



PAN AMERICAN HEALTH ORGANIZATION  
WORLD HEALTH ORGANIZATION



## 152nd SESSION OF THE EXECUTIVE COMMITTEE

Washington, D.C., USA, 17-21 June 2013

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*Provisional Agenda Item 4.7*

CE152/25 (Eng.)

17 June 2013

ORIGINAL: SPANISH

### **CHRONIC KIDNEY DISEASE IN AGRICULTURAL COMMUNITIES IN CENTRAL AMERICA**

#### **Concept Paper**

#### **Introduction**

1. Over the past two decades, the subregion of Central America has reported a growing number of cases of people suffering, and dying, from chronic kidney disease (CKD). Among these cases, there have been reports of a type of CKD whose etiology is not linked to the most frequent causes of CKD such as diabetes mellitus and hypertension. The frequency of this type of CKD is higher than that observed in the Region of the Americas and exhibits an upward trend. The disease is most common among underprivileged young men and farm workers living in agricultural communities concentrated along the Pacific coast of Central America. It has been associated with various factors including environmental toxins (probably agrochemicals) and occupational risks (inadequate occupational health in conditions of high temperatures and insufficient water intake), as well as harmful habits such as the use of nephrotoxic medicines, especially non-steroid anti-inflammatories. In this context, this type of chronic kidney disease is a pressing and serious public health problem given its high incidence, prevalence and mortality rates, as well as the unmet health care demand and the burden it represents for the families, communities, health systems, and society as a whole.

2. At the “High-level Meeting on Chronic Kidney Disease from Non-traditional Causes (CKDu<sup>1</sup>) in Central America” held in April 2013, the Member States of Central America and the Dominican Republic in the Central American Integration System (SICA) and the Council of Ministers of Health of Central America and the Dominican Republic (COMISCA) recognized, in the “Declaration of San Salvador,” that chronic

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<sup>1</sup> CKDu is the acronym for Chronic Kidney Disease of unknown causes.

kidney disease is a significant public health problem in Central America and requires urgent action.

3. This paper examines the current situation of chronic kidney disease in agricultural communities in Central America and presents the progress made in the clinical and epidemiological characterization of the disease, so that the countries of the Region can strengthen cooperation and the response of health systems. Health systems should prioritize and implement urgently actions in the areas of surveillance, prevention, control, and timely treatment.

### **Background**

4. In the past decade, and particularly in the past three years, several scientific gatherings and meetings at the highest political level have been held in Central America to discuss chronic kidney disease in agricultural communities in Central America. COMISCA, the Pan American Health Organization (PAHO), and other sectors and institutions have participated in these meetings.

5. The main scientific meetings are described below:

- (a) The Program on Work and Health in Central America (SALTRA) held workshops in 2005 and 2012 to discuss CKDu with researchers and other stakeholders from different countries, in collaboration with the Central American Institute for Studies on Toxic Substances of the National University Heredia in Costa Rica. As a result of the latter workshop, a report was published recently that presents the findings of descriptive studies and proposals for tackling this disease (1).
- (b) The International Conference and High-level Meeting on Chronic Kidney Disease from Non-traditional Causes in Central America was held in El Salvador in April 2013, under the leadership of the Ministry of Health, working in conjunction with COMISCA and with support from the Spanish Agency for International Development Cooperation (AECID) and PAHO. At the meeting, findings were presented from epidemiological, clinical, histopathological, and environmental toxicology studies that contribute to the knowledge about and characterization of this disease and its associated factors. It was acknowledged that despite the progress made in the past two years, there is still a knowledge gap in relation to the epidemiological behavior, natural history, etiology, and risk factors of CKDu in the region and more analytical research on the problem is required at the level of Member States and the region. It was pointed out that there is no regionally-accepted case definition of CDKu and more information is needed about the underlying economic burden and integrated surveillance systems for this disease, including vital statistics. It was recognized that at present, the affected countries lack a multisectorial approach that would enable them to address CDKu in an

- integrated manner. Similarly, there is a shortage of skilled human resources, infrastructure, and inputs to mount an adequate response (2).
6. The main meetings at the highest political level are described below:
- (a) At the end of 2009, the Minister of Health of El Salvador requested technical cooperation from PAHO to address this disease, which had been widely documented in research and technical reports. The issue was presented by the Minister of Health of El Salvador at various regional forums including SICA, COMISCA, and the Pan American Sanitary Conference (7), at the meetings of the Group of the Americas during the 2011 World Health Assembly, and at preparatory meetings for the Region of the Americas prior to the United Nations General Assembly High-level Meeting on Noncommunicable Diseases in 2011 (3-8).
  - (b) In response, the Pan American Sanitary Bureau formed an interprogram working group that includes the Representatives of PAHO in Central America. In addition to the work of this group, many other activities have been undertaken including technical cooperation, partnerships, subregional and regional consultations, and activities coordinated by COMISCA with the support of PAHO, AECID, and the United States Centers for Disease Control and Prevention (CDC).
  - (c) The Declaration of San Salvador was adopted on 26 April 2013, at the high-level meeting of the Ministers of Health of COMISCA in El Salvador (followed by the international conference). The declaration proposed a definition of the disease as “tubulo-interstitial kidney disease in Central America”, which mainly effects agricultural communities, and described it as a catastrophic disease and a major health problem (9).

### **Situation Analysis**

7. Many countries do not have reliable registries for CKD, nor regular surveillance systems capable of detecting its distribution patterns in the population that could facilitate the identification of trends in and groups of CKD. Most estimates of incidence and prevalence are based on patient records during treatment for end-stage kidney disease or community surveys (10).

8. Numerous epidemiological studies, mainly descriptive, have been conducted to characterize and measure factors associated with this disease. These studies have suggested various causal hypotheses ranging from environmental causes to personal habits and customs, mainly those of impoverished workers. Most of the information and research findings from the past five years were presented at the conference organized by SALTRA in 2012 (11, 12) and at the April 2013 Conference in El Salvador mentioned earlier (2). They are summarized below:

### ***Frequency of the Disease***

9. The frequency of CKD in all stages reflects an overall prevalence of between 10% and 16% in the adult population, with similar frequency in both sexes. In Latin America, the incidence rate of this disease rose from 27.8 cases per million population (pmp) in 1992 to 188 pmp in 2006, with diabetes as its leading cause (13, 14).

10. In the past two decades, a disconcerting increase in CKD has been observed in Central America, causing thousands of deaths (15, 16). According to the available data (17), the specific mortality rates from chronic kidney failure (ICD 10, N-18),<sup>2</sup> in the region (and over 10 deaths per 100,000) are, in descending order, Nicaragua (42.8), El Salvador (41.9), Peru (19.1), Guatemala (13.6), and Panama (12.3). Canada and Cuba have reported the lowest mortality rates in the Region. Mortality was 17 times higher in Nicaragua and El Salvador compared to Cuba, and three times higher for men than for women.

### ***Clinical, Epidemiological, and Environmental Research to Determine Etiology***

11. In the view of the participants at the SALTRA network workshop, based on available scientific research (including Nicaragua, El Salvador, and others), the strongest causal hypothesis for the epidemic is repeated episodes of heat stress and dehydration during heavy work in hot climates. Possible co-factors that interact with heat stress or influence the progression of CKDu include excessive use of nonsteroidal anti-inflammatory drugs and fructose consumption in rehydration fluids. Possible contributing factors to the epidemic include inorganic arsenic, leptospirosis, exposure to pesticides, and hard water (12).

12. The descriptive studies in El Salvador presented at the International Conference—which have included nearly 5,000 people over the past several years—characterize CKD as a chronic, tubule-interstitial nephropathy that mainly affects young men and agricultural workers living and working in obviously disadvantaged communities on the Pacific coast. While there is consensus that this is a multifactorial disease, some of the main factors include exposure to agrochemicals, either through direct prolonged exposure over time or through residual long-standing contamination of the soil, water sources, and crops, compounded by difficult working conditions; exposure to high temperatures; and insufficient water intake, among others factors (2). The clinical and histopathological manifestations of these cases, and the risk factors identified, are very similar to those described by researchers in agricultural communities in Sri Lanka—nephropathy of Sri Lankan farmers—where the excessive number of cases observed has been attributed to agrochemicals (18).

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<sup>2</sup> International Classification of Diseases (ICD)

### ***Impact on Health Services***

13. CKD imposes a high burden on Central American countries in terms of people's quality of life as well as health services delivery, mainly in hospital networks. Chronic kidney disease in agricultural communities in Central America requires strategies to reorganize services delivery, strengthen human resources capabilities, and reduce treatment costs, including kidney function substitution treatment. The prevalence of kidney function substitution treatment in the Region (19) rose from 162 patients per million population (pmp) in 1991 to 473 pmp in 2006 (59% hemodialysis and 20% peritoneal dialysis), although there are still are countries with very low delivery rates relative to existing demand (13).

14. Specific data from the ministries of health and scientific associations in the subregion indicate that:

- (a) In El Salvador, hospitalizations for CKD increased by 50% from 2005 to 2012, and it is the leading cause of hospital deaths. There were a total of 1,474 hospitalized cases of CKDu among the group aged 0-19 years (relative to the total of 39,000 cumulative cases) and the hospitalization rate doubled from 2011 to 2012 (and tripled for those over 50 years of age). According to data submitted by national coordinators or national donation and transplant committees in the countries, approximately 3,100 patients are in substitution treatment (hemodialysis and peritoneal dialysis) in El Salvador, over 3,000 in Guatemala, 1,800 in Panama, and 1,000 in Nicaragua. In Panama, the number of patients on dialysis doubled from 2007 to 2012; in 2013, 1,725 patients were receiving peritoneal dialysis and 142 were receiving hemodialysis. Sixty transplants were performed in 2012. The Dominican Society of Nephrology reports 1,621 patients.
- (b) The evidence on treatment costs for this disease is still limited and varies from country to country. More details are available on the website of the International Conference (2).

### **Proposal**

15. In order to strengthen the response of health systems, considering the actions proposed in the Declaration of San Salvador and in light of the available evidence, the following actions are proposed to respond to this serious public health problem:

- (a) Promote a shared agenda that fosters coordinated action by agencies of the United Nations system and the Inter-American system to confront this serious health problem, which requires multisectorial efforts and international cooperation.

- (b) Create intersectorial—including United Nations agencies—and interministerial coordination mechanisms at the local and regional levels, spearheaded by the ministries of health and COMISCA.
- (c) Empower the affected communities so that they can participate actively in the prevention and control of this disease, in public policy-making, and in monitoring compliance with the agreements and commitments made.
- (d) Strengthen regulatory and control mechanisms to ensure an acceptable minimum level of occupational health and hygiene, with an emphasis on workers' rights and health.
- (e) In policy-making and planning, take into account that the exercise of the right to health is an entitlement even in situations of poverty and high burden of disease. The principle of progressive realization facilitates the effective exercise of human rights, taking into account the resources available to each State. Progressive realization should be based on an ethical assessment and prioritization of health needs (20, 21).
- (f) Strengthen and standardize surveillance and mandatory reporting systems for cases of CKD and share information as a public good, including agreement on a common case definition.
- (g) Complete the studies necessary to better understand this disease in all its stages, and also conduct economic evaluations that include the cost impact on society.
- (h) Strengthen the countries' capabilities in environmental surveillance and alerts—water sources, soil, food, etc.—especially in the most affected areas, with emphasis on evaluation of the actions each country has agreed to, taking into account regulatory frameworks and international commitments relating to environmental policies in general.
- (i) Strengthen and/or create national toxicological centers and a Central American network of toxicological information centers that also includes training for agriculturists and the community in the prevention of pesticide exposure, drawing on the lessons learned, for example, from PLAGSALUD.
- (j) Expand access and coverage and improve the quality of promotion activities focused mainly on occupational health and hygiene; prevention; early detection and diagnosis; timely, integrated and interdisciplinary treatment; and equitable access to kidney function substitution treatment, medicines, and supplies, with special emphasis on high-risk communities.
- (k) Strengthen the response of health systems at all stages of the disease and including health promotion. Particular emphasis should be placed on

- strengthening the health services network that includes a model of care that ensures quality of care and patient safety, the availability of human resources, medicines, and health technologies, and financing of the services package.
- (l) Strengthen technical cooperation for evidence-based decision-making to inform policy alternatives (for example, EVIPNet) and healthcare recommendations taking into account the Integrated Health Services Networks and the decisions on chronic noncommunicable diseases from the United Nations High-level Meeting (22-25).
  - (m) Recommend that the countries of the Region adopt procurement policies that ensure the quality of supplies and medicines and facilitate economies of scale in the procurement of therapeutic equipment and supplies, for example, through the PAHO Strategic Fund.
  - (n) Appeal to the solidarity of the countries of the Region so that, through cooperation mechanisms, they collaborate, within the means available to them, on actions to mitigate this serious public health problem in the subregion.
  - (o) Join the Declaration of San Salvador and establish follow-up and monitoring mechanisms through the Secretariat of COMISCA, with the support of the CDC and PAHO/WHO.

#### **Action by the Executive Committee**

16. The Executive Committee is invited to review the information presented and to consider approving the proposed resolution included in Annex A.

Annexes

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PAN AMERICAN HEALTH ORGANIZATION  
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## 152nd SESSION OF THE EXECUTIVE COMMITTEE

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CE152/25 (Eng.)  
Annex A  
ORIGINAL: SPANISH

### ***PROPOSED RESOLUTION***

#### **CHRONIC KIDNEY DISEASE IN AGRICULTURAL COMMUNITIES IN CENTRAL AMERICA**

##### ***THE 152nd SESSION OF THE EXECUTIVE COMMITTEE,***

Having reviewed the concept paper *Chronic Kidney Disease in Agricultural Communities in Central America* (Document CE152/25);

##### ***RESOLVES:***

To recommend the 52nd Directing Council to adopt a resolution in accordance with the following terms:

#### **CHRONIC KIDNEY DISEASE IN AGRICULTURAL COMMUNITIES IN CENTRAL AMERICA**

##### ***THE 52nd DIRECTING COUNCIL,***

Having considered the document CD52/\_\_\_ on *Chronic Kidney Disease in Agricultural Communities in Central America*;

Recalling the importance that the Member States place on the objective of achieving universal health coverage and equitable access to health services;

Aware of the Political Declaration of the High-level Meeting of the General Assembly on the Prevention and Control of Noncommunicable Diseases (To/66/L.1);

Recognizing the existence of chronic kidney disease in agricultural communities in Central America possibly caused by a combination of environmental and occupational factors;

Taking into account the *Declaration of San Salvador*, which recognizes this chronic kidney disease as a serious public health problem that requires urgent action;

Aware of the obligation of the Member States to provide a comprehensive, integrated, and solidarity-based response to the health problems of its populations,

***RESOLVES:***

1. To take note of the concept paper *Chronic kidney disease in agricultural communities of Central America*.
2. To urge the Member States to:
  - (a) support the Declaration of San Salvador, which recognizes chronic kidney disease from nontraditional causes in Central America as a serious public health problem;
  - (b) advocate for the need to prevent and manage chronic kidney disease in the region;
  - (c) identify the at risk and vulnerable populations and communities and the subnational geographical areas that need to be targeted on a priority basis;
  - (d) strengthen their capabilities in environmental and occupational health, taking into account the regulatory frameworks and international commitments and standards;
  - (e) strengthen surveillance strategies for chronic kidney disease;
  - (f) strengthen integrated strategies such as the development of research programs in communities and high-risk population groups, early diagnosis, and timely treatment, to reduce the complications from chronic kidney disease;
  - (g) strengthen the health services network that includes a model of care that ensures quality of care and patient safety, the availability of human resources, medicines, and health technologies, and financing of the services package;
  - (h) work with the affected communities so that together they can participate actively in the prevention and control of the disease, in public policy-making, and in monitoring compliance with the agreements and commitments made;

- (i) guarantee sufficient resources to achieve the sustainability of national and subnational programs to address this disease;
  - (j) promote the design and implementation of domestic and regional research agendas for chronic kidney disease in order to bridge the knowledge gap;
  - (k) promote the preparation of practice guidelines and the development of evidence-based policy options consistent with international standards;
  - (l) Forge partnerships with other sectors of the government, civil society, academia, and private enterprise to develop a plan that makes it possible to mitigate, on an urgent basis, the health, social and economic consequences of this disease, and to articulate plans and commitments to stop the epidemic, protect the population, prevent the disease, treat patients, and support their families; and
  - (m) develop an interministerial approach and invite partners in the countries, development agencies, nongovernmental organizations, and other interested parties to contribute to the coordinated design of policies, plans and strategies and to resource mobilization.
3. To ask the Director to:
- a) continue to advocate on behalf of effective resource mobilization and to encourage Member States to play an active role in the application of this resolution;
  - b) lend support to the strengthening of surveillance systems for chronic kidney disease;
  - c) promote the strengthening of the countries' capabilities with regard to environmental and occupational health, taking into account the regulatory frameworks and international commitments and standards;
  - d) provide technical cooperation to the countries for the development of national and subregional action plans to prevent and address chronic kidney disease in the framework of renewed Primary Health Care;
  - e) continue supporting and strengthening human resources management systems in order to increase coverage, access, and quality of care;
  - f) promote evidence-based policy-making and interventions to address chronic kidney disease and its consequences;

- g) strengthen procurement mechanisms for medicines and other critical public health supplies, such as the PAHO Strategic Fund, for the treatment of chronic kidney disease;
- h) provide technical cooperation to countries in order to establish and implement a regional and domestic agenda of research priorities for chronic kidney disease;
- i) continue to advocate for collaboration between countries that share the same problem and its determinants; and
- j) continue to alert countries that might face similar situations in terms of agriculture and environmental and labor practices to this situation, especially, but not limited to, neighboring Central American countries, and call on them to conduct thorough evaluations and take the necessary measures to prevent similar situations.



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CE152/25 (Eng.)  
Annex B

**Report on the Financial and Administrative Implications  
of the Proposed Resolution for PASB**

**1. Agenda item: 4.7: Chronic Kidney Disease in Agricultural Communities in Central America**

**2. Linkage to Program and Budget 2012-2013:**

**(a) Strategic Objective:**

SO3: To prevent and reduce disease, disability and premature death from chronic non-communicable conditions, mental disorders, violence and injuries.

SO8: To promote a healthier environment, intensify primary prevention and influence public policies in all sectors so as to address the root causes of environmental threats to health.

SO11: To strengthen leadership, governance, and evidence base of health systems.

**a) Expected result:**

**RER 3.3** Member States supported through technical cooperation to improve capacity to collect, analyze, disseminate and use data on the magnitude, causes and consequences of chronic noncommunicable conditions, mental and behavioral disorders, violence, road traffic injuries and disabilities.

**RER 3.5** Member States supported through technical cooperation for the preparation and implementation of multisectorial, population-wide programs to promote mental health and road safety and prevent chronic non-communicable conditions, mental and behavioral disorders, violence, and injuries, as well as hearing and visual impairment, including blindness.

**RER 8.5** Health sector leadership enhanced to promote a healthier environment and influence public policies in all sectors to address the root causes of environmental threats to health, by responding to emerging and re-emerging environmental health concerns from development, evolving technologies, other global environmental changes, and consumption and production patterns.

**RER 11.3** Member States supported through technical cooperation to increase equitable access to, and dissemination and utilization of, health-relevant information, knowledge and scientific evidence for decision-making.



**3. Financial implications:**

**(a) Total estimated cost for implementation over the lifecycle of the resolution (estimated to the nearest US\$ 10,000, including staff and activities):**

The proposed resolution does not include a specific time frame and it is therefore difficult to determine the total cost. Moreover, since the magnitude and scope of the disease throughout the Region has not yet been established with scientific evidence, it is difficult to arrive at a long-term estimate. Chronic kidney disease requires a long-term commitment from the Secretariat to identify and address the problem as a whole, including all the necessary resources: human, political and financial.

**(b) Estimated cost for the biennium 2014-2015 (estimated to the nearest US\$ 10,000, including staff and activities):**

The estimated cost for the biennium 2014-2015 is approximately US\$1,700,000. Estimated needs are as follows:

<b>Area</b>	<b>Amount (US\$)</b>
<i>Health Services</i>	1,000,000
<i>Surveillance and research</i>	300,000
<i>Environment and Safety</i>	300,000
<i>Advocacy</i>	100,000
<b>TOTAL</b>	<b>1,700,000</b>

**(c) Of the estimated cost noted in (b), what can be subsumed under existing programmed activities?**

The Bureau has human resources in place in all the areas identified, although the issue of chronic kidney disease needs to be included in the advocacy and work plans of the human resources assigned to the issue. In addition, some activities under this initiative are included in the proposed plan of action to tackle chronic disease. It entails close coordination among PAHO's Health Systems and Services, Chronic Diseases, and Environmental Health areas.

**4. Administrative implications:**

**(a) Indicate the levels of the Organization at which the work will be undertaken:**

This work will be carried out at all levels of the Organization—country, subregional and regional.

**(b) Additional staffing requirements (indicate additional required staff full-time equivalents, noting necessary skills profile):**

N/A

**(c) Time frames (indicate broad time frames for the implementation and evaluation):**

The proposed resolution does not propose a particular time frame and considers that a long-term effort and commitment on the part of all Member States and the Bureau is required.



PAN AMERICAN HEALTH ORGANIZATION  
*Pan American Sanitary Bureau, Regional Office of the*  
WORLD HEALTH ORGANIZATION

CE152/25 (Eng.)  
Annex C

**ANALYTICAL FORM TO LINK AGENDA ITEM WITH ORGANIZATIONAL MANDATES**

**1. Agenda item:** 4.7: Chronic Kidney Disease in Agricultural Communities in Central America

**2. Responsible unit:** Health systems based on Primary Health Care

**3. Preparing officer:** Dr. Evelina Chapman

**4. List of collaborating centers and national institutions linked to this Agenda item:**

Central American Integration System (SICA); Council of Ministers of Health of Central America and the Dominican Republic (COMISCA); Program on Work and Health in Central America (SALTRA); Central American Institute for Studies on Toxic Substances (IRET-UNA); national coordinators and national donor and transplant committees nephrology areas and dialysis units; regulatory agencies for imports, contraband, storage, sale, distribution, use and final disposal of agrochemicals; national research programs.

**5. Link between Agenda item and Health Agenda for the Americas 2008-2017:**

The proposed resolution is linked to Health Agenda for the Americas 2008-2017 in the following areas of action:

- Tackling health determinants;
- Increasing social protection and access to quality health services;
- Reducing the risk and burden of disease.

**6. Link between Agenda item and Strategic Plan 2008-2013:**

The issue of chronic tubule-interstitial kidney disease is directly related to Strategic Objectives 3 and 8 of PAHO's Strategic Plan 2008-2012:

- SO3: To prevent and reduce disease, disability and premature death from chronic non-communicable conditions, mental disorders, violence and injuries.
- SO8: To promote a healthier environment, intensify primary prevention and influence public policies in all sectors so as to address the root causes of environmental threats to health.
- SO11: To strengthen leadership, governance, and evidence base of health systems.

Given the repercussions for health systems due to the high number of hospitalizations, it is also related to Strategic Objective 10, to improve the organization, management, and delivery of health services.

It also entails the need for research and evidence-based decision-making, in addition to a multisectorial approach that includes the private sector.

**7. Best practices in this area and examples from countries within the Region of the Americas:**

In recent years, several specific actions have been taken in the Region to tackle and address different aspects related to chronic kidney disease in Central America, although not necessarily the problem as a whole. For example:

- Implementation of the project PLAGSALUD “Occupational and Environmental Aspects of Exposure to Pesticides on the Central American Isthmus”--financed by the Danish Agency for International Development (DANIDA) and implemented by PAHO/WHO; recognized for its multicountry and long-term approach.
- Mandates related to agricultural workers’ health in Central America as a result of advocacy efforts by SALTRA.
- Important mandates on water quality throughout the Region.
- Knowledge and strengths that each country has in public health surveillance of pesticides.
- Establishment of the POP scale (Peradeniya Organophosphorus Poisoning)

**8. Financial implications of this Agenda item:**

***Total estimated cost of the application of the resolution:***

The proposed resolution does not include a specific time frame and it is therefore difficult to determine the total cost. Moreover, sine the magnitude and scope of the disease throughout the Region has not yet been established with scientific evidence, it is difficult to arrive at a long-term estimate. Chronic kidney disease requires a long-term commitment from the Secretariat to identify and address the problem as a whole, including all the necessary resources: human, political and financial.

The estimated cost for the 2014-2015 biennium is approximately US\$1,700,000.