadership. Indeed, a strategic response that emphasizes prevention, alongside cost-effective, fiscally sustainable and targeted treatment. Health system adaptation can make real headway in stemming the rise of NCDs and can help mitigate their impact in an affordable way.

Much of the rise in NCDs in developing countries is attributable to modifiable risk factors such as physical inactivity, malnutrition in the first thousand days of life and later an unhealthy diet (including excessive salt, fat, and sugar intake), tobacco use, alcohol abuse, and exposure to environmental pollution. Country evidence suggests that more than half of the NCD burden could be avoided through effective health promotion and disease prevention programs that tackle such risk factors. Particularly effective at very low costs are measures to curb tobacco, such as taxes, as indicated in the "*WHO Framework Convention on Tobacco Control*", and to reduce salt in processed and semi processed foods.

In India, this has meant, among other things, subsidizing and promoting kitchen stoves that use clean fuels and do not cause respiratory disease. In Bogotá, Colombia, the city government has built cycle paths across the city and started a community exercise program that takes place every Sunday and now draws the active participation of more than a million pedestrians and cyclists each week.

A compelling OECD example comes from New York City, where the mayor brought the health sector and hospitality industries together to reduce smoking and ban the use of trans-fats. The proportion of restaurants using trans-fats fell from 50 percent to less than 2 percent in two years, while the percentage of adult New Yorker smokers fell from 21.5 percent to 15.8 percent over the same period.

The aim of this note is to support policy makers in lower- and middle-income countries, as well as the development community, in taking action across sectors to effectively address the growing crisis of NCDs amongst other national and global priorities. The World Bank's support to policy makers in addressing the NCD challenge builds on its work in strengthening development and improving health outcomes in middle- and lower-income countries. This work complements the World Bank's strong commitment to supporting the MDG agenda. The Bank stands ready to help countries, particularly those dealing with a "double burden" of disease, to shape strategies to achieve their MDG targets, and build the evidence, for both middle and lower income countries, to effectively respond to the NCD challenge, while resolving the inevitable tradeoffs that policymakers will face in allocating national health budgets.

A Call to Action: The Mounting Development Challenge of NCDs

Premature mortality and illness due to NCDs present a growing health and development challenge in middle- and lower-income countries. The cost for economies, health systems, households and individuals is already substantial, and is set to increase significantly if action is not taken to stem the rise of NCDs.[2]

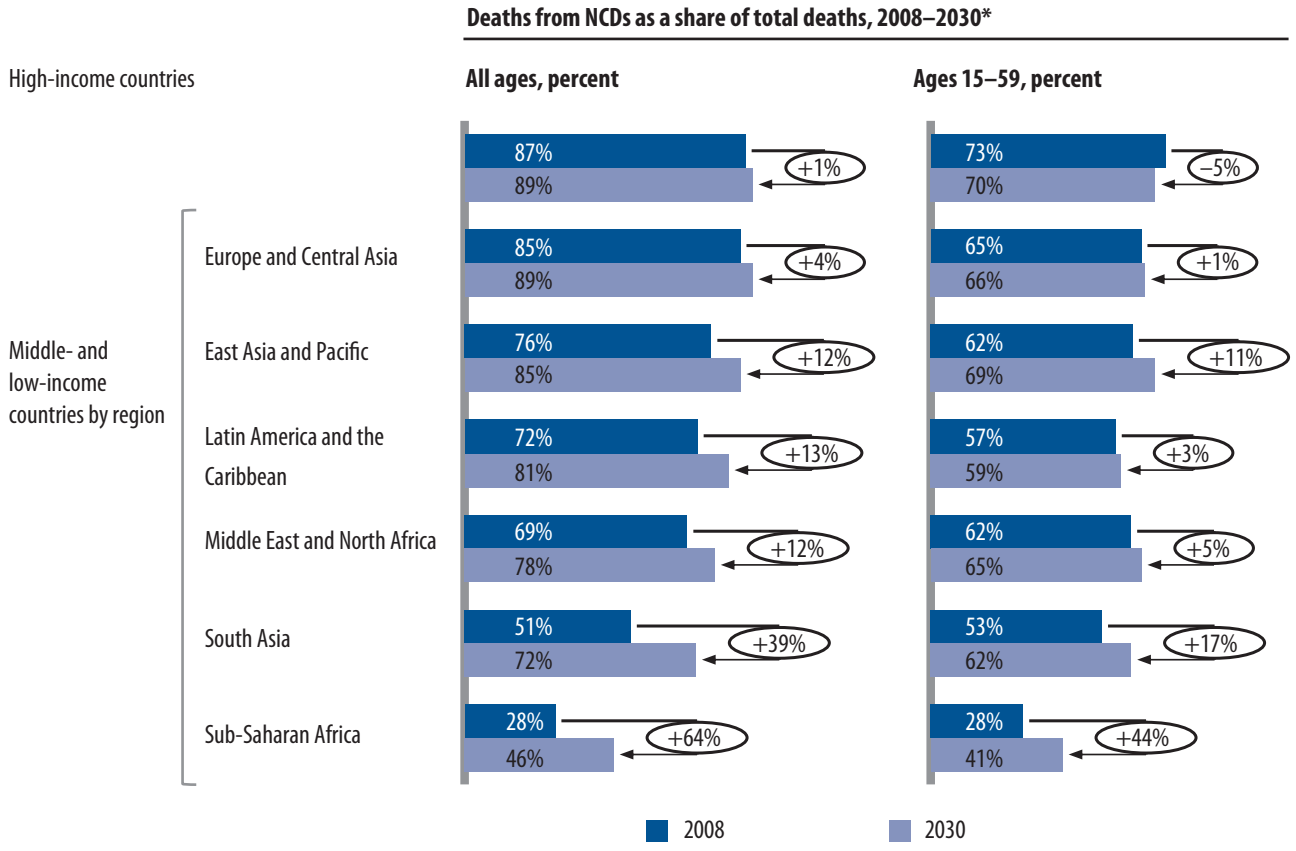
The Rise of NCDs in Middle- and Lower-Income Countries

In high-income countries, NCDs have long been the leading cause of death and ill-health. It is no surprise that NCD prevalence is now rising in the rest of the world, where the burden of communicable diseases is largely on the retreat, populations are aging rapidly, and development and lifestyle changes due to social and economic globalization are increasing exposure to risk factors such as obesity, smoking, and pollution. The rise of NCDs in middle- and lower-income countries, including amongst younger, working-age populations, makes NCDs a challenge that warrants global attention (figure 1).

Increasing NCD-related mortality and ill-health. Overall, deaths from NCDs as a share of total deaths are projected to rise by over 50 percent in middle- and lower-income countries by 2030. The change will be particularly substantial in Sub-Saharan Africa, where NCDs will account for 46 percent of all deaths by 2030, up from 28 percent in 2008, and in South Asia, which will see the share of deaths from NCDs increase from 51 to 72 percent during the same period. Data on ill-health paint a similar picture. By 2030, cancer incidence is projected to increase by 70 percent in middle-income countries and 82 percent in lower-income countries.[1] While increases in NCD-related mortality and ill-health in part reflect countries' successes in extending lives and curbing communicable diseases, a significant part of the increase is a result of modifiable risk factors, many of which are linked to modernization, urbanization, and lifestyle changes. Moreover, in some countries, particularly in the former Soviet Union area, premature mortality has resulted in a reduction of the population size and a decreasing or stagnant healthy life expectancy.[4] Postponing the onset of NCDs to shorten the number of years of ill-health and avoid premature mortality represents an important policy goal, and an investment in health as well as economic and development outcomes.

The rise of NCDs amongst younger populations. The rise of NCDs amongst younger populations may jeopardize many countries' "demographic dividend", including the economic benefits expected to be generated during the period when a relatively larger part of the population is of working age. Instead, these countries will have to contend with the costs associated with populations that are living with longer episodes of ill-health. For example, a recent study found that one in four people in Ukraine between the ages of 18 and 65 has an NCD, and that a growing number of young adults are being affected, prompting the conclusion that the country could "lose the next generation to chronic disease".[4] Cardiovascular disease is already a major cause of death and disability in South Asia, where the average age of first-time heart attack sufferers is 53 compared to 59 in the rest of the world.[5] In the Middle East and

FIGURE 1. The Rising NCD Challenge in Developing Regions Includes Younger Populations



Sources: World Bank analysis based on the WHO Global Burden of Disease database estimates and projections and the World Bank regional and country income groupings in "Chronic Emergency: Why NCDs Matter." *Health, Nutrition, and Population Discussion Paper*. 2011. Washington DC: World Bank.[2]
Notes: *Analysis by region uses WHO updated estimates for 2008 and baseline projections for 2030; analysis by income group uses WHO 2008–2030 baseline projections.

North Africa, NCD prevalence is increasing amongst women and adolescents, driven by factors unrelated to age, such as growing rates of obesity and smoking.[6]

A daunting development challenge. NCDs also present a daunting development challenge for middle- and lower-income countries because of the magnitude of the burden relative to their level of economic development.[2] The projected rise of NCDs in these countries will occur on a compressed timeline, compared to high-income countries, and often in the context of competing priorities and a restricted capacity to respond. In fact, NCDs are already exacting a significant toll in terms of the human and economic cost in these countries, as measured in healthy years of life lost (a sum of productive life years lost due to premature mortality and disability). This toll will become even higher over the next two decades, as the share of the disease burden attributable to NCDs in middle-income countries approaches that found in high income countries and rises even more rapidly in lower-income countries to come close to the levels found in middle-income countries today.

The "double burden" of disease. Even as NCDs become an increasing challenge, many lower-income countries will continue to face a substantial burden of communicable diseases. As a result, they will contend with a "double burden" of disease, further compounding the overall health and development challenge. For poorer populations in particular, the greater likelihood of exposure to multiple risk factors for NCDs, combined with inadequate preventive health care and edu-

cation, can help constitute a clustering of risk factors that makes the health consequences and costs associated with NCDs more likely to weigh most heavily on those already most vulnerable.[5, 24]

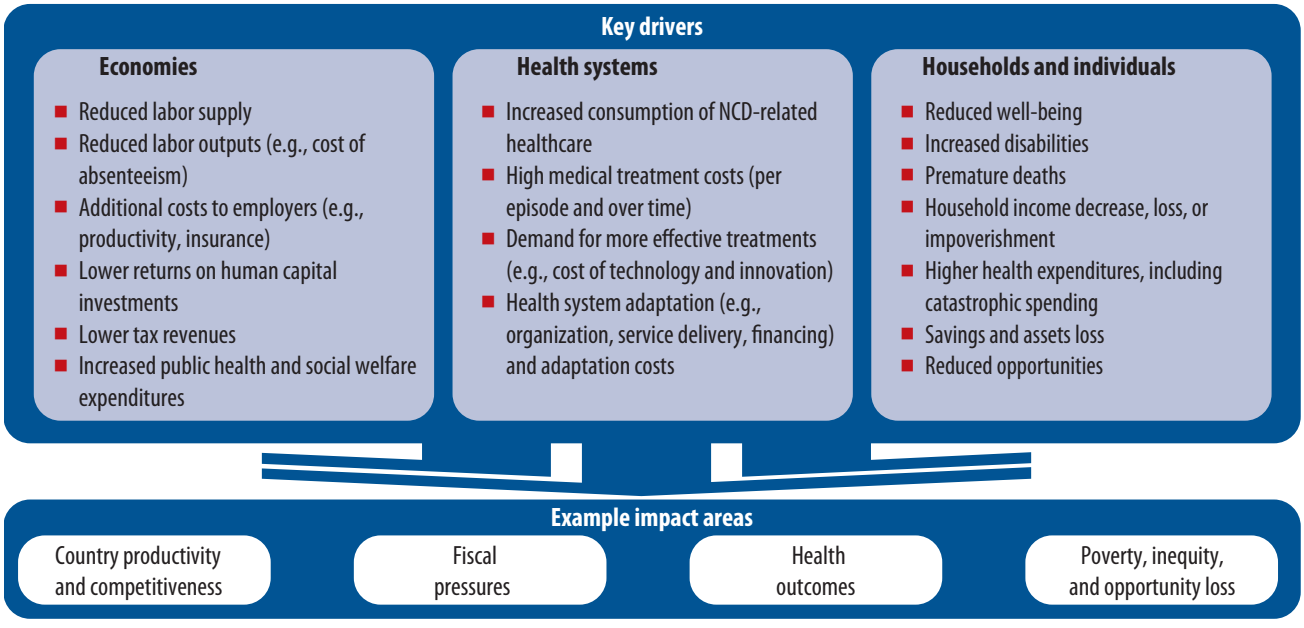
The Cost of NCDs: Impact on Economies, Health Systems, Households and Individuals

The impact of the mounting NCD challenge cannot be fully understood without considering the broad range of direct and indirect effects on economies and health systems, as well as on the affected individual and his or her household.[2] These effects, in aggregate, drive economic and human development outcomes, including: decreased country productivity and competitiveness, greater fiscal pressures, diminished health outcomes, increased poverty and inequity, and reduced opportunities for society, households and individuals (figure 2).

Impact on economies. Because of their specific characteristics, NCDs affect adults—often in their productive years—, require costly long term treatment and care, and often are accompanied by some degree of disability. Therefore, they could potentially have greater socio-economic impact than other health conditions. Increased NCD levels can: reduce labor supply and outputs, increase costs to employers (from absenteeism and higher health care coverage costs), lower returns on human capital investments, reduced domestic consumption and lower tax revenues, as well as increased public health and social welfare expenditures. Several studies have quantified this impact. For example, a review of such studies undertaken for a 2006 report found the cost of chronic diseases and their risk factors to be ranging from less than 1 percent up to nearly 7 percent of a national GDP.[7] In addition, recent research, including a World Economic Forum-funded study on the economic impact of NCDs and a number of regional and country studies on the impact of NCDs, suggests that the economic costs of NCDs may be significantly higher and, if current trends continue, even potentially overwhelming in some contexts.*

* The Bank is currently conducting a major piece of analytical work on health-including health care-and economic development to further develop the depth of evidence on the linkages between health and the economy.

FIGURE 2. High Cost of NCDs to Economies, Health Systems, Households and Individuals



Sources: World Bank analysis in "Chronic Emergency: Why NCDs Matter." *Health, Nutrition, and Population Discussion Paper*. 2011. Washington DC: World Bank.[2]

Country-level findings are particularly striking. In Egypt, a recent study found the aggregate labor supply to be some 19 percent below its potential, driven by lost employment and reduced numbers of hours worked by those reporting chronic conditions, implying an overall production loss of roughly 12 percent of the country's GDP.[8] In China, reducing cardiovascular mortality by 1 percent per year over a 30-year period (2010–2040) could generate an economic value equivalent to 68 percent of the country's real GDP in 2010—more than US$10.7 trillion at purchasing power parity.[9] A recent study illustrated the economic impact of NCDs in India by estimating that if NCDs were "eliminated", the country's 2004 GDP would have been 4 to 10 percent greater.[10, 5]

Impact on health systems. The rise of NCDs will also place increasing pressure on health systems. As the prevalence of NCDs rises, there will be greater demand for NCD-related health care, which will create increasing pressures for health expenditures and additional health financing challenges. NCDs are generally more expensive to treat and require patients to have multiple interactions with health systems, frequently in inpatient settings, and over longer time periods. The demand for more effective treatments, as well as newer and more costly ones, is likely to rise. Indeed, a recent IMF report found that the rising health costs resulting from shifting disease patterns (increasing NCDs) and the need to control expenditures while not creating adverse health outcomes will become in the coming years a fiscal policy challenge that could dwarf the current fiscal crisis.[11] These findings underscore the need for health systems in many countries to undergo significant adaptation if they are to address NCDs effectively and in a fiscally sound manner. They will need to invest substantial resources and effort in changing and strengthening service delivery, organization, skills, equipment, and financing models. Health systems in many lower-income countries will face a particular challenge, as they will need to find a means of coping with the "double burden" of NCDs and communicable diseases. The issue of health system preparedness and adaptability was thoroughly addressed in a 2007 World Bank report.[22]

Impact on households and individuals. The most immediate impact of NCDs lies, of course, in suffering and decreased well-being. However, because NCDs affect adults in their productive years, require long term treatment and often cause disability, they can have more severe economic consequences for the individual and his or her family,—including decrease or loss of household income, impoverishment, loss of savings and assets, and reduced opportunities—than other illnesses. Amongst people suffering from chronic diseases in Egypt, for example, the probability of being employed is 25 percentage points lower than the average, and their working time is reduced by 22 hours per week on average.[8]

NCD-related health care costs can also significantly affect households' financial security. For example, the share of out-of-pocket household health expenditures on NCDs in India increased from 32 percent to 47 percent between 1995–1996 and 2004. Moreover, 40 percent of these expenditures were financed by borrowing and sales of assets, increasing the household's financial vulnerability.[10] NCDs also increase the risk of households incurring "catastrophic" health costs. In South Asia, the chance of incurring catastrophic hospitalization expenditures was 160 percent higher for cancer patients and 30 percent higher for those with cardiovascular diseases than it was for those with a communicable disease requiring hospitalization.[5]

Changing Course: the Prevention Opportunity

Attempts to "treat their way out" of the NCD challenge will be too costly for most middle- and lower-income countries, and such a strategy would, in any event, constitute an inefficient use of resources. Current trends in NCD prevalence and treatment costs will force countries to make deliberate, and often very difficult, choices in creating strategies to address NCDs in a sustainable way. Such strategies should, particularly in lower-income countries, first and foremost include a strong emphasis on prevention measures, alongside efforts to strengthen health systems in order to provide targeted, cost-effective, and fiscally sustainable treatment for health conditions, depending on countries' epidemiological profile.

The efficacy of prevention. Prevention has the potential to yield meaningful results, because much of the rise in NCDs in developing countries is attributable to shared and modifiable risk factors such as physical inactivity, unhealthy diet (including excessive salt, fat, and sugar intake), tobacco use, alcohol abuse, and exposure to environmental pollution.[9, 12] Indeed, existing evidence suggests that more than half of the NCD burden could be prevented through a few key health promotion and disease prevention interventions that address such risk factors (figure 3).

Such interventions are also cost-effective and affordable. For example, in six major middle-income countries, the costs of a comprehensive prevention package including several population-based and one individual interventions, ranged from US$1.5 to US$4.5 per capita.[13] This corresponds to a small fraction of their 2010 total per capita health spending ranging between 0.39 percent in Brazil to 3.38 percent in India, including values around 0.85 percent in South Africa Russia, China and Mexico. Better prevention today could save millions of lives and billions of dollars tomorrow.[3] In a recent report, the World Health Organization (WHO) has identified a series of population based and individual preventive measures whose costs-effectiveness is well proven. The optimal package of prevention measures, as well as the right strategic mix of prevention and cost-effective treatment options for any given country will depend on its epidemiologic and demographic profiles, the capacity of its health system, and the available resources. These expenditures could in part be financed through increases in general revenue from actions that also help to curb risk factors, such as tobacco taxation measures agreed under the Framework Convention on Tobacco Control (figure 3).

Configuring prevention measures. A recent World Bank study on NCDs in China illustrates how countries might go about configuring such a mix of measures (figure 4). To achieve the greatest impact and value for money, the study proposes a set of targeted population-wide preventive interventions and individual-based prevention measures aimed at groups at high-risk of developing an NCD. This strategic mix,—four sets of population-wide and high-risk individual/group-based preventive interventions—was proposed as a strategic mix because it was estimated to leverage economies of scale and to deliver the greatest value for investments needed at different levels of available resources. According to this study, full implementation of the proposed combined set of interventions in China would cost about US$220 per high risk individual per year and could halve the total estimated NCD burden measured in averted healthy years of life lost.[9]

FIGURE 3. Examples of Priority Interventions to Address NCDs

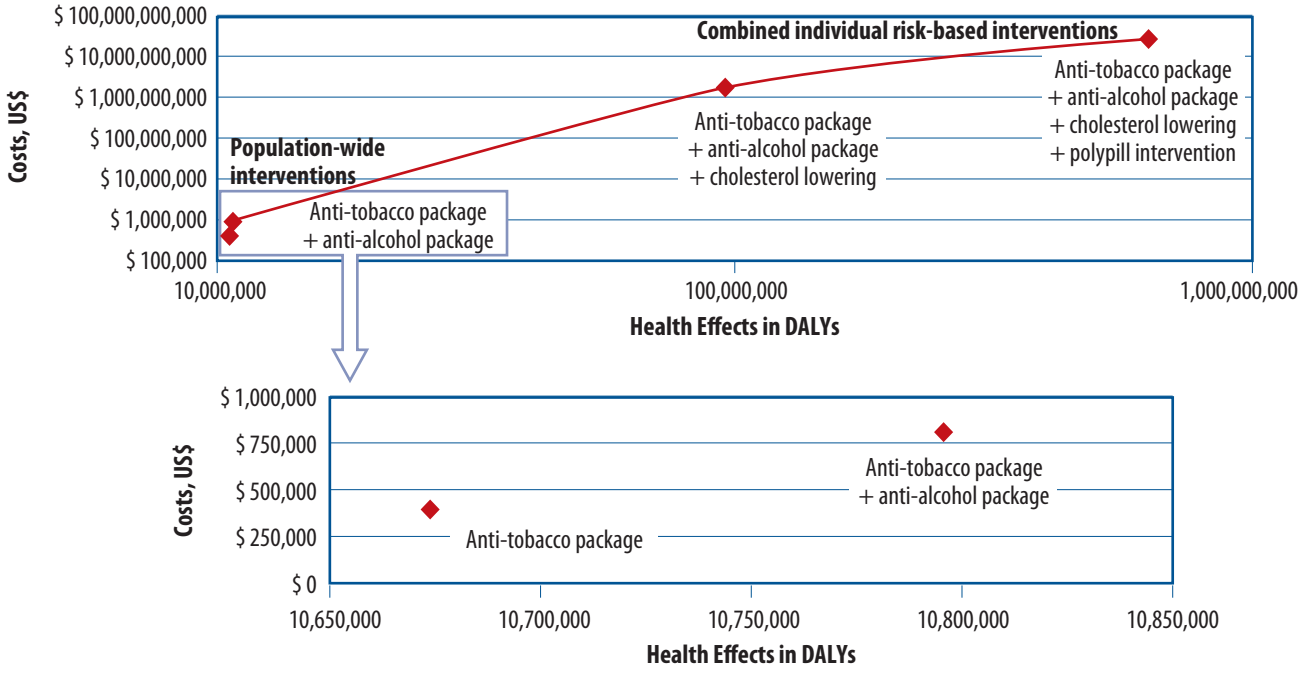
Risk Factor	Example Intervention
Tobacco use	Accelerate implementation of the Framework Convention on Tobacco Control: ■ Raise taxes on tobacco ■ Enforce bans on tobacco advertising, promotion, and sponsorship ■ Ban smoking in public places and protect people from tobacco smoke ■ Offer help to quit tobacco use and warn about the dangers of tobacco use
Excessive dietary salt intake	■ Regulate salt concentration limits in processed and semi-processed foods ■ Reduce dietary salt levels through voluntary action by food industry ■ Promote low-sodium salt substitutes ■ Implement information and education campaigns to warn about the harm from excessive salt intake
Harmful alcohol use	■ Increase taxes ■ Ban advertising ■ Restrict access
Unhealthy diets, physical inactivity, obesity	■ Introduce taxes for unhealthy food ■ Provide subsidies for healthy food ■ Promote labeling ■ Administer marketing restrictions
Cardiovascular risk	■ Facilitate access to and promote combinations of drugs for individuals at high risk of NCDs
Environmental pollution	■ Subsidize and promote the use of cookstoves that use cleaner fuels ■ Reduce emissions of harmful urban air pollutants from vehicles through better technology and greater use of mass transit ■ Reduce exposure to agro-industrial chemicals and waste by ensuring clean water for irrigation and managing pesticide use for crops and vegetables

Sources: Expanded from *Toward a Healthy on Harmonious Life in China; Stemming the Rising Tide of Non-Communicable* Diseases. 2011. Washington, DC: The World Bank.[9] Adapted from "Priority actions for the non-communicable diseases" 2011. Lancet 377: 1438–47.[12]

Similarly, in other middle- and lower-income countries, intervention packages can be designed to deliver the greatest impact for each country-specific context. Moreover, implementation modalities may change over time, hence the need to evaluate outcomes on an ongoing basis.

Policy dialog and tradeoffs. In identifying the most appropriate combination of interventions, considered policy dialog is needed, particularly between economic and health policy makers. Consideration of the inherent tradeoffs with other competing development and health priorities will be critical in the context of finite resources. Many middle-income countries will face difficult tradeoffs between expenditures on prevention and treatment in the context of limited fiscal space. For many lower-income countries, tradeoffs between an unfinished MDGs agenda, which will remain a priority, and the launch of a comprehensive NCD prevention and control effort should be carefully assessed. In this context, strengthening health systems, particularly essential public health functions, (such as surveillance, public health regulation and enforcement), and exploiting potential synergies between the existing mechanisms to promote MDGs and the most cost-effective population-based measures to control NCDs will be an avenue to explore. For example, efforts to reduce low birth-weight and malnutrition in the first thousand days of life may be important for reducing the likelihood of diabetes and cardiovascular diseases later in life.

FIGURE 4. Example of a Possible Expansion Path for an NCD Prevention Package in China



Sources: *Toward a Healthy and Harmonious Life in China: Stemming the Rising Tide of Non-Communicable Diseases*. 2011. Washington, DC: The World Bank.[12]
Note: Both axes in large figure are on log scale.

Effective Response Requires Action Across Sectors

How, then, can countries ensure that such prevention measures are effectively designed and implemented? NCD risk factors can rarely be modified through policies and interventions within the health sector alone. Rather, prevention measures that address these risk factors typically embrace a range of different sectors including finance, agriculture, education, urban design and transport, along with civil society and the private sector.

By way of illustration, the implementation of prevention measures to reduce tobacco use under the Framework Convention on Tobacco Control (figure 3) typically requires that: legislative arms of government enact laws and bans; ministries of revenue implement tax increases on cigarettes; agricultural policies limit tobacco growth; and industry associations adhere to guidelines on advertising and promotion of cigarettes.

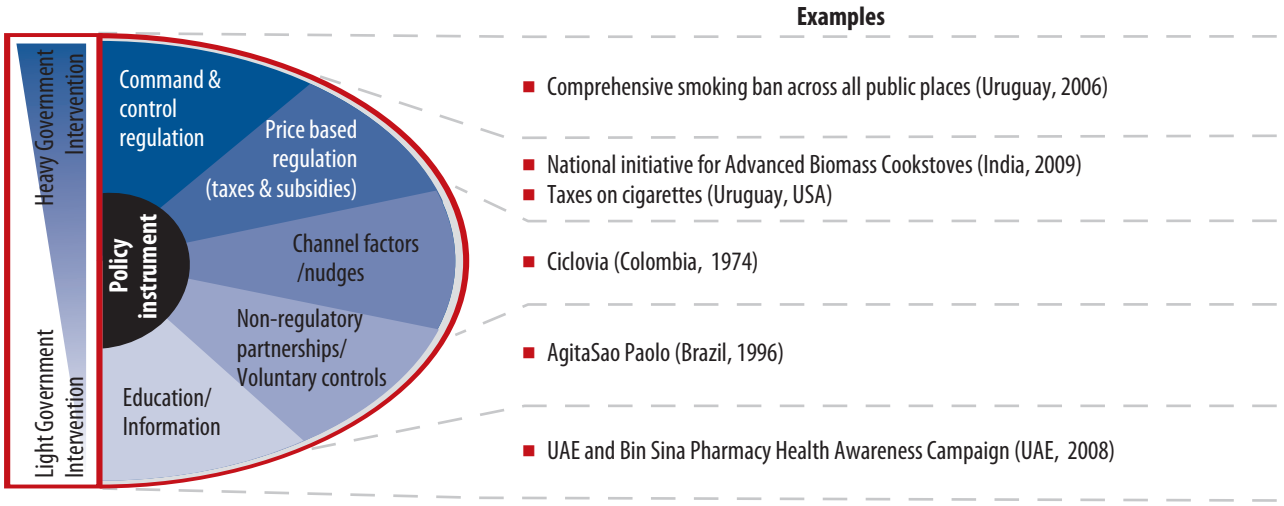
To address poor diet and nutrition, on the other hand, the education sector can help to provide information in school curricula, the agricultural sector can design policies that encourage production of healthy food, while food manufacturers can voluntarily reduce dietary salt in products manufactured. Prevention measures to address physical inactivity can involve cities improving urban design to provide opportunities for exercise, as well as ministries of transport to develop more efficient transport systems that also provide the opportunity for commuters to cycle. To tackle an unhealthy environment, ministries of energy, transport, and industry can all undertake actions that limit potentially toxic environmental pollutants.

Policy Instruments Underpinning Prevention

The prevention measures and actions described here are typically underpinned by one or more policy instruments to enforce or encourage behaviour shifts by individuals or organizations (figure 5). These policy instruments range from heavier to lighter government involvement and include command and control regulation, price based incentives such as taxes and subsidies, channel factors and nudges, and education and information programs.[3] "Command and control" regulation, such as smoking bans or drunk-driving legislation, tends to be most effective when compelling evidence and or social consensus exists on the importance of limiting risk factors.

Price-based regulations, such as taxes on tobacco or subsidies for clean cookstoves, are often used to coax changes where there is insufficient societal consensus to support command and control regulation, or where it is not feasible to mandate behavior change. Channel or nudge factors use non-financial incentives and disincentives to influence behavior—examples being the placement of certain products in groceries and cafeterias to promote pro-health choices, or designing cities to promote exercise. Voluntary controls and agreements, as well as non-regulatory partnerships, are useful to ensure that there is buy-in of key stakeholders, for example to coordinate and promote exercise programs. Finally, education and the provision of information, such as awareness campaigns to promote health, can be used to beneficially modify attitudes.

FIGURE 5. A Wide Range of Possible Policy Interventions



Sources: World Bank analysis ("Effective Responses to Noncommunicable Diseases: Embracing Action Beyond the Health Sector" *Health, Nutrition, and Population Discussion Paper*. 2011. Washington DC: World Bank).[3]

A Range of Choices in Designing Prevention Measures

Case studies of existing efforts show that successful prevention measures can be designed and configured in a range of different ways, using the policy instruments discussed above.

Comprehensive vs targeted measures. Comprehensive preventive interventions can target several risk factors concomitantly. One such program was implemented in Finland's North Karelia province, targeting diet, exercise and smoking. Between 1972 and 2006, the province's annual mortality rate from chronic heart disease fell by some 85 percent, driven by innovative communications and changes in primary health care, along with interventions on environment, nutrition, and tobacco control.[14, 15] Other interventions focus on just one risk factor. For example, an anti-smoking effort in Uruguay, championed by the country's president, banned smoking in public places and workplaces and so reduced air nicotine concentrations in the capital city by 91 percent in five years.[16]

Local initiatives. Many successful NCD prevention efforts have been initiated at the local level, and often at the insistence of high-profile leaders such as city mayors. In New York City, for example, the mayor brought the health sector and hospitality industries together to reduce smoking and ban the use of trans-fats. The proportion of restaurants using trans-fats fell from 50 percent to less than 2 percent in two years, while the percentage of adult New Yorkers defined as smokers fell from 21.5 percent to 15.8 percent.[17] In Bogotá, Colombia, the city government established cycle paths across the city and initiated Ciclovia, a mass-recreational program taking place every Sunday and now attended by more than a million pedestrians and cyclists each week—nearly 15 percent of Bogota's population.[17, 3] Originally conceived as a mechanism to improve social capital, this powerful "nudge" of having car-free roads has significantly increased citizens' physical activity levels.[17] Likewise, at the national level, programs that drive NCD prevention are not necessarily led by the health sector. India's recently established National Biomass Cookstoves Initiative, for example, is led by the Ministry of New and Renewable Energy (box 1).

The role of the private sector. The private sector may at times be best positioned to initiate similar efforts. In the United Arab Emirates, for example, a public-private

BOX 1. Indian National Biomass Cookstoves Initiative (NCI), Launched in 2010

Program goals:
- To replace traditional cookstoves in Indian households using highly pollutant biomass and coal with energy efficient ones
- To reduce the harm caused to the environment and health by traditional cookstoves

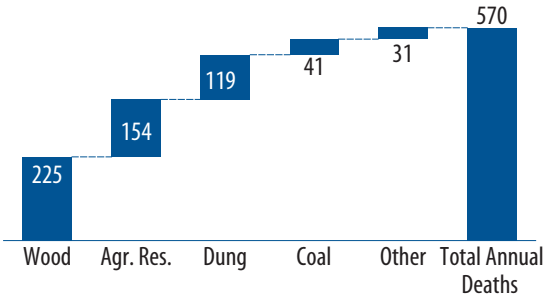
Program rationale:
More than 770 million Indians across 160 million poor households rely primarily on biomass as their cooking fuel with very negative impacts on health and the environment.

Key actors participating:
- Led and coordinated by the Ministry of New and Renewable Energy, with support from Prime Minister and other officials
- Implementing partners include state agency nodes, private sector actors, NGOs, self-help groups, and several technical research institutions such as X PRIZE Foundation and the Indian Institute of Technology Delhi Policy instruments used: Subsidies for innovation and use; provision of information

Activities involved:
Setting up of testing, certification, and monitoring facilities, and R&D training across Indian technical institutions. Launch of a global competition to develop and deploy clean cookstoves. Assessment of existing improved biomass cookstoves through a series of pilot-scale projects in several locations. Deployment and development of new cookstoves and partial subsidy of cookstove costs for consumers.

Impact:
While it is too early to assess its impact, modeling suggests that the program has the potential to:
- Reduce the national disease burden by almost 3% (avoiding 570,000 premature deaths per year in women and children)
- Eliminate one third of India's black carbon emissions along with a range of other air pollutants
- Reduce 4% of India's greenhouse emissions, worth up to US$ 1 billion on the international carbon market.

Indian Premature Deaths Due to Lack of Clean Burning Cookstoves (2005)



Sources: "The Indian National Initiative for Advanced Biomass Cookstoves: The benefits of clean combustion".

Source: "The Indian National Initiative for Advanced Biomass Cookstoves: the Benefits of Clean Combustion".[23]

partnership formed between the country's Ministry of Health and Bin Sina Pharmacy, the largest pharmacy provider in the country, offers a consolidated health examination as well as assistance and advice on cholesterol, blood pressure, diabetes, and obesity.[18, 19] In the first year of the program, some 28,000 people participated and high cholesterol was discovered in 27 percent of the participants, almost half of whom were previously unaware of their condition.[3]

Achieving effective coordination across multiple sectors may seem a big task. However, there are smart ways of organizing NCD prevention initiatives to avoid coordination that is overly complex and costly, as demonstrated by the Agita São Paulo initiative in Brazil (box 2). Aimed at promoting physical activity across the population, the initiative was launched by the state government, co-ordinated by an academic institution, and implemented by more than 300 partner organizations across the public and private sectors.[20, 21]

The Critical Role of the Health Sector

Embracing action both within and beyond the health sector will be of critical importance in effective prevention efforts, and the health sector has a key role to play in facilitating and coordinating such efforts. This role includes assessing the size of the problem and presenting this evidence to society at large; helping shape interventions with other actors; and monitoring and evaluating outcomes. Selection and prioritization of the optimal

BOX 2. Agita São Paulo, Launched in 1996

Program goals:
- To increase the population's knowledge on the importance of physical activity and the activity levels by 20% over 10 years.

Program rationale:
In the early 1990s nearly 70% of the adults in São Paulo were not sufficiently active leading to poor health outcomes that placed a heavy burden on the health system.

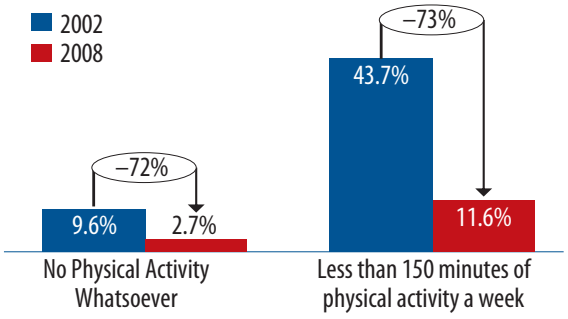
Actors participating:
- Launched by the State Secretariat of Health of São Paulo.
- Coordinated by the Studies Centre of the Physical Fitness Research Laboratory of São Caetano do Sul (CELAFISCS).
- Implementing partners: more than 300 governmental, non-governmental, and private partners from several industries.
- Funded through direct and indirect partner contributions, private business, and the State Health Secretariat, with state funds equivalent to less than $0.01 per state inhabitant per year

Policy instruments used:
Cues to channel behavior; education and information; and partnerships with voluntary controls.

Activities:
Mass media; promotional giveaways; mega-events (Active Community Day, Annual São Paulo Mega-Walk); access to sporting facilities; improving physical environments; and "prescription" of physical activity by health professionals

Impact of program:
- Physical activity: the proportion of residents with no physical activity fell from nearly 10% to less than 3% between 2002 and 2008; and the proportion of individuals with less than 150 minutes of weekly activity fell from 43.7% to 11.6%
- Awareness: between 2002 and 2008 the proportion of residents aware of the program went from 37% to 60%

Success factors:
- A respected coordinating body able to attract partners
- Simple and straightforward messages and activities
- Cross-sector partnerships leverage program reach and capacity
- Technical cooperation and support among partners allows program to remain dynamic and innovative



Sources: "Time Trends in Physical Activity in the State of São Paulo, Brazil: 2002–2008" V. Matsudo, S. Matsudo, T. Araujo, D. Andrade, L. Oliveira, P. Hallal.

Source: "The Agita São Paulo Program as a Model for Using Physical Activity to Promote Health." Revista Panamericana de Salud Pública 14 (4): 265–272. 2003.[20]
Time Trends in Physical Activity in the State of São Paulo, Brazil: 2002–2008." Medicine and Science in Sports and Exercise 42 (12): 2231–2236. 2010.[21]

package of interventions is also a key role for ministries of health, and an important basis for engaging other sectors and actors in dialogue leading to the prioritization and implementation of such interventions.

For most countries, a strong focus on NCD prevention should be complemented by strengthening health care surveillance, delivery, and organization. An example might include reshaping primary care to include effective NCD interventions, which requires adapting from an acute to a chronic care model, while still retaining a strong focus on prevention. The health sector will also need to offer effective and cost-efficient treatment, and also aim to exploit, as much as possible, the interconnection between communicable diseases and NCDs through synergies with existing programs (such as those addressing maternal and child health and communicable diseases).

Conclusion

Within a couple of decades, NCDs are poised to dominate the health care needs in most low- and middle-income countries and to exact a significant human and economic toll on countries and their populations.[22] Despite the magnitude of the challenge, there is considerable scope for action.

Attempts to "treat the way out" of NCDs will not be affordable for most middle- and low-income countries. Action should be oriented toward curbing the NCD risk factors and promoting healthier lifestyles to reduce NCD incidence rates and push back the age of NCD onset. Action within and beyond the health sector will be of critical importance in effective prevention. A growing body of evidence shows that targeted prevention measures, involving multiple sectors and actors, can successfully and cost-effectively reduce the burden of NCDs, both through population-wide measures (e.g., tobacco taxation, nutrition information, and regulation) and individual-based interventions (e.g., targeted interventions, such as high blood pressure or obesity/overweight management, accompanied by early detection of at-risk individuals). The mobilization of multiple sectors and actors can make a substantial difference in reducing disability and premature mortality, promoting healthy and productive living and aging, and mitigating the overall high socioeconomic costs of NCDs.

Well-known effective and affordable interventions and packages to address NCDs should be used as a guide rather than as a blueprint because the effectiveness of interventions depends in part on a country's epidemiological and socioeconomic profile and its potential for successful implementation of chosen interventions. Selecting the right strategic mix is a key role for ministries of health, and an important basis for engaging other sectors and actors.

The World Bank is committed to providing wide-ranging support for countries to improve their development and health outcomes. Current global attention to NCDs should help stimulate the dialog between economic and health policy makers, particularly in the context of competing fiscal pressures. The World Bank's support to policy makers in addressing the NCD challenge builds on its work in strengthening development and improving health outcomes in middle- and lower-income countries. This support complements the World Bank's strong commitment to the MDG agenda. The Bank stands ready to help countries, particularly those dealing with a "double burden" of disease, to shape strategies to achieve their MDG targets, and build evidence for both middle- and lower-income countries to effectively respond to the NCD challenge, while resolving the inevitable tradeoffs that policy makers will face in allocating national health budgets. The Bank's work will emphasize providing assistance to countries in mounting effective responses, i.e., promoting actions across sectors, and supporting health systems adaptation to offer effective and cost-efficient treatment and also aim to exploit, as much as possible, the interconnection between communicable diseases and NCDs through synergies with existing programs (such as those addressing maternal and child health and communicable diseases).

Worldwide, the best examples of measures to address NCDs show that such efforts can deliver health improvements sooner than commonly thought—within a few years of the elimination of exposure to risk factors, or even more quickly. Leaders at the national and local level have the power to save many lives, avoid widespread suffering, and forestall major human and economic cost, all within a short space of time. Now is the time to act.

Endnotes

1. WHO (World Health Organization). 2011a. *Global Status Report on Noncommunicable Diseases 2010*. Geneva: WHO.
2. Nikolic, I. A., A. Stanciole, and M. Zaydman. 2011. "Chronic Emergency: Why NCDs Matter." *Health, Nutrition, and Population Discussion Paper.* Washington, DC: World Bank.
3. Meiro-Lorenzo, M, T. Villafana, and M. Harrit. 2011. "Effective Responses to Noncommunicable Diseases: Embracing Action Beyond the Health Sector." *Health, Nutrition, and Population Discussion Paper.* Washington, DC: World Bank.
4. World Bank. 2010. *What Underlies Ukraine's Mortality Crisis*? Washington, DC: World Bank.
5. Engelgau, M., S. El-Saharty, P. Kudesia, et al. 2011. *Capitalizing on the Demographic Transition: Tackling Noncommunicable Diseases in South Asia.* Washington, DC: World Bank.
6. World Bank. 2010. *Meeting the Challenges of Health Transition in the Middle East and North Africa*. Washington, DC: World Bank.
7. Suhrcke, M., R. A. Nugent, D. Stuckler, and L. Rocco. 2006. *Chronic Disease: An Economic Perspective.* London: Oxford Health Alliance.
8. Rocco, L., K. Tanabe, M. Suhrcke, and E. Fumagali. 2011. "Chronic Diseases and Labor Market Outcomes in Egypt." Policy Research Working Paper 5575, World Bank, Washington, DC.
9. World Bank. 2011. *Toward a Healthy and Harmonious Life in China: Stemming the Rising Tide of Non-Communicable Diseases.* Washington, DC: The World Bank.
10. Mahal, A., A. Karan, and M. Engelgau. 2010. "The Economic Implications of Non-Communicable Diseases for India." *Health, Nutrition, and Population Discussion Paper.* Washington, DC: World Bank.
11. IMF (International Monetary Fund). 2010. *Macro-Fiscal Implications of Health Care Reform in Advanced and Emerging Economies.* Washington, DC: IMF.
12. Beaglehole, R., R. Bonita, R. Horton, et al. 2011. "Priority Actions for the Non-Communicable Diseases." *Lancet* 377: 1438–47.
13. Cecchini, M., F. Sassi, J.A. Lauer, et al. 2010. «Tackling of Unhealthy Diets, Physical Inactivity, and Obesity: Health Effects and Cost-Effectiveness.» *Lancet* 376: 1775–1784.
14. Puska, P. 2002. "Successful Prevention of Non-Communicable Diseases: 25 Year Experiences with North Karelia Project in Finland." *Public Health Medicin*e 4 (1): 5–7.
15. Information retrieved June 2011 at: http://www.ktl.fi/portal/english/research_people_programs/health_promotion_and_chronic_disease_prevention/projects/training_seminar/ncd_seminar/north_karelia_project
16. Blanco-Marquizo, A., B. Goja, A. Peruga, et al. 2010. "Reduction of Secondhand Smoke in Public Places Following National Smoke-Free Legislation in Uruguay." *Tobacco Control* 19: 231–234.
17. Sarmiento, O., A. Torres, E. Jacoby, et al. 2010. "The Ciclovia Recreativa: A Mass Recreational Program with Public Health Potential." *Journal of Physical Activity and Health* 7 (2): S163–S180.
18. Information retrieved June 2011 at: http://www1.albawaba.com/news/moh-binsina-pharmacys-second-campaign-against-high-risk-ailments-launched
19. Information retrieved June 2011 at: http://www.ameinfo.com/150046.html
20. Matsudo, S.M., V.K., Matsudo, T. L, Araujo, et al. 2003. "The Agita São Paulo Program as a Model for Using Physical Activity to Promote Health." *Revista Panamericana de Salud Pública* 14 (4): 265–272.
21. Matsudo, V.K., S.M., Matsudo, T.L., Araujo, et al. 2010. "Time Trends in Physical Activity in the State of São Paolo, Brazil: 2002–2008." *Medicine and Science in Sports and Exercise* 42 (12): 2231–2236.
22. Adeyi, O., O. Smith, and S. Robles. 2007. *Public Policy and the Challenge of Chronic Noncommunicable Diseases*. Washington, DC: World Bank.
23. Venkataraman, C., A. D. Sagar, G. Habib, et al. 2010. "The Indian National Initiative for Advanced Biomass Cookstoves: the Benefits of Clean Combustion." *Energy for Sustainable Development* 14 (2): 63–72.
24. Marquez P, M. Suhrcke, M.McKee, and L.Rocco. 2007. "Adult health in the Russian Federation: More than just a health problem*". Health Affairs* 26 (4):1040–1051.

THE WORLD BANK
1818 H Street, N.W.
Washington, DC 20433