

# **Chronic diseases in Latin America: Problems and Solutions for health systems**

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## **Introduction**

The burden of disease in Latin American countries is significantly different from other regions and other low and middle-income countries in particular. In Latin American countries (LAC) non-communicable diseases are 13-16 percentage points higher than in other regions, accounting for 66.7 percent of deaths and 65.0 percent of DALYs.

Traditionally, chronic diseases have been addressed mainly by curative means in the region, and only lately - limited mainly to middle income countries - preventive and educational measures have been taken as far as non-communicable diseases and injuries are concerned. The cost of treatment of those chronic diseases tends to be excessively high if the treatment starts only at secondary and tertiary levels of care, which demand hospitalization on both cases, and, in the later, implies the more intensive use of advanced technologies and of costly medicines. Therefore, the increasing burden of CVD, cancer, diabetes, respiratory diseases and injuries in Latin America, as forecasted for the next decades, places cost-related issues as a first order (though correlated) problem associated with health care services. Limited cost effectiveness is a potential barrier to population access to more specialized healthcare services. They can also produce varied and correlated failures in the quality of services delivered to the population.

It was mainly in the 1930s-1940s that Latin American healthcare systems were or either constructed or reached a more final step in their formation. Their constructions constituted political responses to the increase of population in the cities, caused by industrialization and economic development. Though most LAC were influenced mostly by European welfare concepts related to healthcare, healthcare systems presented segmented structures since the beginning. This means that only the employed part of the population had access to healthcare services. As a result of the health reforms carried out in the 1980s and 1990s, there was an increase of population access to healthcare services in all countries. This increase, however, was significantly higher in middle income countries. Segmentation continues to be one of the characteristic of healthcare systems in most of LAC.

Latin American health systems have also been characterized by the fragmentation of healthcare services, delivered by separated units with little integration with other units and levels of care within the system. For decades services were mainly provided by hospitals, and healthcare tended to be understood more as curative than preventive measure. In countries such as Brazil and Mexico and Chile, this situation changed enormously after the reforms. Brazil, for instance, is currently considered a paradigmatic

case of late construction of basic primary care units and agents in the 1980s and 1990s, giving access to basic care to almost 90% of the population<sup>1</sup>.

Given the present state of the burden of morbidity and mortality, as discussed earlier in this report, changes in LAC healthcare systems will consequently require the construction of both promotion (education) and prevention measures, rather than just curative care. As already emphasized, a critical strategy for the prevention and treatment of chronic diseases is to reorient primary care systems to more effectively deliver the care required for chronic disease management.

This article will present problems and solutions related to LAC healthcare systems, as far as those top five causes of morbidity and mortality are concerned. In the first part, I will focus on four main groups of problems that, in diverse and co-related ways, will have to be coped with by health systems. Those groups of problems will be described in terms of 1) cost-related issues, 2) access to services, 3) quality of services, and 4) knowledge and accountability related issues. In the second part, we will suggest how different actors within the healthcare systems, or related to them, could work together in the next years so as to combat those challenges. The focus would be to improve efficiency, access, and quality within the healthcare systems.

## **1. Problems**

### **1.1. Cost related issues**

#### **Economic cost:**

A study made in 2008 (2) shows that cardiovascular disease (CVD) has a huge economic impact on individuals, households, and countries. The effects are particularly marked in LAC, where CVD more frequently affects those of working age. Recent estimates of foregone gross domestic product (GDP) associated with CVD and diabetes for 23 low and middle income countries highlight how such illnesses can significantly impair economic growth in the next years (2). A projection shows that the loss in GDP in Brazil as a consequence of CVD was 0.33 billions USD in 2006 and can reach 0.5 billions USD in 2015. This projection will account for 186% in Mexico and 125% in Argentina. It is forecasted that if there is no change in the disease trend, the annual forgone GDP in Brazil will increase to 150% of current levels by 2015. Over this 10-years-period, this will corresponded to a cumulative loss of 4.18 Billions USD in Brazil, of 7.14 Billions USD in Mexico and of 1.1 billions USD in Argentina. In 2005, WHO proposed a global goal of 2% annual reduction in cardiovascular death rates. If this goal is achieved, it may avert the loss of 0.43 billions USD in Brazil, 0.75 Billions USD in Mexico and 0.13 billions USD in Argentina over the next decades.

As highlighted by the DCPD2, studies showed that the costs of intimate partner violence are considerably higher in low and middle income countries than in high-income countries. Morrison and Orlando (1999) calculate the costs of domestic violence against

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<sup>1</sup> The Cuban case is very different from other LAC. Cuban health system is 100% public and has been always focused on primary health. See details about access to services in the section 1.2 of this work.

women, by means of using only the lost productive capacity of the women. They extrapolate total costs of US\$1.73 billion in Chile and US\$32.7 million in Nicaragua. Buvinic and Morrison (1999) calculate that the direct medical costs plus lost productivity, attributed to violence against women, are equivalent to 2.0 percent of GDP in Chile and 1.6 percent of GDP in Nicaragua (9).

**Cost of the treatment:**

In the case of diabetes, according to an evaluation made in LAC in 2003 (7), the overall contribution of indirect costs was 82% and of direct costs was 18%. The average per capita expenditure on health (latest available figures) in the region was US\$ 220, while the average cost of care per person with diabetes was US\$ 703; it was lowest in Haiti (US\$ 24) and highest in Argentina (US\$ 882). In general, the costs of caring for diabetes were more than 300% higher than the average health expenditures in Latin America and the Caribbean — ranging from 68% in Argentina to 2517% in Haiti (7).

**Cost of specialized interventions:**

The publication “Disease Control priorities in Developing Countries, 2<sup>nd</sup> edition” (DCPDC2, Chapter 33) (1) presents an evaluation of four incremental medical strategies for the treatment of Acute Myocardial Infarction (AMI). To evaluate the best medical intervention, they used incremental cost-effectiveness analysis to examine the possible combinations of the four standard medical therapies (aspirin, betablockers, statins, and ACE inhibitors) (4).

In a setting where hospitals are available, a combination of aspirin and atenolol was cost saving in Latin America. When they assumed that where limited hospital access the combination of aspirin and atenolol US\$545 per DALY in Latin America and the Caribbean. The addition of enalapril increased the range of ICER (incremental cost-effectiveness) to US\$783 per DALY to US\$1,111 per DALY, and the addition of lovastatin increased them to US\$2,497 (4).

Results show the use of the four-drug combination medical therapy alone would prevent some 1,913 Ischemic heart Disease deaths, about 4,040 myocardial infarctions, and approximately 118 strokes per million persons treated in LAC (4).

**High cost of late interventions (exacerbation of acute care):**

An evaluation demonstrates that the cost of chronic obstructive pulmonary disease (COPD) (3) is correlated with the severity of the disease. Patients from the more severe forms can require as much as double that expenditure, and an early diagnosis is therefore vital. Miravittles highlights that the cost attributed to treatment failure represented 28 USD in Colombia (representing 28.6% of total costs due to exacerbations), 136 USD in Venezuela (48% of total costs due to exacerbations), 102 in Brazil USD (representing 48.3% of total costs). Acute exacerbations and, in particular, hospitalization are the most important factors in increasing direct health costs due to COPD. The highest percentage of costs attributable to treatment failure was in Ecuador, where it represented 62.8% of total costs due to acute exacerbations (3). This evaluation evidences that the most effective strategy is earlier detection of the disease, in concert with anti-smoking campaigns.

**Cost-effectiveness of regular screenings:**

A research focusing on Cancer evaluates the potential cost-effectiveness of cervical cancer screening strategies in middle income countries, using computer-based simulation models calibrated to age-specific cervical cancer incidence and mortality in each country, along with published data. The available data for Brazil and other countries included show that cervical cancer screening conducted once, twice, or three times in a lifetime can have a significant effect on the lifetime risk of cervical cancer compared with no screening (5).

#### **Cost effectiveness of law enforcements:**

Costs related to injuries could also be avoided by the means of adopting preventive measures. Costs per deaths averted (DAILY) of an intervention to improve Traffic Enforcement (DCPD2, Chapter 39) (8) are higher in LAC than in other regions of the world, even higher than in Europe and Central Asia. Experiences prove that enforcement interventions are considered very effective and would therefore save society more than it costs. The cost of Traffic enforcement per DAILY represents 268 USD in LAC, and 217 USD in Europe and Central Asia. (8).

## **1.2. Access to health care services and medicine**

According to the publication Health of Americas, in LAC an estimated 20–25% of the population (close to 200 million people) has no regular and timely access to the healthcare system. The main causes of exclusion in health care vary from country to country but in general are related to poverty, rural location, informal sector employment, unemployment, and factors linked to the performance, structure, and organization of health systems.

#### **Access to sub-systems of health care**

The large percentage of Latin American countries healthcare systems are divided into three sub-systems, characterized by different types of providers. Those sub-systems are: the public system (opened to the non-insured population), the social security healthcare system and the private system. As examples, in Ecuador, Mexico and Paraguay, subsequently, 28%, 41.8% and 35-42% of coverage of healthcare takes place at the Public system, held by national governments and states (and municipalities); while 21%, 45.3% (IMSS – Mexican Institute of Social Security) and 18.4% are held by social security schemes of health care (11). The percentage of coverage represented by the private sector is 12% in Ecuador, 2.8% in Mexico and 7% in Paraguay. In Paraguay, it is estimated that 38% of the population has no access at all to healthcare services, and 81.1% has no public or no private health insurance. Ecuador, together with El Salvador and Bermuda, are differentiated from other countries in that they are predominantly private, market oriented systems.

#### **Availability of Healthcare providers**

Access to preventive measures and/or treatment of chronic diseases, or even gaps in the treatment, can be partially explained by the limited availability of health care providers (personnel) in LAC. For example, in Nicaragua and Colombia in 2002, there were 4 and 14 physicians per 10,000 population, respectively, whereas in Argentina and Cuba there

were 30 and 59 per 10,000 population (12). This disparity reflects a broader imbalance in the availability of key health care providers (doctors, nurses, and midwives) such that those countries with the lowest relative need have the highest numbers. Within countries, the distribution of health care workers also varies by locality: there is typically a higher density of health workers in urban areas because of better standards of living and higher salaries compared with rural regions.

Countries with low availability of health workers in LAC do not have the necessary personnel to achieve not even minimum levels of basic health services coverage. On the other hand, countries with medium and high density of health personnel are capable of delivering care and developing preventive measures related to chronic diseases. According to "Health in the Americas" (11), the average density of health professionals per person in the groups of countries with low, medium, and high indexes is 18.4, 27.7, and 122.6 (human resources per 10,000 population), respectively.

The health personnel rate of several of the countries in the group with lowest availability is significantly below the minimum density required to achieve basic healthcare coverage. Among those are: Haiti, Paraguay, Bolivia, Guyana, Honduras, and Guatemala. To achieve the minimum rate, the countries in question will require 124,000 physicians and nurses - with Haiti needing 18,000, Guatemala 14,500, Bolivia 12,000, Paraguay 9,500, and Honduras 8,500 (11). Countries with high levels of physicians, nursing and midwifery density are Cuba, Uruguay, Argentina, Bahamas, Brazil, Barbados, Guatemala, Panama, Dominican Republic, Venezuela and Mexico (12).

### **Availability of medicine**

Insufficient access to chronic diseases treatment in LAC could also be partially explained by budgetary constraints. In the case of CVD, secondary prevention has contributed substantially to the dramatic decline in CVD mortality rates in high-income countries such as the U.S.. Despite the strength of scientific and economic evidence about the benefits of aspirin, blood pressure-lowering drugs, and statins in secondary prevention, such treatments are underused in most low and middle income countries. For example, a WHO study conducted in 10 developing countries indicated that fewer than one-fifth of all patients with a previous history of CVD were on statins in low and middle income countries, including LAC(2). Although such drugs are more often available through the private sector, their cost is generally many times higher, in part because of the greater availability of drugs manufactured by international pharmaceutical companies rather than drugs manufactured by generic producers (2).

As far as the treatment of cancer is concerned, the high cost of opioid creates inequitable access to pain management among patients. In Argentina for example, where the average income is US\$300/month, the cost of commercial sustained release morphine treatment is US\$570/month. Although 70% of patients belong to insurance companies (mutuales) which reimburse between 40% and 60% of the costs of health care, the costs of analgesics are not systematically reimbursed as are the costs of curative treatments, such as radiation or chemotherapy. In Mexico, only wealthy patients can afford morphine sulfate (the retail cost to the general public of 180 mg of oral morphine is US\$2.00); poor patients with cancer pain get demerol, nalbupine or dextropropoxyphene. In the

Dominican Republic, clinicians report that some patients do not take their analgesic medication by the clock, in an attempt to "save" medications because of their cost (6).

The high cost of asthma medication is also considered a major barrier to patient access to treatment of the disease in low and middle income countries. A study conducted in Latin American countries, the Asthma Insights and Reality in Latin America (AIRLA) survey (13), has shown that only 6% of asthmatics use inhaled steroids. In the city of Curitiba, in Brazil, there was a radical change in these numbers after implementing a local asthma programme. Aggressive health policies, training medical teams and, in particular, promoting free access to anti-asthma medication increased the number of patients with persistent asthma receiving inhaled steroids from 28% (before the year 2000) to 82% (10).

### **1.3. Quality**

The reasons for these treatment gaps associated with non-communicable diseases and injuries in LAC are complex. They are likely to include incomplete use of guidelines by physicians and other health care workers, low treatment adherence in part because of the cost of therapy, and the stigma associated with taking medications over the long term in some settings (2). Studies examining the reasons for poor implementation of guidelines suggest numerous barriers at the health system, doctor and patient level.

In the case of treatments for cancer, inadequate facilities to examine and treat patients is a problem common to clinicians in many settings and affect inpatients, outpatients, as well as the care of patients at home. In Quito, Ecuador, home to 2 million people, the main cancer hospital only has 50 beds available for 200 cancer patients/year. In Costa Rica, the lack of physical space forces physicians to examine their patients in small rooms not intended for patient care (6). In Guadalajara, Mexico, a city of 6 million, many patients do not receive the care they deserve, since the main palliative care unit can only accommodate 180 cancer patients per year. In the Dominican Republic, most cancer patients reside in large hospital wards where space and resources are scarce. In part because of the poverty of living conditions of the patient population, the infrastructure for homecare does not exist at this time making it impossible to follow-up patients once they return home (6). Clearly, the lack of proper infrastructure implies not only inadequate coverage of the patient population, but poor management of the quality of services as well.

Additionally, some essential preventive medicines, such as generic diuretics, angiotensin-converting enzyme inhibitors, and statins, in the case of CVD, are not readily available through the public sector in many developing countries (2), imposing limits to both the access and quality of healthcare services. Results are not the same they would be if those medicines were available. Treatment tends to be longer, some time interrupted, and do not generate the quality promised by national health plans. The availability of medication and prescription of more advanced therapies could result in better qualities in the treatment of chronic diseases in LAC (10) (13).

In spite of recent regional or local initiatives in professional education, many experts identified lack of training in pain management and palliative care as a major barrier to

adequate patient care associated to cancer. The cost of obtaining professional education is a primary obstacle for physicians and nurses. In Brazil, for instance, given the size of the country, it is costly for Brazilian physicians who have been trained to travel from South to North to teach others. Physicians in Northern Brazil prefer to spend their limited resources to learn about cancer therapies rather than palliative care. Academic training in pain management and/or palliative care is not available in Ecuador or the Dominican Republic. Obtaining funds to train abroad is an economic challenge for clinicians who cannot support themselves from the income from palliative care and need the income from private practice to live. This same problem also happens in the case of transference of knowledge from other specialized medical fields to clinical physicians; such as cardiology, pulmonology and endocrinology.

Inadequate education among clinicians and drug regulators can lead to misunderstandings about how a drug acts in the body in relation to pain. As in other parts of the world, inadequate information about the use of analgesic drugs can lead to inappropriate prescribing. In the last two years, however, several Latin American programs have produced educational resources on symptom control and palliative care, and are making them available free of charge. These include translations into Spanish of WHO and other internationally recognized guidelines and of articles from foreign medical journals (6).

The very first evaluation of the quality of advanced care in five LAC (Argentina, Brazil, Cuba, Mexico and Peru) (14) indicated that the top three barriers to optimal cancer care, were 1) palliative care not being a priority in health care policy formulation (72%), 2) palliative care not being a priority in health care education (68%), and 3) fear of “opioids” analgesic being diverted to the illegal market (50%). The ranking order of the policy barriers changed between the countries. Only 36% of the providers from Cuba asserted that “palliative care is not a priority in the formulation of health care policy” as a top barrier, while 72% (Brazil), 76% (Mexico), 80% (Peru) and 87% (Argentina) of interviewers from the other four countries identified this item as a major barrier. While 48% of Cuban providers claimed that “palliative care is not a priority in health care education” and as a principal barrier, in the other four countries 57% (Peru), 61% (Mexico), 75% (Brazil) and 76% (Argentina) of providers appointed this item as a major barrier. This same study attributed a mean score to the quality of care in those five countries, which varies from 1 to 5. Cuba received 3.41, Peru 2.86, Argentina 2.81, Mexico 2.61 and Brazil 2.56 (14).

Barriers to both access and quality of healthcare associated with non-communicable diseases – and mainly with CVD, cancer, diabetes and COPD-, is probably the main cause of the increase of demand to services at private markets in some LAC. Both private health insurance and pre-paid health plans are becoming important mechanisms for financing private health costs. This market is extremely segmented, offering products/services associated to different types and levels of care. The rapid increase in resources spent on private health insurance and pre-paid health plans is the most important factor in recent trends in national health expenditure and has become a major factor shaping the health care markets of the countries. This trend poses a major public policy challenge. Legislations must be designed not only to ensure efficiency in the development of the health insurance and pre-paid health plan markets, but also to combat inequalities that exist in LAC in access to and quality of health care.

#### **1.4. Knowledge and accountability related issues**

Over the past 20 years, new investments in research have generated remarkable improvements in developed countries health systems and in global health in especial. A longer-term perspective of global health problems, which recognizes more emphatically the increasing importance of health problems associated with chronic diseases and injuries, is still in its very initial stage. Given the present burden of chronic diseases in LAC and in other low and middle income countries, it is no longer true that researches on cardiovascular disease, diabetes, cancer and respiratory diseases - which comprise the top five causes of mortality in LAC - are no longer relevant to developing countries (16). These constitute the major challenges for Research and Development (R&D).

##### **Two main challenges for R&D**

The first important emerging R&D challenge related to the burden of CVD, cancer, diabetes, respiratory diseases and injuries in Latin American concerns the issue of transference of knowledge. This concept entails questions on how to bring knowledge and programs from one country or local context to another, and as an attempt to define how they can become best practices elsewhere. Lack of research concerning the development of intervention studies and of epidemiological databases related to each one of the main top challenges, is probably the main reason why cost-effective strategies to reduce the prevalence of major risk factors in different contexts in developing countries have not been yet identified. Those two topics are being recommended highly recommended as a priority of research (11) (16) (2) (18).

In LAC, there is a need for new knowledge through research, aiming at the development of new contextualized tools for addressing continually emerging global health problems, as emphasized by a WHO report (Ad Hoc Committee on Health Research Relating to Future Intervention Options 1996) (17). The need to define best practices associated with the treatment of chronic diseases in different circumstances is urgent. For example, data from the industrial countries indicate that providing a three-drug package containing aspirin to people with hypertension as preventive treatment might be possible on a population-based model as well as by individual physicians or medical personnel. However, if local population would be more predisposed to hemorrhagic strokes than Europeans; therefore, treatment with such a regimen would have a significantly increased risk of adverse effects. This fact shows that effective and efficient transference of knowledge demands broader local contextualized knowledge associated with each chronic disease (16).

As broadly know by policymakers, practitioners and donors, better health information systems, such as mortality surveillance systems, would be required in LAC to inform health policies and set targets, as well as to monitor the effects of intervention programs. The study “Impact of Information and Accountability on Hospital Procurement Corruption in Argentina and Bolivia” (19) underlines that Argentina and Bolivia have both attempted to curb corruption in procurement of hospital supplies. With different degrees of success, their experiences tell a lesson: unless there are consequences attached to identified mal-practice, monitoring and publicizing information will not guarantee sustained gains (19).



Low income countries more specifically, which presents the highest mortality levels and are in the greatest need for robust mortality statistics, are the least likely to have civil registration systems with complete coverage of the population. Overall, only about one-third of the world's deaths are presently covered by civil registration systems (2) (11). In Latin American there is still a lack of health databases focused on separated chronic diseases specialties, presenting desegregated information for each disease. Data tend to be aggregated mainly in the "chronic diseases" category, turning difficult the development of more specialized and focused analyzes associated to the burden or morbidity and mortality of chronic non-communicable diseases and injuries in LAC. Data available tend to lack in quality, like the case of information on diabetic and hypertensive patients in Sao Carlos, at the State of Sao Paulo, Brazil (18).

The second challenge for R&D concerns the lifelong medical management of chronic conditions, which cannot be cured but could be improved by means of the development and testing of public health prevention and treatment algorithms. This issue has been little considered in past discussions of priorities for Latin America and global health research, and only recently it has been brought into the regional and both agenda, and because it is believed it could contribute to the adoption of cost-effective care measures in those countries. Examples include diabetes, and secondary prevention of ischemic heart disease and stroke (16). Vast knowledge is currently available on how to prevent a major portion of heart disease, lung cancer, type 2 diabetes and injuries in the elderly, yet most countries do not implement that knowledge effectively. For example, if the treatment of chronic diseases and injuries are monitored carefully, cost-effective and community-based treatments could have an enormous effect in most LAC and developing countries.

Moreover, little is known so far about the determinants of access and management performance (or quality) related to specific chronic diseases in LAC. There is currently a lack of researches seeking to find ways to correct failures, for instance, in financing, in human resources, in health information, and in quality of care related to those top challenges: cardiovascular diseases, cancer, diabetes, respiratory diseases and injuries. Strengthening researches focused on failures related to those main top challenges associated with the present burden of chronic diseases and injuries would constitute one way not only to tackle the current problems in health systems, but also to prevent catastrophic problems in the future. Too many researchers develop general studies focusing either on failures concerning the access, investment and structure of health systems in general, analyzing data related to communicable diseases or basic indicators of health mainly.

### **Limited human and institutional capacity**

The WHO report (17) also underlines that research capacity - that is, people with the training to carry out surveillance and laboratory and operational research - is limited in many developing countries, indicating an enormous need for training. Changes in career structures and incentives to retain trained professionals in public health, medical sciences, and health systems in Latin American countries are also needed (17) (11).

Moreover, the WHO report (17) asserts that key priorities for researchers associated to chronic diseases depend on the strengthening of institutions: universities, schools of

public health and medicine, centers for disease control, and research institutions for health policy and economics. Another report indicates that, in most of LAC, few high-level institutions for research and training in public health have been created during the past 25 years, revealing some progress since the mid 1990s (11). However, in LAC, and especially in low income countries of the region, there is still a need for human capacity as well as laboratory and research infrastructure for public health (11). For this situation to improve in a timely way, a new basis for cooperation in support of people and institutions should be forged between the developing and industrial countries, as recommended in the DCPD2 (16).

### **Corruption**

Lack of research and information can be seen as a mechanism prone to generate corruption in healthcare. Health care is very open to fraud and abuse as an industry where the client is not billed directly, so cannot check line by line the description of services rendered. According to Transparencia Mexicana's 2008, National Survey on Corruption and Good Governance (20), more than 197 million bribes were allegedly paid in order for Mexicans to access public services. Another study shows that medical supplies have very different prices in four LAC (Bolivia, Venezuela, Argentina and Colombia), and that these differences are attributed mainly to corruption (21). Anti-corruption education and training are still lacking in LAC countries, and especially in more deprived poor areas (21).

### **Limited community-based programmes**

Community-based non-communicable diseases interventions are still rare in Latin America in both specialized care (secondary and tertiary) and primary care. In large cities, for instances, refereed hospitals in the treatment of cardiovascular diseases and cancer, are now adopting community-based programmes in parallel with medical treatment. Those programmes are focused on combating health risks associated with the development of diseases. The development of community-based initiatives related to non-communicable diseases and injuries is still in great need in most countries (22) (23).

## **2. Solutions**

Solutions regarding the main problems associate to the burden of CVD, cancer, diabetes, respiratory diseases and injuries in LAC require complex responses over a long period of time, involving coordinated resources and strategies from a wide range of actors belonging to health systems, governments, private health sector, multilateral and non-governmental organizations (1) (2) (23).

### **Primary care services: prevention and early diagnosis**

A critical first step would be to establish primary healthcare oriented toward evidence-based, cost-effective strategies, as recommended by WHO/PAHO (23) (2). The challenge is greater in low income countries in LAC, as mentioned in a previous work in this report (Burden of mortality). Such strategies would promote awareness and improve access to prevention, early diagnosis, and early treatment. This would result in cost savings to individuals and the community, due to the decline of morbidity and mortality, to lower

levels of hospitalization, and increased economic productivity. This would happen for two main reasons: 1) primary care led health systems have a strict gate-keeping system in place, which is often viewed as a mechanism to promote coordination and integration, 2) chronic patients well managed at primary care level seldom develop acute conditions requiring hospital care. In Brazil, for instance, the Family Health Programme (PSF), which started in the early 1980s and 1990s, covered about 90 million people or nearly 50% of the Brazilian population in 2008, making it one of the largest systems of community-based primary care in LAC. Studies have underlined that the expansion of PSF was related to reductions in hospitalizations for diabetes mellitus and respiratory problems (11).

### **Improving access to medicine**

Together with pharmaceutical industries, multilateral agencies, non-governmental organizations and governments should be involved in campaigns targeting the distribution and/or local production of high quality generic medicines and some essential specialized medicines in LAC.

Multilateral agencies could have a more accentuated role in the formulation of new legislations to secure that some medicines would be added to the national lists of essential drugs and included in procurement procedures. An inventory of barriers to access to medicines, like the “opioid” analgesic (for pain control related to cancer), could also be developed to help professionals to identify barriers in their own country. It is recognized, for instance, that the analgesic “opioid” is not expensive to produce, and the necessary morphine powder could be obtained from international producers at very low cost (6).

There is a broader concern that primary care strategies and educational initiatives alone are not enough to combat the overwhelming projected increase in the burden of mortality attributed to those top five causes of death in LAC. The WHO guidelines directly address the issue and offer guidance on how to deal with them. Health professionals would be expected to work with their colleagues in the government and the pharmaceutical industry, following the recommendations issued by WHO, and if possible attend the courses organized by the WHO and or other institutions (6).

A good example of partnership was the creation the Asthma Drug Facility (ADF), by the International Union Against Tuberculosis and Lung Diseases. The aim of the ADF is to improve the access and affordability of essential asthma medicines in low and middle income countries. The ADF uses pooled procurement and other purchasing and supply strategies to obtain the lowest possible prices. Delivery is organized by the ADF’s procurement agent. (15).

### **Financial incentives**

The creation of supply-side incentive mechanisms, from the part of the government, could be designed to accomplish certain improvements on the supply side: 1) to encourage providers to provide specific services, 2) to encourage cost containment, 3) to support staff recruitment and retention, 4) to enhance the productivity and quality of services and 5) to allow for effective management of health care institutions.

Results from impact evaluations reveal that target financial incentives are powerful tools to the improvement of health results in LAC as well. The Brazilian PAB (Piso de

Atencao Basica), created at the very beginning of the Brazilian Family Health Programme, is a good example of target incentive given by the national to local governments. However, the use of financial incentives has so far been little considered as a potential policy option to improve chronic disease control in LAC particularly.

Recently, the Inter-American Development Bank (IDB) (26) supported the Argentinean Primary Health Care Strategy (FEAPS) program, which entails two main interventions: 1) provision of technical assistance to strengthen the health systems; with the introduction of financial incentives to provinces given based on compliance with management indicators for the selected chronic diseases; and 3) provision of key inputs for the operation of the health system, improving and consolidating national programs. The Ministry of Health also launched what is considered to be a successful pay-for-performance program between the federal and provincial level to incentive better quality and coverage of maternal and child health care (Plan Nacer) (27). The participation of IDB is just an example of how international donors and multilateral agencies, together with local governments, could participate together in the promotion of health incentives related to chronic diseases as well.

Demand-side incentives are more complex. Individual behaviors contribute significantly to the main causes of morbidity and mortality, including cancer, heart disease, stroke, diabetes and injures. Demand-side financial incentives can be used to bring some the benefits from healthy activities and compliance back from the future. Existing empirical evidence suggests that patient targeted financial incentives can be effective in increasing compliance with medical treatments and to achieve healthy behavior, including smoking cessation and better managing of chronic conditions (1) (23).

Considering that benefits and cost savings tend to be hidden for many years, a continuous involvement of insurers and providers with patients (through patient enrolment, for instance) is probably one of the most relevant prerequisites for the development of effective chronic disease management programs. On the one hand, evidences have shown that collective tax-funded or single-payer social health insurance systems tend to facilitate long-term chronic disease care. On the other hand, health systems which offer choice of insurer or sickness fund and/or choice of providers encourage a fairly rapid turnover of enrollees and patients, making more difficult the continuity of care required for long-term chronic disease. Consequently, it would be an advantage to form a separate system of funding for chronic disease management, based mainly on public sources, which could result in a socially efficient level of management. Thus an alternative approach in social insurance systems with multiple sickness funds or insurers, which develops a sophisticated risk-equalization formula could be considered as suggestion for LAC. It could reallocate resources between insurers or sickness funds as patients change their affiliations, as well as encourage insurers to take responsibility for people with chronic conditions (25).

### **New investments in R&D**

New challenges demand a shift in thinking in relation to the convergence of health burdens and research opportunities in both industrial and developing countries. In addition to emphasizing the commonality of health problems, the great challenge is perhaps to develop stronger global research collaboration in tackling major health

problems. Stronger public-private partnerships would be required to ensure that affordable drugs and vaccines will be developed and made available in resource-constrained environments.

There would be necessary to increase the number of people trained to carry out the surveillance and the laboratory and operational research that are so essential to the successful implementation of cost-effective interventions. Redressing this limitation is a major task that will require substantial financial investment and creative approaches to create conditions to promote substantial changes in academic and research institutions in LAC.

With information technology, procedures can be put in place to minimize medical and pharmaceutical errors and to provide greater accounting for medical costs and outcomes. Research with partners in many parts of the world can now be carried out in real or in lag time. The tools, hardware, and software for this informatics revolution could be made available to a larger number of LAC governments, as well as to universities and health systems in developing countries. Given the lack of financial research and mainly in low income countries, multilateral agencies, as well as the private sector could participate in the development of information systems in low LA income countries.

#### **Anti-corruption intervention**

Private companies have often been at the forefront of progressive change, leaving the state sector behind. Companies introduced pensions and healthcare benefits before governments. Procter & Gamble, for instance, pioneered disability and retirement pensions in 1915 (28). Socially responsible companies build trust with customers, staff, investors and the community where they work and conduct business (28).

Companies would have to establish codes of conduct, including detailed rules designed to combat bribery at home or by their subsidiaries abroad. The proposals would have to include training programmes with guidance for all employees to ensure that bribery - direct or indirect - is outlawed. Pharmaceutical industries could join this initiative, and ensure that corruption does not damage the ethical core values of the medical profession (20) (21) (28).

#### **Community-based programmes**

The Pan American Health Organization has launched a strategy that focuses on community interventions to build supportive environments for risk-factor reduction, mobilizing communities not only to change institutional policies, but also to become active participants in the creation of enabling environments (23). Interventions are being channeled through PAHO's CARMEN network (Collaborative Action for Risk-factor Management of Non-Communicable Diseases) , an international network that shares the common goal to increase technical capacity among member states to reduce risk factors associated with chronic diseases, and through integrated community-based preventive approaches. The network activities take place through PAHO's initiatives on healthy settings and health-promoting schools. These interventions are part of WHO's Global Strategy for the Prevention and Control of Chronic Diseases. It is expected that by 2015, all member states have implemented strategies and actions in schools, the workplace, and other settings.

The International Alliance of Patients has also been involved in activities in LAC, and formed four regional support groups in order to foster the involvement of patients in the development of solutions to combat the common challenges they are currently facing in LAC in relation to non-communicable diseases. It is expected that patient groups' contribution to healthcare policy making can improve access to healthcare services and treatments.

Comprehensive and correlated measures are therefore necessary to combat the burden of mortality associate to CVD, cancer, diabetes, respiratory diseases and injures in LAC. Collaboration is needed from different actors, nationally and globally. This process will certainly entails many battles between actors, who will have to find their resolutions in the communal interest of reducing or even halting the excessive burden of mortality forecast for Latin American in the next decades.

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