The Role of Government and Competing Priorities in Minority Populations and Developing Nations

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Objective: The purpose of this article is to analyze the role of governments in relation to the burden of chronic diseases and the potential response within the framework of competing priorities that determine resource allocation.

Methods: The following variables were analyzed both in retrospect and prospectively: the epidemiologic transition and the current effect of degenerative chronic diseases, the epidemic of diabetes and kidney disease in minority populations and developing countries, the potential response from healthcare systems, the relationship of chronic kidney disease vs quality of life and costs, and the differences between developed and developing countries.

Results: In Latin America, as in many other regions, cardiovascular diseases (ie, heart diseases and stroke) kill many people at early stages of renal disease. Only some survivors have access to renal replacement therapy. Those deaths can be attributed to the lack of systematized prevention and control programs to encompass chronic diseases and relate to poor engineering of adequate financial support. The Latin American Society of Nephrology and Hypertension is fostering a cardiovascular, cerebral, renal, and endocrine-metabolic health program in which 12 countries in the Latin American region implement different strategies, including allocation of national funds and strengthening of transplant programs. The focus of these strategies is on promotion, prevention, rehabilitation, research, and teaching.

Conclusion: Developing countries should implement cardiovascular, cerebral, renal, and endocrine-metabolic health programs to improve efficiency of sanitary regulations and retrieve the huge amount of money that is spent on illnesses associated with the absence of systematized kidney disease control and follow-up programs (*Ethn Dis*. 2009 [Suppl 1];19:S1-73-S1-79)

Key Words: Renal Health, Dialysis, Chronic Kidney Disease, Endothelial Injury

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Introduction

In recent years, great importance has been paid to the critical impact of renal disease on the budget of healthcare organizations and its close connection with prevailing chronic diseases such as diabetes, hypertension, obesity, dislypidemia, certain infections, and types of cancer such as kidney and urinary tract tumors. As a result, the cost of treating chronic disease has soared worldwide both for health organizations and for individuals.

Governments have not been very effective in the control of chronic diseases, and competing priorities for the allocation of available human and financial resources have always been under consideration. As a result of this situation, populations at risk in developing countries do not have good access to health care. To be poor in some Latin American countries means to be short of healthcare coverage, to rely on the state for health care, and to see how quickly the possibility of disease and premature death increase.

Competing priorities for governments can be better explained as the consequence of an epidemiologic transition and its strong influence on infectious disease, which prevailed for more than 1900 years in the history of mankind. The so-called ''epidemiologic transition'' shows the passage between acute infections to degenerative and human-caused diseases.

In this article, I examine the underlying ethics of this process and analyze the budget allocations that cater to the needs of different population groups and the need to establish a sustainable and tenable model of cardiovascular, renal, and endocrine-metabolic health.

Method

1. The Epidemiologic Transition

I analyzed implications of the epidemiologic transition in the development of health policies in different countries, especially in developing countries with unfavorable conditions as regards available resources, healthcare access, and conditions that gave rise to endemic transmissible diseases. Humanity was dominated by infectious diseases up to the 19th century. From the 20th century onward, degenerative and human-caused diseases have taken an important role, and today we are witnessing a global epidemic of diabetes, obesity, and kidney disease, cardiovascular disease, respiratory disease, cancer, and dementia.

2. The Impact of Chronic Disease in Minority Populations and Developing Countries

Developing countries have a high burden of transmissible disease and high mortality from chronic degenerative diseases.[1] Low-income countries have a high prevalence of both infectious and chronic-degenerative diseases, while in higher-income countries, mortality due to chronic diseases has overtaken that due to infectious disease, and the gap is widening.

According to the World Health Organization, the prevalence of overweight in adults (mainly women) will significantly increase during the next 10 years. By 2015, it is estimated that >1.5

billion people will be overweight. Deaths from chronic diseases are projected to increase during the same period. Statistical projections show that 64 million people will die in 2015; 41 million (64%) of them will die from chronic diseases. This is a 17% increase in chronic disease deaths from 2005 to 2015.

3. Response from Health Care Systems

The possible answers to the increased burden of chronic disease and costs in developing countries can take 3 forms. The first might be a universal, unique health insurance system, and the second might be a national reassurance fund. Both would be potentially effective in catering to the needs of society. The third approach is to restrict healthcare plans, which is an inequitable and unethical option since it does not cater to the needs of patients. Regrettably, this last option operates in most parts of the developing world.

4. Kidney Disease: Relationship with Quality of Life and Costs

Chronic kidney disease has a negative effect on quality of life and on the economics of the healthcare system, given the long time it generally takes patients to pass through all the different stages of the disease. The loss of 10 mL/min/1.73 m^2/year in glomerular filtration rate (rapid progression) generates increased costs, reduced quality of life, and premature death. If we could slow the loss to 2 mL/min/1.73 m^2/year, we could increase quality of life and reduce costs and the high rate of cardiovascular deaths in patients. The average mortality rate in stage 4 of chronic kidney disease (glomerular filtration rate of 30–15 mL/minute) is higher than 45% (Table 1).[2]

5. Differences between Developed and Developing Countries

I analyzed the prevalence of patients in renal replacement therapy as an indicator of health coverage and access to renal health care. In 1999, a total of 243,534 patients received dialysis in Latin America and the Caribbean, at an average rate of 240 patients per million population (pmp) and at a cost of $2.24 billion. The cost of dialysis was equivalent to $3.22 per inhabitant. If we compare this figure with the rate of dialysis patients in industrialized countries, the United States for example, (1400 pmp), it may be that 120,000 to >600,000 patients in Latin America do not receive any treatment.[3]

In 2004, the following regional differences in the rate of dialysis could be observed: [4] Europe, 585 pmp; Asia (excluding Japan) 70 pmp, Latin America, 380 pmp; Africa, 70 pmp; Middle East, 190 pmp. When we compare countries, we can see the following: Japan, 2045 pmp; United States, 1505 pmp; Argentina, 617 pmp; Bolivia, 42 pmp; Brazil, 362 pmp; Colombia, 360 pmp; Ecuador, 109 pmp; Mexico, 380 pmp; Peru, 154 pmp; Paraguay, 126 pmp; Salvador, 60 pmp; Venezuela, 384 pmp; Uruguay, 893 pmp; and Chile, 841 pmp.

Table 1. Percentage of patients in every stage who will evolve toward RRT or death

End point	Stage 2 eGFR* 60–89# #(ml/min/1.73 m2	Stage 3 eGFR 30–59# #(ml/min/1.73 m2	Stage 4 eGFR 15–29# #(ml/min/1.73 m2
Progression to RRT**	1.1%	1.3%	19.9%
Death	19.5%	24.3%	45.7%

** RRT: renal replacement therapy.
* eGFR: estimated glomerular filtration rate.
The table shows average of patients with renal disease (including CDK) evolving at each stage toward RRT or death for cardiovascular disease (CVD). Stage 4 average (CVD) mortality rate is 45.7%.

RESULTS

In 1999, I analyzed the epidemiologic and economic effect of dialysis treatment in Latin America and the Caribbean. If all patients had survived and received renal replacement therapy, the macroeconomic impact would have been:

1. The cost per inhabitant per year would have increased from $3.22 to $18.33.
2. The .07% impact on the gross domestic product would have increased to .43%.
3. The annual cost for renal replacement therapy would have increased from $2.24 billion dollars to >$8.90 billion.

In each country, the state is forced to distribute resources from public accounts in such a way that the basic needs of inhabitants can be covered. Each item of the budget is expressed as a percentage of gross domestic product, and then, within a macroeconomic concept, each area of responsibility receives part of the resources. In general, no money is ever enough, and this ignites a struggle between the different areas in order to obtain more resources.[5] Some sectors of the society lobby and use their pressure to obtain more resources, so on many occasions, if public funds are insufficient, health care does not get enough attention. This situation generates an internal tension in the health sector and each player fights to get more funds from available resources, for example, the pharmaceutical industry, high complexity surgery, transplants, basic and applied research, and dialysis all compete for a greater share.

The obvious result is that the sector that wins strips resources from another healthcare sector. The final result, however, is even worse since we habitually quantify direct costs and overlook indirect or hidden costs, which in the end amount to at least double direct costs (Figure 1A).

Assuming the dialysis population increases at the projected levels described above, the demand could not

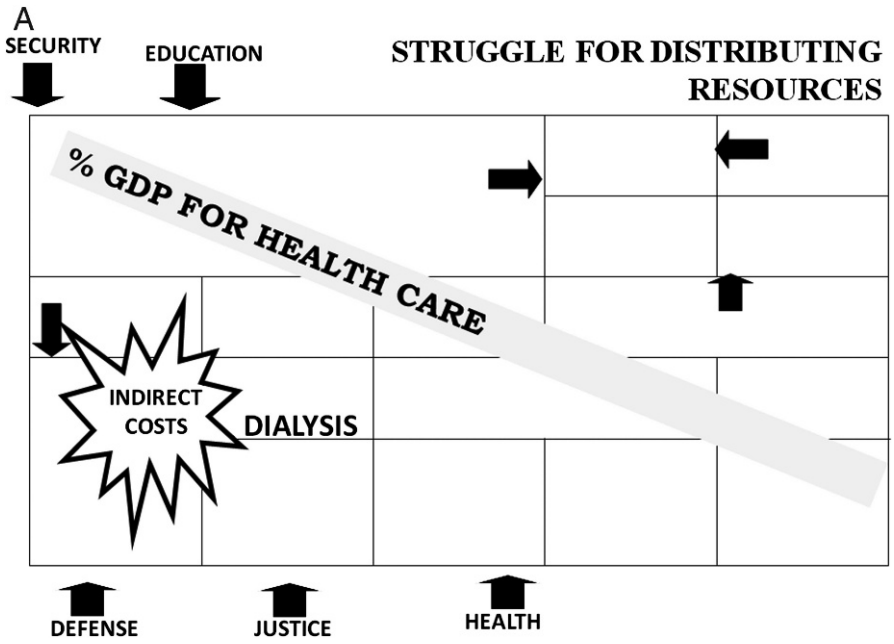

Fig 1A. Distributing struggle generated inside the health care system in Latin American countries, which is deepened by an insufficient budget. Dialysis has a space but lack of prevention and control triggers hidden costs that increase over 100% the cost of treatment. (indirect costs)

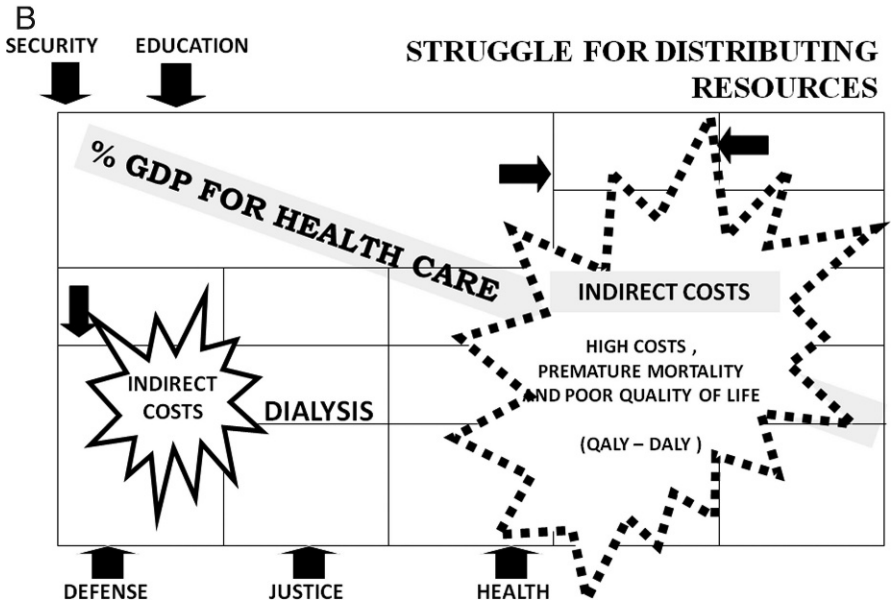

Fig 1B. Geometrical growth of patients requiring RRT because RRT indirect costs grow in the same progression as direct costs. Unless prevention and control programs are implemented promptly in Latin American countries, the most vulnerable groups will have a more limited access to public health

be met. In such a geometric progression of dialysis patients, indirect costs grow even higher. This is the money the healthcare system could conceivably recover if systematized programs of cardiovascular, cerebral, renal, and endocrine-metabolic health care were implemented (Figure 1B).

This situation poses an ethical dilemma for society: how can these limited resources be ethically allocated when resources in developing countries

are so limited? The debate can follow two trends: either to allocate resources to cover the most basic health needs of important pockets of population—a situation known as unsatisfied basic needs for an increasing number of people in structural poverty and social exclusion—or to cover the needs of a population group that requires therapeutic treatment with very high technology and consequently at the highest cost.[6]

Therefore, it is essential to raise this question: How can available resources from national accounts be equally and fairly distributed (Figure 2)?

Habitually, resources are allocated to: Healthcare services (hospitals, primary care, high-complexity procedures, drugs, others); other healthcare-related requirements (education for health, nutrition programs, environmental cleanup—especially sanitation and clean water); other requirements for well-being (education, security, others).

In order to understand how the national budget is allocated depending on the social needs, we can see different drivers that promote actions in the administration of public funds. The question is how the budget can be ethically reconsidered. I analyzed this issue under the principles of ethics in budget allocation and assumed different stages in the allocation of resources (Figure 3)[5]: primary macroallocation (PMA); secondary macroallocation (SMA); limitations of SMA; excessive improvement; clinical bioethics: toward an ethical concept of proper treatment.

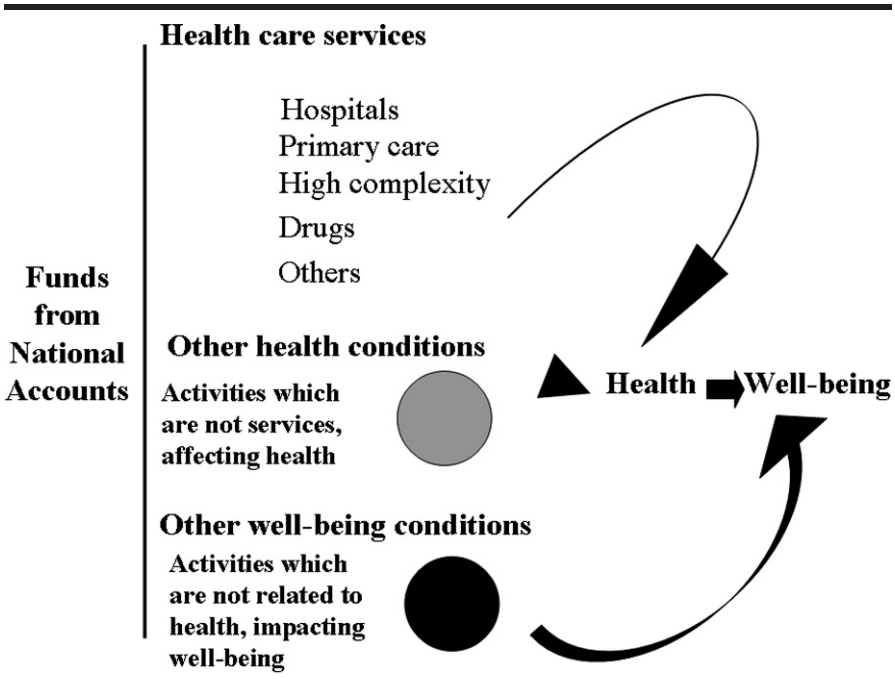

Fig 2. Health care budgets in Latin American countries should consider all aspects that might smooth access to public health care such as promotion and prevention, and at the same time attention and rehabilitation. Self-care should be encouraged

Secondary macroallocation

Sharing the ideals of equality, administering with equality should generate special allocation of resources to allow access to health care of population groups at a disadvantage compared to other groups, either because they are at risk or are vulnerable, or because they are in need of special treatment, for example population groups whose life depends on access to dialysis. A similar situation is going on worldwide with HIV/AIDS groups. In these cases, there is a need to establish a SMA of economic resources. When the health condition of an identified group of people in the society is lower than the mean and the health needs of this group are not covered by the PMA, a SMA is needed. In general, if the

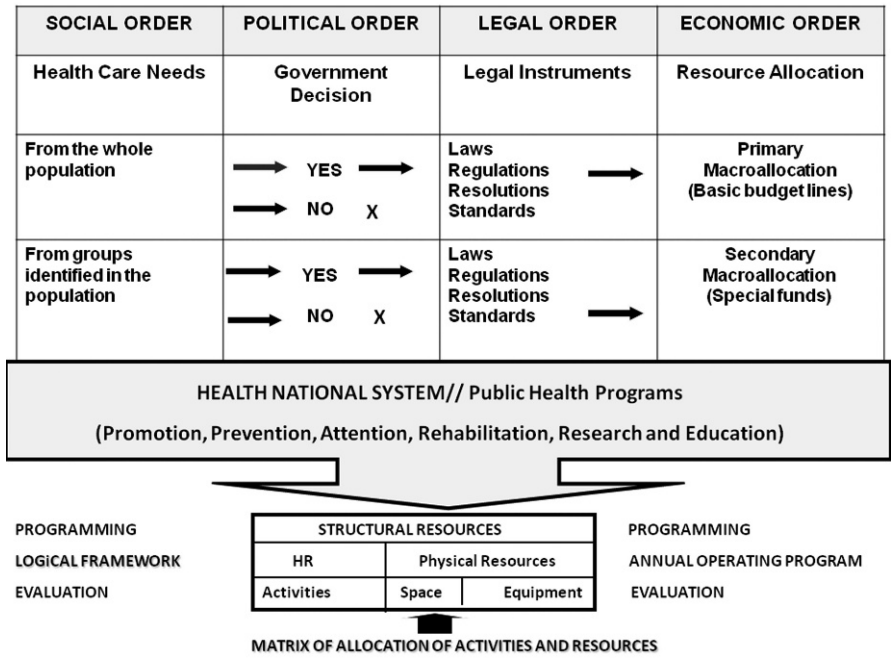

Fig 3. Principles of ethics in budget allocation

Table 2. Gantt Chart. Ten-year projected trends to develop awareness in Latin American countries

Cardiovascular, Cerebral, Renal and Endocrino-Metabolic (CaCeREM) Program	Time in Years					
	2003	2004	2005	2006	2007	2008
Underway: First Stage 2003 - 2008 **Goal*: Create awareness in health ministries and deploy one element of the CaCeREM Program in 10 countries in Latin America and the Caribbean***						
General guidelines of the program Logical framework						
Workshops in Latin American countries						
Work and cooperation with counterpart technicians in each country						
Adjust goals and objectives to local conditions						
Collaborate on demand in planning and programming						
Forecast. Second Stage 2009 – 20013 **Goal: *Include CaCeREM Program in Health Policies in 10 countries in the Latin America and the Caribbean***						
Coordinate activities with other programs in the first Level of attention Design algorithms and diagnosis and treatment guidelines Design matrices for the annual operative program (Spanish POA) Generate databases and actuarial curves						

health condition of a group initially at risk after PMA is not better than before, or if the improvement cannot be effectively related to the SMA, the obligation to provide should be stopped.

In December 2002, a workshop from the Latin American Society of Nephrology and Hypertension called ''Towards a Sustainable and Tenable Renal Health Model'' was held in Valdivia, Chile, sponsored by the Pan American Health Organization and the Chilean Society of Nephrology. The Declaration of Valdivia was approved on that occasion as a guideline to facilitate the implementation of the model in Latin America.

The Valdivia Declaration connected for the first time clinical nephrology with public health by using the logical framework and the matrix of allocation of activities and resources and established an action plan for Latin America countries. The four established principles were: 1) start a patients' identification system depending on the evolutionary stage of the disease, encouraging National Kidney Foundation classification; 2) create a reference and counter-reference system for an orderly planning of renal patients at primary level of attention (ie, early reference to nephrologists at first diagnosis); 3) establish therapeutic goals and plans encouraging the use of flowcharts and diagnostic and therapeutic algorithms; and 4) integrate the renal health model and health national policies in each of the countries using the logical framework and the matrix of activities and allocation resources.

As a consequence of this action plan, several documents were prepared: [7,8] First we established starting points and a logic model recognizing that ESRD is one of many major problems for public health. We devised a ''problem tree'' and an ''objectives tree.'' In the first we showed a cascade of events that currently make renal health assistance non-sustainable. In the second we established the necessary objectives to make renal health assistance sustainable and tenable.

Using a Gantt chart, I projected trends for 10 years, with the goal for the first five years being to develop chronic kidney disease awareness in 10 Latin American countries. If we could meet this goal, the goal for the following five years would be to deploy CaCeREM strategies in 10 countries. Table 2 presents the progression of the program in several countries during 2003–2008.

From the Latin American Society of Nephrology, we found a Sustainable and Tenable Renal Health Model that links communitarian public health and clinical medicine.[9] The Model has several intervention strategies: to reinforce continent-wide transplant programs; to organize service provider's networks; to generate special funds to support the model based on ethical principles of budget allocation. The Renal Health program is based on the concept of ''renal health control'' that integrates promotion, through community programs, and prevention, through a reference and counter-reference system. The reference system goes from the primary doctor to the nephrologist (counter reference), who refers the patient back to his family doctor with suggestions to continue treatment together. It also features management, rehabilitation, research and teaching systems as well as an information database. The program connects clinical nephrology and public health and can generate a new strategy

Table 3. Components of the sustainable and tenable Renal Health Model in Latin America

Special Fund Program	Training and Education	Primary Health Care
Goal	Goal	Goal
Have available resources to be used in the development of the model.	Improve quality of health to renal patients as well as cost-efficiency.	Improve equality and provide population access to renal health care.
Purpose	Purpose	Purpose
Have economic resources available for funding coverage of renal patients at every stage of treatment, either pre-dialysis aiming at regression or remission dialysis and\or transplant.	Have qualified medical professionals available for integral care of the renal patient.	Have primary health care centers available nationwide. Generate reliable information on renal patient populations. Generate easy to interpret algorithms to be used at the first level of care.
Outputs	Outputs	Outputs
Allocation of resources or budgetary item.	Qualified care givers at the first level of renal health care.	Accessible primary care centers for renal patients. Databases Control and follow-up algorithms.
Activities	Activities	Activities
Reallocate budgetary items	Courses, seminars and\or training workshops. Permanent education programs.	Systematic follow-up or renal patients. Completion of follow-up form Strengthening data base for actuarial curves.

Source: Latin American Society of Nephrology.

called "program for surveillance and control of chronic diseases." (Table 3)

At-risk individuals can develop CKD and CVD at the same time. One of the first signs is vascular endothelial injury detected by proteinuria or albuminuria, and if we can stop albuminuria excretion, we may be able to slow the advance of both diseases, especially in patients with type 2 diabetes.[10,11] This important contribution of nephrology to public health will assist in reducing the burden of cardiovascular disease worldwide and the renal health model will be seen as a program for surveillance and control of chronic diseases. At the same time, we are advancing an interconnection with chronic disease programs at a high political level.

Recently renal insufficiency was declared a public health problem by the US Centers for Disease Control and Prevention (CDC) and the World Health Organization. Four criteria must be met to declare a disease a public health problem: 1) the health condition must place a large burden on society, a burden that is increasing despite existing control efforts; 2) the burden must be distributed unequally (eg, as in the case of CKD and chronic diseases, which have a high impact on vulnerable populations from the cultural and socioeconomic point of view)[1]; 3) evidence that upstream preventive strategies could substantially reduce the burden of the condition; and 4) such preventive strategies are not yet in place. It is important to note that, for renal disease, the fourth criteria relates to the absence of sanitary regulations, although Latin America has already begun the implementation of prevention and control in 12 countries.[13,14]

CONCLUSION

Governments should adopt a public health policy for CKD, and should support programs for detection, surveillance, evaluation and management of CKD; they should also support a public awareness program for CKD.[12] The key elements of the program should include: planning, programming and evaluation components; intervention elements; and a plan for implementation at the primary care provider's level. A follow-up chart and remission/regression matrix must include: risk indicators; NKF - KDIGO classification; hypertension classification; urinary albumin/ protein classification; albumin/creatinine ratio; obesity classification; risk factor for metabolic syndrome; Framingham score or similar.

In summary, the advances achieved by the Committee for the Development of Nephrology and the Committee for Renal Health (SLANH), include:

- Nine countries with document signed by representatives from all sectors, including the Ministry of Health (Chile, Argentina, Uruguay, Venezuela, Colombia, Brazil, Paraguay, Bolivia, and Mexico)
- Twelve countries have created awareness programs (Chile, Argentina, Uruguay, Venezuela, Colombia, Brazil, Paraguay, Bolivia, Mexico, Puerto Rico, Peru, and Ecuador).
- Nine countries in different stages of implementing the program (Chile, Argentina, Uruguay, Venezuela, Colombia, Brazil, Paraguay, Puerto Rico, and Bolivia)
- Five countries with PAHO involvement (Argentina, Venezuela, Brazil, Bolivia, and Puerto Rico)
- Three countries who prepared documents with PAHO (Argentina, Puerto Rico, and Bolivia)

In closing, we urge governments to place chronic disease prevention, treatment and management on high priority

and to understand that chronic kidney disease is common, harmful, but treatable, and its control helps lower the cost of other chronic diseases.

ACKNOWLEDGMENTS

I acknowledge Dr David Pugsley for his sensible and careful corrections and suggestions to the original manuscript.

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