NCDs and Development in the PAHO Region: A Think Tank Report to Inform NCD Strategic Planning in the Americas

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Think Tank members

Sonia Angell, Adriana Blanco, Tamu Davidson-Sadler, Majid Ezzati, Vilma Gawryszewski, Amanda Glassman, James Hospedales, John Kirton, Branka Legetic, Rafael Lozano, Deborah Carvalho Malta, Fatima Marino, Tim Miller, Rachel Nugent, Andrea Wilson, Pedro Zitko

Background and Purpose

In September 2011, the United Nations set a new international agenda for non-communicable diseases (NCDs) with the Political Declaration of the UN High-level Meeting (UNHLM) on NCDs, acknowledging that NCDs and their risk factors pose a serious threat to public health and economic and social development.[1]

The declaration called upon WHO to develop by the end of 2012 a comprehensive global monitoring framework, including a set of indicators, to monitor trends and assess progress on NCD prevention and control. Informed by their national situations, Member States participated extensively in the WHO-led process of developing a set of voluntary global targets for the prevention and control of NCDs. Ten targets and a proposed monitoring framework were discussed in November 2012 and are being agreed at the May 2013 World Health Assembly.

The process for developing global targets and indicators, the first of its kind for NCDs, was underway throughout 2012 in collaboration with Member States, other UN bodies, and relevant regional and international organizations. In addition, WHO regional offices are considering the implications of the targets and monitoring framework for their own regions, taking into account their specific situations and diversity, as well as their existing commitments and progress to date on NCDs. Countries in the Americas are increasingly aware of the centrality of NCDs to development and economic growth. Whether in the U.S., where health care consumes almost one-fifth of national output, or in Mexico where health spending will rise by 5-7 percent annually to keep pace with increases in diabetes and hypertension, NCDs are driving significant shares of national output.

In the Americas, this initiative coincides with revising the Strategy and Plan of Action for the Prevention and Control of Non-communicable Diseases in the Americas, 2007-2012. The Americas, with the Pan American Health Organization (PAHO) as their secretariat, are in the process of revising this strategy post UNHLM for the period 2013-2020. The new strategy represents a balance of continuity and change: to put NCDs on the

development and economic agenda nationally and regionally, to strengthen the multi-stakeholder “all of society” approach, to strengthen communications using traditional and new media, and to include explicit outcome and exposure goals and targets in alignment with the WHO global monitoring framework and targets, but also reflecting Regional needs.

As part of this process, the WHO Regional Office for The Americas convened an expert think tank meeting to assess NCD targets and indicators for the region. The specific objectives were to: (1) propose one or two politically attractive and feasible targets with indicators that relate to development and/or economic growth and (2) review epidemiological targets and indicators for the Americas in relation to global targets. This paper summarizes the conclusions of the Think Tank on those two issues, and proposes indicators for tracking progress in NCD prevention and control to be considered by the countries of the Americas.

NCDs as a Development Issue

Non-communicable diseases present a growing threat to the health of millions of people across the globe, and more broadly to international development goals and economic growth. Close to two-thirds of all global deaths are due to NCDs, primarily cancer, cardiovascular disease, chronic respiratory disease, and diabetes. An overwhelming 80 percent of these NCD deaths occur in low- and middle-income countries.[2] In the America’s, three out of every four deaths are due to non-communicable diseases, and about one-third of NCD deaths occur among people less than 70 years old. The burden of disease from NCDs ranges from 64 percent in the Andean region to 86 percent in North America.[3]

Further, the Political Declaration of the High-level Meeting on NCDs acknowledges that the global burden and threat of non-communicable diseases is one of the major development challenges in the twenty-first century undermining social and economic development throughout the world.[4]

The NCD epidemic impedes progress on the Millennium Development Goals including poverty eradication, universal primary education, and maternal and child health. Because NCDs can impose prolonged periods of illness on those affected—and in many countries healthcare costs are paid out-of-pocket—treatment for NCDs can place a serious strain on household budgets, forcing families into catastrophic spending and even impoverishment.[5] On average, out-of-pocket expenses represent 39 percent of total health expenditures in Latin America, most of which are related to NCDs.[6] Household spending on NCDs also displaces resources that could have otherwise been used for education. In addition, NCDs have an impact on maternal and child health, as maternal conditions such as eclampsia and gestational diabetes can threaten the lives of pregnant women and their babies, and worsen long-term health. Tobacco use, a key cause of NCDs, exposes children to second-hand smoke and risk of respiratory infections, asthma, and sudden infant death.[7]

Non-communicable diseases place a heavy burden on patients, families, busineses, health care systems, and governments. The increases in health expenditures, coupled with losses in worker productivity, hinder economic growth for countries at crucial stages

in their economic development, including high income countries.[8] The costs to the overall health system and to national economies are high, and they are expected to rise as governments increasingly allocate funds for long-term care and treatment of NCDs. By the year 2030, NCDs will be responsible for estimated cumulative economic losses of $14 trillion in low- and middle-income countries.[9]

The Americas, in particular, are confronting high costs associated with NCDs. Costs for new cancer cases in the Americas in 2009 were estimated at $153 billion in the first year after diagnosis, including costs for medical care and lost productivity. The costs for diabetes were estimated at $65 billion for the Americas in 2000. Cost estimates from individual countries are staggering as well. Per capita spending on healthcare in Canada was more than 50% higher in 2010 than in 1996 on an inflation-adjusted basis.[10] The major NCDs in Brazil impose an estimated $72 billion in treatment costs and lost worker productivity from illness.[11] In the United States, 85 percent of all health spending is directed at NCD treatment and care.[12] These costs will be difficult to contain as populations age in the Region.

Aging populations in poor health have the potential to place a serious strain on health systems and pensions. In Latin America and the Caribbean, people over the age of 60 make up ten percent of the population, and by 2050 one-quarter of the population is projected to be over age 60.[13] NCD incidence is also rising because of changing economic and environmental conditions, such as globalization and rapid and unplanned urbanization—with increasing access to junk food, tobacco, and alcohol, and more sedentary lifestyles.[14]

Yet this scenario of a growing burden of disease and rising economic costs is not inevitable. The onset of many NCDs can be prevented or delayed by addressing their common behavioral risk factors: tobacco use, unhealthy diet, insufficient physical activity, and harmful use of alcohol. Vulnerability to NCDs and exposure to their risk factors are largely determined by social, physical, economic, and environmental factors. By adopting a multisectoral response that involves all of society rather than the health system alone, governments can re-orient policies, services, and infrastructure to create healthier environments, reduce exposure to NCD risks, improve health and wellness, ensure healthy aging, and enhance economic growth and development prospects.[15]

These strategies must be part of a coordinated health systems strengthening agenda. Health care systems in the Region are currently riddled with different degrees of fragmentation and segmentation, usually underfunded, and mostly focused on treatment rather than prevention. The NCDs represent a challenge to traditionally organized health care systems to move from a curative oriented disease-centered approach to a new prevention oriented and people-centered approach capable of providing equitable, comprehensive, integrated and continuous care and promoting intersectoral action.[16]

The Political Declaration of the High-level Meeting on NCDs supports “the development of multisectoral public policies that create equitable health-promoting environments that empower individuals, families and communities to make healthy choices and lead healthy lives.” The Declaration also acknowledges “that effective non-communicable disease prevention and control require leadership and multisectoral approaches for health at the government level, including, as appropriate, health in all policies and whole-of-government approaches across such sectors as health, education, energy,

agriculture, sports, transport, communication, urban planning, environment, labour, employment, industry and trade, finance and social and economic development."[17]

The following diagram is based on the WHO NCD framework and attempts to illustrate the multi-sectoral nature of NCD risks and responses. The WHO framework has been enhanced by the PAHO Think Tank to show that multiple sectors play a role in addressing the social determinants and risk factors that increase exposure to NCDs, ultimately affecting healthcare costs, productivity, economic growth, and sustainable development. The enhanced framework implies that monitoring and indicators for NCD prevention and control should extend beyond health to include development and other sectors.

Proposed NCD and Development Framework

Economic Growth	Productivity	Sustainable Development	Wellness	Healthcare Costs

Mortality/Morbidity [Healthy Life Years Added]

Outcomes (NCDs)	CVD	Cancer	Diabetes	Chronic Respiratory Diseases

(Complications: heart attack, stroke, renal failure, amputations, blindness)

Exposures

(Physiological/ Metabolic Risk Factors)	High Blood Pressure	Elevated Glucose	BMI	Cholesterol
(Behavioral Risk Factors)	Harmful Alcohol Use	Tobacco	Unhealthy Diet	Physical Inactivity
(Social Determinants)	Educational level	Household income	Healthcare access	Urbanization (Automobiles, pollution) Safety, Security

Response

Health	Other Sectors
Government: Interventions and health system capacity (Infrastructure, policies and plans, access to interventions and treatments, partnerships, health system strengthening)	Agriculture/Food Environment Finance/Planning Urban planning Transportation Education
Private sector, civil society, academia	

The Heads of State and Government of the democratic countries of the Americas affirmed their commitment to NCDs in the Declaration of Commitment of Port of Spain in 2009, "We are convinced that we can reduce the burden of non-communicable diseases (NCDs) through the promotion of comprehensive and integrated preventive and control strategies at the individual, family, community, national and regional levels and through collaborative programmes, partnerships and policies supported by governments, the private sector, the media, civil society organisations, communities and relevant regional and international partners. We therefore reiterate our support for the PAHO Regional Strategy and Plan of Action on an Integrated Approach to the Prevention and Control of Chronic Diseases Including Diet, Physical Activity, and Health. We encourage national planning and coordination of comprehensive prevention and control strategies for NCDs and the establishment of National Commissions where appropriate."[18]

Countries are seeking ways to manage rising health care costs and a rapidly shifting landscape of disease risks. Beginning with the Port of Spain Declaration, countries in the Region have acknowledged the connection between good health and economic development. They recognize that rising NCD burdens create the potential for slowing growth through rapidly rising health and care-giving costs that consume a larger share of the economy, and through declines in productivity stemming from illness and early death. The Think Tank argues that implementation of the PAHO Regional Strategy and Plan of Action requires establishing indicators to monitor progress in preventing and controlling the health and development costs of NCDs. This paper offers recommendations for country consideration.

Methods and Criteria for Assessing Indicators and Targets

Experts[i] from a variety of backgrounds including public health, epidemiology, economics, political science, and development participated in the PAHO think tank meeting to assess NCD targets and indicators for the region. The Think Tank process involved face-to-face meetings, presentations of the NCD risk and health data from PAHO staff, review of documents from WHO and literature, and extended discussion of NCDs in the context of PAHO countries.

Epidemiological targets and indicators to measure progress in mortality reduction and specific risk factors based on previous WHO recommendations were reviewed and agreed by PAHO as the Secretariat for the Region and are described below. Further, the Think Tank experts discussed and proposed new evidence-based indicators that could highlight the socio-economic costs of NCDs in the Americas.

To achieve these aims, the expert group considered indicators that would meet some or all of the following criteria:

- Emphasize NCD prevention
- Appeal to high-level policymakers beyond the Health ministry
- Be able to demonstrate progress within a short time-frame
- Allow for incremental cumulative improvements in performance
- Promote a multisectoral response to the epidemic (highlighting the co-benefits to other sectors)

[i] Sonia Angell, Adriana Blanco, Tamu Davidson-Sadler, Majid Ezzati, Vilma Gawryszewski, Amanda Glassman, James Hospedales, John Kirton, Branka Legetic, Rafael Lozano, Deborah Carvalho Malta, Fatima Marino, Tim Miller, Rachel Nugent, Andrea Wilson, Pedro Zitko

- Address quality and effectiveness of interventions (and cost-effectiveness)
- Focus on quality of life (not just mortality)
- Consider the context of countries that may have specific limitations to meeting targets, above all the very poorest ones

From these elements, members of the Think Tank developed three indicators to recommend to member countries for their consideration in monitoring and managing the development impacts of NCDs.

Proposed Indicators Linking NCDs and Development

In an effort to address economic and multi-sectoral aspects of the NCD epidemic, PAHO and its expert group propose the inclusion of three new indicators in the regional monitoring framework:

- Percent of GDP invested by the public sector in NCD prevention
- Percent of population below the national poverty line that can afford to purchase a quality food basket
- Percent of households experiencing catastrophic health spending due to an NCD

Each of these indicators measures the connection between an aspect of NCDs and development in a quantitative manner that allows monitoring of important trends. The Think Tank recommends that the indicators be piloted in several countries, with the expectation that the specific formulations and interpretations will vary as country data and measurement capacity vary. Over time, the indicators and their measurement can be refined to more adequately reflect the trends that member countries wish to track. The Think Tank members anticipate that the indicators will initially bring greater attention to the NCD trends they are intended to illustrate and ultimately lead to improved understanding of the development aspects of NCDs.

Indicator #1: Percent of GDP invested by the public sector in NCD prevention

The first indicator—percent of national GDP invested by the public sector in NCD prevention—recognizes the benefit of disease prevention in achieving longer and healthier lives. The result of expanding prevention is increased productivity and reduced health care costs. Tracking investments in disease prevention creates greater awareness of the wide array of measures and policies that contribute to prevention, and highlights the need for multiple sectors to participate in creating a healthful environment.

The indicator is loosely modeled after the 2001 Abuja Declaration, in which the heads of state of African Union countries pledged to set a target of allocating at least 15 percent of their annual budget to the health sector.[19] When the Abuja Declaration was passed, the median government expenditure on health in Africa was near $10 per capita, with a range from $0.38 to $380 per year.[20] In the ten years following its passage, substantial progress was seen: 28 countries increased government spending on health although only two met the target. In Rwanda -- one of the countries that meets the target – the Government tallies the contributions to health of all ministries, not just the Health Ministry.

The Think Tank does not propose that a minimum threshold be established for prevention expenditures from the public sector, but countries may choose to set a target for themselves. The Abuja example offers two pertinent lessons for NCD goals and indicators. First, tracking expenditures encourages change in those expenditures, following the adage "what gets measured, gets treasured." Second, using a common indicator allows countries to make comparisons that prompt policy leaders to perform well.

The value of such an indicator is to clearly embrace a "whole of government" policy for NCD prevention and control. The indicator would recognize and encourage all sectors to invest in and measure their own contribution to NCD prevention. Examples of relevant sectors include Agriculture, Education, Transportation, Industry and Commerce, Trade, Local Government, Sports, and Foreign Affairs. The budgetary contributions made by each public agency would need to meet criteria agreed upon by a designated body with representation from multiple sectors (to be identified in each country, or regionally). The most important criterion for inclusion of a program's expenditures in the summary indicator would be proven impact on disease prevention.

The use of this indicator aligns with the Political Declaration of the UNHLM, in which Heads of State and Government and their representatives acknowledge that "resources devoted to combating the challenges posed by non-communicable diseases at the national, regional and international levels are not commensurate with the magnitude of the problem", and they further commit to "promote all possible means to identify and mobilize adequate, predictable and sustained financial resources and the necessary human and technical resources, and to consider support for voluntary, cost-effective, innovative approaches for long- term financing of non-communicable disease prevention and control, taking into account the Millennium Development Goals".[21]

This proposed NCD prevention indicator meets several of the criteria listed above. It reflects an investment in future health, has an emphasis on prevention, and is relevant for and appealing to high-level policymakers with their comprehensive and whole-of-government objective. In addition to holding policymakers accountable, focusing on NCD prevention investments as a portion of GDP would allow policymakers to publicly demonstrate their commitment to NCDs in a positive way. Furthermore, such an indicator would allow for incremental improvements, whereby leaders can demonstrate their increasing commitment to addressing the NCD epidemic.

Most ministries could contribute beneficially to achieving the target. Some of the sectors that could play a role are indicated below, along with some of the potential co-benefits and how they can contribute to the MDGs.

- Nutrition and agriculture can play a role by enacting policies and programs affecting production, trade, manufacturing, labeling, public-private partnerships, taxes and subsidies. There is an emerging and dynamic consumer market for healthier food options.[22] Public policies can support consumers in making good nutrition decisions and reduce future health care expenditures in the process. For instance, reductions in salt and replacement of trans fat with polyunsaturated fat are among WHO best buys.[23] Such interventions could also contribute to MDG 5: improving maternal health, by reducing conditions such as diabetes and hypertension in pregnancy.[24]

- Urban planning can increase access to rapid mass transit and safe biking and walking paths. Active transport can help to reduce fuel emissions, air pollution, and dependence on fuel, with benefits for climate change, the environment, and energy security.[25] For example, the use of Transmilenio, rapid mass transit in Bogotá, Colombia has been shown to improve air quality along the transportation corridors it follows.[26] Such benefits would also address MDG 7: ensuring environmental sustainability.[27]

- The education sector can create healthy school environments, providing safe spaces for physical activity and offering nutritious foods to students.[28] In Brazil, 30 percent of national funds for the school meal program are used to acquire local produce, supporting local farms.[29] Active commuting to school can avoid a 2-3 pound weight gain among schoolchildren in the Philippines.[30] By preventing childhood obesity, such programs would also contribute to achieving MDG 4, improving child health.[31]

Each of these examples illustrates how different government sectors play a role in preventing non-communicable disease, and each of them should be regarded as important to public health in addition to the other benefits they provide to society. Through such a broader framing of social programs it will be possible to move towards a "whole-of-society" perspective on NCD prevention and control.

Steps to Develop a Whole-of-Government Indicator for NCD Prevention

One of the key challenges for the new indicator lies in how it would be measured and whether the required data are available. Countries would need to assess whether and how they could measure progress and report on the new indicator. The terms "investment" and "prevention" need to be further defined, and a definitive and comprehensive list of interventions would need to be established to ensure that all contributing efforts are focused on prevention and are proven effective, and where possible cost-effective.

The World Bank proposed the following definition of prevention in documents for the UN High Level Meeting on NCDs:

Disease prevention is considered to be action, usually emanating from the health sector, dealing with individuals and populations identified as exhibiting identifiable risk factors, often associated with different risk behaviors. Health promotion strives to boost the resources that help people avoid getting sick and thus seeks to support the autonomy of individuals.[32]

The OECD provides a taxonomy of prevention activities and health prevention expenditures for its member countries using the following definition.[33]

Prevention and public health services comprise of services designed to enhance the health status of the population as distinct from the curative services which repair health dysfunction.

Both World Bank and OECD definitions are primarily confined to the activities emanating from the health sector. The Think Tank proposes that a broader definition be utilized and recommends that initial lists of NCD prevention actions be assembled through a multi-sectoral dialogue in countries based on specific examples of programs in those

countries. The lists should initially be focused on known high-priority programs, such as school feeding. The list of qualified prevention activities can be incrementally expanded as examples are shared across countries with similar and different characteristics and contexts and as effectiveness evidence is acquired. Over a period of years, the most effective types of prevention expenditures will consist of well-proven and implemented prevention programs and policies.

Beyond the issues of measurement, setting a target for this indicator will also be a challenge. There is no single amount of investment in prevention that is optimal for all countries. A country that invests 5 percent of GDP in NCD prevention may not have better performance than a country that invests 0.5 percent. A country can increase preventive activities at the expense of the budgets for the main outcomes of others sectors (e.g. culture, education), and this could have adverse consequences in other areas and also indirectly on health. If a threshold target is desired, one option is to set the target based on the proportion of GDP invested in disease prevention in countries with the best performance on NCDs. Even amongst OECD countries, considerable variation exists in the methodologies and the amounts invested. The most recent data available show that Canada spend seven-tenths of one percent of GDP on prevention and health promotion, Korea spent two-tenths of one percent of GDP on prevention and health promotion, and Mexico allocated 2.8% of GDP to prevention and health promotion (combined public and private expenditures)[34]

Initially, progress could be assessed based on incremental improvements in the percent of GDP invested by the public sector in NCD prevention. As such, the purpose of the indicator would be to highlight the importance of and encourage government commitment to NCD prevention. In the longer-term, once an indicator to incentivize and measure a whole-of-government approach to NCD prevention is in place and well understood, countries may wish to move toward a whole of society response. For example, contributions toward NCD prevention from the private sector (with the exception of companies like tobacco) could be assessed. However, for the moment the priority is to ensure that governments are accountable and successful in their commitments to the regional Strategy and Plan of Action for the Prevention and Control of Non-communicable Diseases in the Americas.

Indicator #2: Percent of population below the national poverty line that can afford to purchase a quality food basket

The second indicator proposed by the Think Tank —percent of population below the national poverty line that can afford to purchase a quality food basket—is intended to ensure a healthy diet is available to all. It specifically addresses the issue of finding equitable policy responses to the rise of nutrition-related chronic diseases. It reflects findings that 'healthy food baskets' tend to be difficult to afford for low-income families, although this is not always the case.[35] It also meets several of the other criteria spelled out above. It links to poverty, focuses on prevention, prompts multisectoral action, accounts for quality, and has political appeal as indicated by nutrition being a high priority at major global summits in 2012, 2013, and beyond. Progress on this indicator would also contribute to achieving MDG 1: eradicate extreme poverty and hunger by 2015.

It is fully appropriate to formally recognize that inability to purchase a quality diet is a form of impoverishment. The food and agriculture sectors are directly linked to NCDs as

they can promote a high quality and diverse diet, for example, by shifting subsidies to crops that would protect against NCDs. Specific types of foods can be defined that address the highest disease-attributable risk factor data in the Global Burden of Disease 2010 – such as nuts, fruits, and vegetables -- and country-specific foods can be defined based on dietary guidelines. Other sectors that could improve performance on this indicator could include education, trade, and industry.

This indicator relies on two key measures: cost of a food basket and poverty income. The affordability of healthy food will increase when food prices drop, or when incomes rise. The proposed indicator focuses on the poor, and will allow a country to monitor the accessibility of a healthy diet for those people with high risk of poor health and often the least access to good health care.

As with the first proposed indicator, construction of this indicator will require trial-and-error as country data related to food prices is not uniformly available, and poverty is defined differently across countries. Nonetheless, most governments already measure the cost of an average food basket and all countries define poverty measures.

For instance, the cost of feeding a family of five a nutritional diet is measured in Jamaica based on the minimum wage rather than official poverty line. That cost has dropped from 90 percent of the minimum wage in 2002 to 70 percent in 2008. Another example comes from preliminary work in New Delhi India where researchers found the cost of a healthy food basket represents 47%-69% of a minimum household income and 35%-55% of an average weekly income.[36] Finally, in Adelaide, Australia healthy food is significantly less affordable for low income families, with 28 percent of income going to the purchase of a healthy food basket, compared to 6-9 percent in high income families.[37]

Steps to Develop a Whole-of-Government Indicator for NCD Prevention

The first step in developing this indicator is to define a healthy food basket according to the nutritional and energy needs of the country's population, which vary from country to country. Several states of Australia have developed their own healthy food basket or multiple baskets to account for diversity in households. Variation captures the different nutritional needs for families of different size, age and gender of individuals. [38]

There are many resources available to define and measure a healthy diet, such as national dietary guidelines. The healthy-ness of specific products and brands has been measured by scientific groups such as the International Choices Program on country- and region-specific dietary needs. These can be used to assemble a locally-relevant and seasonally-adjustable basket of healthy foods. Once a healthy food basket has been created using nutritional guidelines and other resources, the total cost of the basket can be calculated, adjusted for inflation, and monitored over time.

The second component of this indicator is the national poverty income, or the household income that defines poverty. The definition of poverty income is often established with reference to the cost of food for a household. A majority of countries in the Americas Region use the 'Cost-of-Basic-Needs' (CBN) method to establish their national poverty line. The CBN consists of both a food and non-food component. [39] In these countries, calculation of the difference in costs between the standard food component and the "healthy food basket" can be used to indicate the affordability of a healthy diet.

Some countries in the Americas already have the information needed to assemble the proposed indicator. For instance, Canada's National Nutritious Food Basket (NNFB) takes both household consumption and national nutritional guidelines into consideration in the creation of its NNFB, and there is even a costing tool available at the Provincial level with which people can assess their own healthy food basket cost.[40]

As with the first proposed indicator, the target would be set by member countries. Short and medium term targets would allow each country to gradually improve performance on the indicator. Additional input on this indicator may be sought from Caribbean Food and Nutrition Institute and/or FAO.

Indicator #3: Percent of people experiencing catastrophic health spending due to an NCD

The third proposed indicator recommended by the Think Tank -- percent of people experiencing catastrophic health expenditure due to an NCD—reflects growing concerns with the impoverishing effects of NCDs on the most vulnerable members of the population. Out-of-pocket medical payments can lead to impoverishment in many countries, and studies have shown that high out-of-pocket medical costs can increase poverty rates.[41,42,43] In many instances, households borrow money from peers or relatives, or sell assets to pay for their healthcare; a quarter of individuals in low- and middle-income countries use this financing mechanism.[44]

Protection from financial risks associated with healthcare is one of the main objectives of health systems,[45] and the World Health Report 2000[46] included provision of financial risk protection (FRP) as one criterion of good performance for health systems. Without prepayment mechanisms, household medical expenditures can often be 'catastrophic',[47,48,49] – exceeding a certain fraction of total household expenditures. The reduction of these financial risks is one objective of health policy instruments such as universal public finance (UPF) – full public finance irrespective of provision.

In recognition of this relationship, WHO publishes data on out-of-pocket expenditures for health and is developing a proposed global indicator to measure catastrophic health care expenditure at the household level. The data show clearly that out-of-pocket expenditures are highest among the poor: 50 percent of all health expenditures in low-income countries compared to 13 percent in high income countries.[50]

A recent 12-country study in Latin America and the Caribbean indicates that the percent of households experiencing catastrophic health expenditures ranges from 1 to 25 percent.[51] Rural poor households, those without health insurance, and the elderly are most likely to suffer these costs. It is further recognized that expenses for treatment of chronic NCDs are more likely to cause impoverishment or financial distress than treatment for acute conditions due to the complexity, longevity, and technologically demanding nature of chronic NCD care.

The challenge of this proposed indicator is that national level data do not yet exist on what kind of health expenditure causes catastrophic costs, although some data from across the Americas shows that expenses for NCD care and treatment are largely responsible. Disease-specific health expenditure data is not routinely collected by

national health accounts although scattered survey data have shown NCDs to be a major component in out-of-pocket and catastrophic health spending.[52]

The Think Tank experts recommend that selected countries in the region conduct health expenditure surveys that allow the attribution of catastrophic health costs to specific health conditions as a way to test the potential broader use of this indicator. Mexico is potentially a country that could pilot this indicator.[53]

Regional Epidemiological Targets and Indicators

The draft Strategy and Plan of Action for the Prevention and Control of Non-communicable Diseases in the Americas, 2012-2025 currently assumes the global indicators and targets set by WHO and proposes additional indicators and targets where the region already has baseline data (e.g. for adolescents, alcohol, access to essential medicines). PAHO would like to establish indicators and targets that are appropriate for the local situation of the region.

The expert group proposes that regional epidemiological targets be established based on the progress made in the past two decades by the top 10 percent of countries on NCD prevention and control. This would follow the same process that was used to set global NCD targets.

The global targets were established following a scientific review of the current situation and historical trends in the proposed indicators. Where possible, targets were set based on past trends and performance of the progress made in the past two decades by the top 10 percent of countries[54] Those in the top 10 percent represented a diverse range of countries, and it was anticipated that with increased global attention to NDCs, other countries would be able to match that progress, with appropriate interventions. The aim of the goals is to show what could be possible, and encourage all countries to meet those targets through effective policies and programs.

The draft Strategy and Plan of Action for the Prevention and Control of Non-communicable Diseases in the Americas, 2012-2025 includes the following goal and indicators:

Goal: to reduce avoidable mortality and morbidity from NCDs

Indicators[ii]:

- at least a 25% relative reduction in overall mortality from CVD, cancer, diabetes, or chronic respiratory disease *[iii]
- 25% relative reduction in prevalence of raised blood pressure, among persons aged 25+ years *
- 10% relative reduction in prevalence of diabetes, among persons 25+ years *
- no increase in adult obesity prevalence*, and 2% relative reduction in adolescents and children

Mortality

[ii] All indicators in this plan presume the baseline to be from 2010 and the target year to be 2020

[iii] *Proposed by WHO in the Global Monitoring Framework and Targets for 2025 on the prevention and control of NCDs; subject to further modification following WHA 2012

The expert group considered that the region of the Americas would be able to meet the 25% relative reduction in overall mortality from CVD, cancer, diabetes, or chronic respiratory disease proposed by WHO , as NCD mortality in the Americas is on the decline. The indicator, as stated in the WHO document, should address age-adjusted premature mortality (NCD deaths between the ages of 30 and 69). Disaggregating by sex, and where available by education, would also provide additional information related to equity.

The expert group considered whether specific mortality targets should be established for each of the four major NCDs (cardiovascular diseases, cancer, diabetes, and chronic respiratory diseases). The group reviewed trends in premature mortality due to specific NCDs (Figure 1). Data were obtained from the Mortality Information System (updated on May 2011), operated by the Health Analysis and Information Project/Health Surveillance, Disease Prevention and Control/Pan American Health Organization (HA/HSD/PAHO). These data were corrected for under-reporting and ill-defined deaths according to published methodology.[55] Data from 43 countries are included in this analysis.

All deaths were extracted where the underlying cause of mortality was coded by the *International Statistical Classification of Diseases and Related Health Problems, Tenth Revision* (ICD-10) for the following four groups from 2000 to the latest available year: 1) cardiovascular diseases: I00-I99; 2) malignant neoplasm (cancers): C00-C97; 3) diabetes mellitus: E10-E14; and 4) chronic respiratory diseases: J30-J98. Premature mortality was defined as death occurring among people aged 30-69 years old, considering the life expectancy in the countries of the Americas[56] and the WHO proposal[57]. Age-adjusted rates were calculated using the WHO Standard Population[58] (direct standardization).

In 2007 in the Americas, NCDs caused about 1.3 million deaths among people aged 30-69 years, accounting for 36% of all NCD deaths (40% among males and 31% among females). Cardiovascular diseases accounted for 43%, malignant neoplasm 41%, diabetes mellitus 9%, and chronic respiratory diseases 7%. Of note, these proportions varied by sex: cardiovascular diseases accounted for 47% of all NCD deaths among males, and malignant neoplasm accounted for 47% among females.

The trend analysis showed that in the Americas the NCD age-adjusted rates per 100,000 dropped from 378.8 in 2000 to 333.5 in 2007, a decrease of 12.0% (12% among both males and females). It has been a linear decrease (statistically significant). The rates were higher among males, especially for cardiovascular diseases and chronic respiratory diseases (Figure 1). Cardiovascular diseases showed the highest decreases (17% overall, 18% among females and 16% among males), followed by chronic respiratory diseases (13% overall, 12% among females and 14% among males) and malignant neoplasm (9% overall, 7% among females and 10% among males). Diabetes mortality rates were stable overall, decreasing 5% among females and increasing 5% among males.

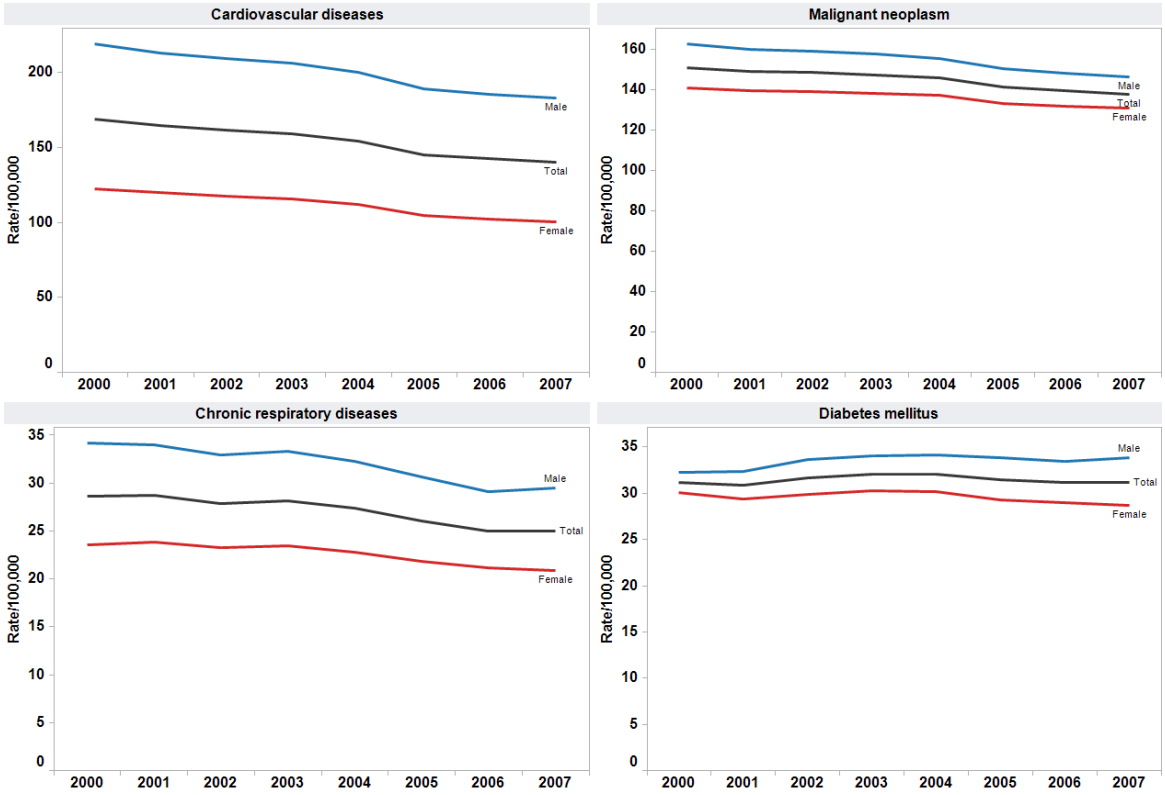
It is important to consider the performance of the three most populous countries in the region, as their rates strongly influence the whole region. Brazil, Mexico, and the US accounted for 74% of all premature deaths due to NCDs in the Americas. From 2000 to 2009, NCD mortality decreased by 17% in the US, 13% in Brazil, and 3% in Mexico.

Highlights from this analysis and other results (not shown):

- Men are at higher risk of premature death due to NCDs compared to women.
- Malignant neoplasm and cardiovascular diseases account for similar proportions of premature NCD deaths, but with high inequalities between sexes in the case of CVD.
- About 44% of all premature NCD deaths in the Americas in 2007 occurred in high-income countries (using the World Bank classification[59]). This percentage is higher than the global level.[60]
- The target reduction proposed by WHO is feasible and appropriate for the whole region of Americas and some countries. This reduction is mainly related to the reduction observed in high-income countries in the region, which also have more favorable socio-economic indicators.[61]
- Some countries have not reached the WHO proposed reduction, and in some countries rates have remained stable.

After a review of the data, the Expert group recommends developing indicators for each of the disease groups but does not propose targets for each of them.

Figure 1: Trends in premature mortality due to non-communicable diseases by group of diseases. Americas, 2000-2007



Disability:

The expert group discussed the need to specifically include an indicator for disability in order to focus attention on significant health burdens that are not well measured through

mortality. The chronic disability experienced from diabetes is an example. The panel concluded that more systematic data collection at the country level is needed in order to include disability, and recommends that countries collect data on disability related to NCDs.

Prevalence of Raised Blood Pressure and Diabetes

Similar to the targets for mortality reductions, the targets for prevalence of raised blood pressure and diabetes may also be established based on the progress in reducing prevalence of raised blood pressure and diabetes of the top 10 percent of countries in the Region—or not showing an increase in the case of diabetes. The Expert group has proposed to set a target for elevated blood pressure of 20% relative reduction in prevalence of raised blood pressure among persons aged 25+ years, and a target of maintaining the current level of prevalence of diabetes among persons 25+ years. However, the Group noted that there is a need for WHO to provide a clear definition of how to measure prevalence of elevated blood pressure, as well as clarify the recommendation of addressing hypertension through elevated blood pressure but not using elevated blood glucose for diabetes.

Hypertension is a key issue in the region, and it is important to note that prevalence does not measure successful treatment. Indicators that measure successful treatment include:

- Proportion of persons with hypertension who are aware of their condition and are on treatment and under control
- Percent of adults with hypertension who are receiving treatment according to national guidelines

Both hypertension and diabetes should have indicators that measure effective treatment, not simply reductions in prevalence. Additional input from other experts (e.g. cardiologists) may be needed to determine appropriate “SMART” indicator(s).

The inclusion of the following indicator related to population based prevention of hypertension is also proposed, based on the Policy Statement: Preventing Cardiovascular Disease in the Americas by Reducing Dietary Salt Intake Population-Wide:

- A gradual and sustained drop in dietary salt intake to reach national targets or in their absence, the internationally recommended target of less than 5g/day/person by 2020.[62]

Prevalence of Obesity

Once again, the targets for obesity prevalence may be set based on the performance of the top 10 percent of countries in reducing obesity—or at least those not showing any increase in obesity prevalence. After reviewing the available data for the Americas the Expert group considers that the goal of maintaining the prevalence on adult obesity at the 2010 level is sufficiently ambitious for the Region.

New Indicators for Youth

The expert group proposes the inclusion of specific indicators for youth. The current global indicator on obesity covers adolescents and children. However, the possibility of including additional indicators on tobacco or alcohol was also discussed. This conclusion is supported by the 2012 Oakland Conference on NCDs in Children and Adolescents which affirmed the importance of addressing the needs of younger populations in the fight against NCDs. The outcome document from the conference states that, "Children and adolescents are central to a life course approach in preventing NCDs… Unhealthy and risky behaviors adopted in childhood often carry through into adulthood. Most NCDs of adulthood can be prevented through behavior change and health promoting programs that ideally start in the earliest years of life." The outcome statement calls for the need to "Ensure that the needs and requirements of children and adolescents are explicitly considered and embedded in the formulation of policies, goals, targets and indicators related to NCDs and adopted by the international community."[63]

Some of the important ways that NCD risks to children and adolescents may be measured include:

- Delaying the age at onset of smoking
- Reducing the prevalence of tobacco use (to zero) – data may not be available for those age 12 and under
- Reducing the prevalence of alcohol consumption (those that have consumed alcohol in the last month)
- Composite indicator of healthy people with several risk/protective factors (percent of people with # of risk factors)

The Expert group consensus was that addressing youth risk behaviors is extremely important. Given the timeline of Strategy revision, the Group recommends that countries track adolescent and youth individual risk behaviors and plan interventions. PAHO may further work with researchers to address this issue.

Issues raised for future consideration
The Think Tank group identified several issues to be considered by PAHO and member countries in the future, as NCD targets and indicators are refined. They included:

- How to account for significant and particular barriers to progress, such as on-going conflict or natural disasters?
- Should there be exceptions or different standards for countries that face a double burden of disease, which may limit their ability to make as much progress on NCD prevention and control? Examples of such countries include Haiti, Bolivia, Nicaragua, Honduras, and Guyana. Note that mortality in Guyana is now overwhelmingly dominated by NCDs and injuries.
- How will risk factor targets relate to mortality targets, and how to account for the time lag between risk exposures and mortality?

Making Progress on NCDs

Many countries in the region of the Americas have been making progress by recognizing the importance of NCDs to their overall health and development plans. A few examples

are Jamaica, Brazil, and Chile. Jamaica has included NCDs in its national development plan, Brazil has a strategic action plan on NCDs, and Chile has developed a composite indicator for "healthy people" in its national health plan. Brief descriptions of the advances in NCD prevention and control made by each country follows.

Vision 2030 Jamaica: National Development Plan

Jamaica has incorporated NCDs into the National Development Plan Vision 2030 as well as the National Health Policy 2012-2015 and Ministry of Health Strategic Plan. Vision 2030 acknowledges that, "In the 21st century, the main causes of morbidity and mortality are chronic non-communicable lifestyle diseases, injuries and mental illness." It also states, "Over the last three decades, Jamaica has moved increasingly toward a higher fat, more refined diet, and these dietary changes have contributed to obesity and nutrition-related chronic diseases. Despite progress, we have not fully achieved the objectives of the Food and Nutrition Policy to provide adequate food and nutrition for all, due in part to issues of affordability and poor food choices. Nutrition is particularly important to the health of certain population groups, including children, adolescents, pregnant and lactating women, and the elderly. Our country remains at risk with respect to the supply of adequate nutrition to vulnerable segments of our population, and therefore the long-term health of the population is at risk."[64]

Strategic Action Plan to Tackle NCDs in Brazil, 2011-2022

Brazil has developed a national Strategic Action Plan to Tackle NCDs with a very comprehensive scope. The plan includes targets for premature NCD mortality, preventive care and treatment, as well as risk factors. A list of the targets is included below:

- To reduce premature mortality rate (< 70 years) caused by NCDs at 2% a year
- To increase to 95% coverage of preventive examination of cervical cancer (25-59 years)
- To increase to 95% coverage of mammography in women between 50-69 years
- To treat 100% of women diagnosed with precursor lesions of cancer
- To reduce obesity prevalence in children and teenagers
- To stop the increase of obesity in adults
- To reduce smoking prevalence in adults to 9% in 2022
- To reduce binge drinking prevalence to 12% in 2022
- To increase the prevalence of leisure time physical activity to 22% in 2022
- To increase fruit and vegetable consumption to 24% in 2022
- To reduce the average salt intake to achieve the goal of 5g/day

Chilean Indicator of Healthy Factors

Chile recently incorporated NCDs into its overall national health plan, and developed a composite indicator providing an innovative measure of "healthy people". The composite indicator is inspired by a metric developed by the American Heart Association after a comprehensive review of the scientific evidence related to risk factor interaction.[65] Research from the United Kingdom provides further evidences that a combination of healthy behaviors can improve health outcomes. The results of the EPIC-Norfolk Prospective Population Study indicate that people who don't smoke, are physically active, drink in moderation, and have high intake of fruits and vegetables live an average

of 14 years longer than those who do not practice these behaviors.[66] Recent studies in other countries also rely on such combination indicators of "healthy living" to define people at high risk of NCDs.[67]

The Chilean National Plan of Health 2011-2020[68] includes as one of its objectives: Develop healthy lifestyles to reduce risk factors and the burden of disease. The first target of this strategic objective is to increase from 35.6 to 42.7 the percent of the population (older than 15 years of age) who have five out of eight 'healthy factors'.

The eight 'healthy factors' are:

1. Do not smoke (currently: last month)
2. BMI < 25 Kg/mt^2
3. Blood pressure < 120/80 mmHg (mean of three measurements)
4. Fast total cholesterol < 200 mg/dl
5. Fast glycemia < 100 mg/dl
6. Regular physical activity (>30 min, at least 3 times a week, out of work)
7. ≥ 5 daily portions of fruits and/or vegetables
8. Alcohol consumption low risk (AUDIT ≥ 8: includes abstemious)

The main benefits of the indicator include:

- An integrative approach that focuses on the absence of different risk factors
- A focus on the person as a whole rather than the risk factors themselves
- Political appeal and engagement
- An impetus for people to count how many 'healthy factors' they have
- Succinctness: the use of one indicator for eight risk factors

The main limitations of the indicator are:

- All risk factors are weighted equally
- A national survey with intensive measurements is required, and such surveys are usually implemented every few years, e.g. every 5 years, so the Ministry of Health in Chile is evaluating an alternative using continuous measurements

The Think Tank recommends further discussion among member countries of the feasibility and benefits of adopting a combination indicators across countries. In the interim, other PAHO countries are encouraged to assess their epidemiological conditions and potential population risk reduction from using a combination indicator. Background data on "healthy factors" contributing to the indicator in Chile is in Appendix 1.

Conclusions and Recommendations

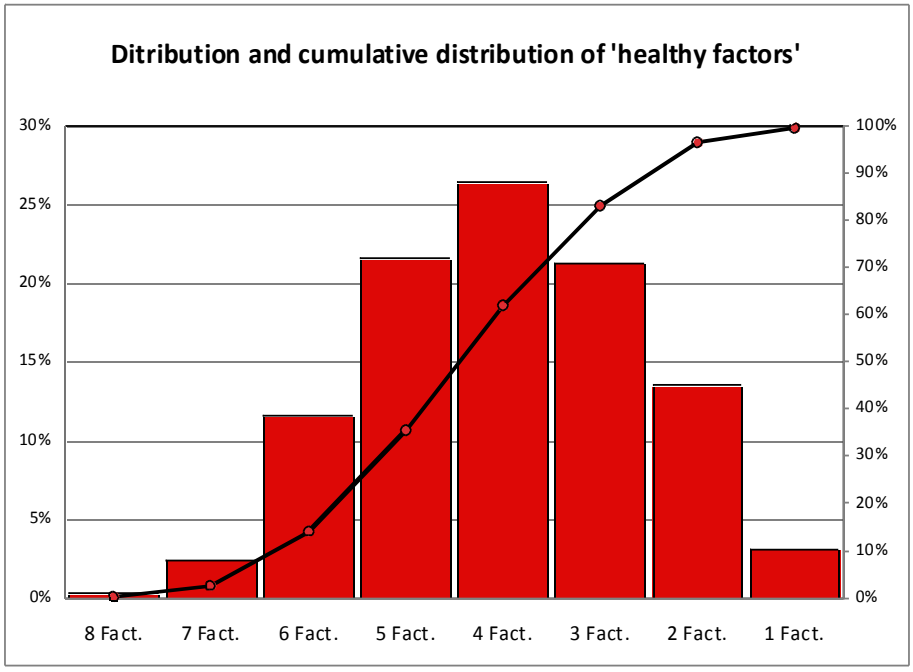
An expert Think Tank group was convened by PAHO to consider indicators and targets as input to the Regional NCD Strategy. The Think Tank members discussed the need to align closely with global indicators and targets under development by WHO, while observing specific Regional conditions. It also recognized the heterogeneity among countries of the Region in terms of their disease and risk factor conditions, as well as capacity to measure and monitor population level variables. Above all, the Think Tank noted the centrality of NCDs to the development goals that countries of the Region have committed to, including the Millennium Development Goals.

In light of those observations, the Think Tank recommends that countries in the Region consider and potentially adopt a small number of new NCD Indicators of Development that will allow countries to track and make progress on the prevention and control of NCDs with regard to equity and a multi-sectoral approach. Specifically, the Think Tank recommends that countries develop the means and data to measure:

- Percent of GDP invested by the public sector in NCD prevention
- Percent of population below the national poverty line that can afford to purchase a quality food basket
- Percent of households experiencing catastrophic health spending due to an NCD

Regarding epidemiological goals and indicators, the Think Tank supports the use of the WHO goal to reduce avoidable NCD mortality by 25 percent. Further, the Think Tank recommends the tracking disease-specific mortality for the four major NCDs. Regarding the challenging but important area of NCD morbidity, the Think Tank proposes that countries further develop capacity to collect morbidity data for eventual inclusion of those data in a more comprehensive monitoring system. The Think Tank proposes additional indicators of youth and adolescent NCD risks. It recommends several risk areas for consideration which PAHO will continue to explore and develop for possible recommendation. Finally, the Think Tank identified several additional considerations of country context that affect the ability of countries to make progress on NCD prevention and control, and also provided examples of countries in the Region that are making progress with different approaches to NCD priority-setting.

Appendix 1: Healthy Factors Used for Combination Risk Indicator in Chile



Source: National Plan of Health 2011-2020 estimations using the database of the National Health Survey 2009-2010.

Number of 'Healthy Factors'	Number of individuals	%	Cumulative %	LIC 95%	UIC 95%
8 Factors	21.794	0,3%	0,3%	0,3%	0,3%
7 Factors	179.843	2,4%	2,7%	2,7%	2,7%
6 Factors	870.667	11,5%	14,2%	14,2%	14,2%
5 Factors	1.619.062	21,4%	35,6%	35,6%	35,6%
4 Factors	1.984.523	26,3%	61,9%	61,8%	61,9%
3 Factors	1.599.131	21,2%	83,0%	83,0%	83,0%
2 Factors	1.015.033	13,4%	96,5%	96,4%	96,5%
1 Factor	234.166	3,1%	99,6%	99,6%	99,6%

Note: The estimation used a subsample representative of 7.557.911 people older than 15 years with all the measures available.

'Healthy Factors'	Number of individuals	Population	Prevalence	LIC 95%	UIC 95%
Do not smoke	7.618.493	13.024.236	58,5%	58,5%	58,5%
BMI < 25	4.577.592	12.870.797	35,6%	35,5%	35,6%
Regular physical activity	1.437.216	13.025.152	11,0%	11,0%	11,1%
Consumption of fruits ad/or Vegetables > 4 portions	2.049.218	13.014.173	15,7%	15,7%	15,8%
Alcohol consumption low risk	11.340.537	13.055.340	86,9%	86,8%	86,9%
Blood Pressure < 120/80 mmgHg	5.646.127	12.962.462	43,6%	43,5%	43,6%
Cholesterol <200 mg%	4.690.074	7.557.911	62,1%	62,0%	62,1%
Glicemia <100 mg%	10.692.170	12.724.071	84,0%	84,0%	84,1%

Note: for economic reasons cholesterol was measured in a subsample of the original sample (equivalent to 7.557.911).

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