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#### C. CHRONIC KIDNEY DISEASE IN AGRICULTURAL COMMUNITIES IN CENTRAL AMERICA: PROGRESS REPORT

##### Background

1. In the past two decades, the Central American subregion has reported a growing number of cases of people who suffer from chronic kidney disease (CKD) and who die from this cause. Among these cases, a type of CKD has been reported whose etiology is not related to the most common causes of the disease, such as diabetes mellitus and hypertension. This type of nontraditional CKD, or CKD of nontraditional or still unknown etiology (CKDnT) is more frequent than in the Region of the Americas as a whole and the trend is toward a growing number of reported cases.

2. Between 1997 and 2013, 47,885 deaths from CKD<sup>1</sup> (31% of them women) were reported in the Region, making this the seventh leading cause of death from noncommunicable diseases. Of this total, 19,533 deaths (26% of them women) were in under-60 age groups. Increasing mortality begins in the 10-14-year age group, both for boys and girls. In terms of years of life lost to premature death from CKD, the analysis shows a rate of 325.5 age-adjusted years of life lost per 100,000 population in 2015 (1-6).

3. El Salvador and Nicaragua—with mortality from CKD between nine and twelve times higher than the countries of reference in the Region (Cuba and the United States)—have been the countries most affected by this epidemic which, according to statistical analysis, began in the mid-1970s, coinciding with significant changes in the forms of agricultural production in the Central American subregion. The results of the 2015 National Survey of Noncommunicable Chronic Diseases in the Adult Population (ENECA) in El Salvador showed 12.6% prevalence of CKD, with 3.8% corresponding to CKDnT. In Guatemala, another of the affected countries in the subregion, the prevalence rates obtained from the Health Management Information System (SIGSA) for the period 2008-2015 show a 75% increase in CKD, rising from 4 per 100,000 population in 2008 to 7 per 100,000

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<sup>1</sup> Coded as category N18, “Chronic Kidney Disease”, according to the International Classification of Diseases, 10th edition (ICD-10).

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population in 2015, and a 25% increase in the mortality rate in the same period (for a rate of 12 per 100,000 population in 2008 and 15 per 100,000 population in 2015) (1-6).

4. In 2013, during the 52nd Directing Council of the Pan American Health Organization (PAHO), the Member States adopted Resolution CD52.R10 on Chronic Kidney Disease in Agricultural Communities in Central America (7). In 2015, the 54th Directing Council took note of the progress report on implementation of the resolution (Document CD54/INF/5-E), and the Director of the Pan American Sanitary Bureau (PASB, or the Bureau) indicated that, despite the work done, little concrete progress had been achieved to address the subject of chronic kidney disease in young people of working age (1, 2).

5. This document reports on the progress achieved since the last progress report on the subject (Document CSP29/INF/7) (8), presented in 2017 during the 29th Pan American Sanitary Conference, and since the conclusion of the interprogrammatic project approved by the Director of the Bureau in 2017 and implemented in Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, and Panama as an integrated response to the CKDnT emergency in agricultural communities in Central America. This project included the following lines of intervention: *a)* support action plans to strengthen local capacity for an comprehensive response to CKDnT in affected municipalities; *b)* increase the availability of policy options, tools, and technical support to strengthen interventions for the care of patients with CKD/CKDnT; *c)* strengthen advocacy and intersectoral action to prevent CKDnT; *d)* prepare technical guidance and tools and provide greater technical support to improve epidemiological, occupational, and environmental surveillance, in addition to registry systems, with emphasis on CKDnT; and *e)* implement a communication strategy that disseminates research findings and calls attention to CKDnT as an occupational disease (2, 9).

### **Analysis on Progress Achieved**

6. Since 2017, the countries of Central America (Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, and Panama) have moved forward with interventions to strengthen national and local capacities for an integrated response to CKDnT, with emphasis on the municipalities most affected by this disease. In El Salvador, Guatemala, Honduras, and Panama, these municipalities have a population of more than four million inhabitants. In El Salvador, the agricultural areas of San Miguel and Usulután are being addressed; in Guatemala, the departments of Escuintla, Quetzaltenango, Peten<sup>2</sup>, and Chimaltenango; in Nicaragua, the municipality of Chinandega; and in Panama, the provinces of Coclé, Chiriquí, and Veraguas (9).

7. Despite the countries' advances in the development of policies and tools aimed at boosting response capacity to treat patients in health services and strengthening interventions to care for people living with CKD and CKDnT, the response has been very

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<sup>2</sup> Peten is the largest department in Guatemala and the one with the greatest risk of CKDnT.

uneven, with large gaps. Based on data from a self-evaluation conducted in November 2017 in a workshop on national dialysis and transplantation registries, it was possible to evaluate the target for access to renal replacement therapy (hemodialysis and peritoneal dialysis), set at 700 treatments per million population for 2019. Except for Panama, which has renal replacement rates higher than 600 per million population, the rest of the Central American countries are in the range of 300 to 600 per million (9).

8. Costa Rica has implemented a protocol for the care of people with CKD in the health services network of the Costa Rican Social Security Fund. As a result, the country now has primary care professionals in the priority cantons who are able to diagnose and treat cases of CKD and CKDnT. Technical capacities were also strengthened through training on the donation and transplantation of organs, tissues, and cells (9).

9. El Salvador has developed various tools to strengthen interventions aimed at self-care and patient management. It also has guidelines for an integrated response to CKD and CKDnT, technical guidelines on continuous ambulatory peritoneal dialysis, guidelines for good clinical practice, guidance for patient self-care, clinical guidelines for internal medicine, and guidelines for transplants; and it has trained health workers in the 30 Ministry of Health hospitals and the five health regions in the use of PAHO's management tool for supplies and medicines. It also determined the equipment and supplies required by the Ministry of Health and the Salvadorian Social Security Institute (ISSS) for the treatment of patients with CKD (9).

10. Guatemala has developed and distributed guidelines for treatment of CKD at the three levels of care, with emphasis on the first level, including guidance on laboratory work and medicines; and, through the PAHO virtual campus, it has trained personnel of the Ministry of Public Health and Social Welfare, at the first and the second levels of care, in the management of CKD, hypertension, diabetes, and cardiovascular diseases. Also, a study was carried out on the cost of treating CKD in Guatemala, in order to estimate the total cost (direct plus indirect costs) of each available option for renal replacement therapy (9).

11. Honduras has reviewed and published protocols for hemodialysis and peritoneal dialysis. For its part, Nicaragua is now preparing a proposal to enhance the human dimension for patients with CKD and their family members: with this objective, the existing material has been reviewed and guides have been prepared with questions for key actors and focus groups in the municipalities of Chichigalpa and Malpaisillo. Finally, Panama held a training workshop introducing methodology for the preparation and adaptation of clinical practice guidelines; and it formed a working group that prepared, with PAHO support, national guidelines on the diagnosis and management of chronic kidney disease at the first level of care (9, 10).

12. At the regional level, the virtual course for health teams of the first level of care on management of CKD has been completed by nearly 10,000 health professionals in the Region (about a thousand of them in Central America), and progress has been made in the

preparation of a course on peritoneal dialysis for first level of care teams . In addition, a regional workshop on National Dialysis and Renal Transplantation Registries of Latin America was held, in coordination with the Latin American Society of Nephrology and Hypertension (SLANH), a nongovernmental organization in official relations with PAHO. A study was also carried out to evaluate renal replacement therapies and great asymmetry was observed among countries in the prevalence of patients in renal replacement therapy (both in terms of the general set of therapies available and in the specific aspects of each type of dialysis), as well as considerable differences in service procurement mechanisms, unit prices, and use of specific devices, in addition to serious difficulties in accessing consolidated information for efficient management of these aspects (9, 11).

13. Countries have made progress in strengthening epidemiological, occupational, and environmental surveillance, and in registry systems, with emphasis on CKDnT. Costa Rica initiated surveillance of CKDnT and made efforts to improve registry, reporting, and analysis of cases and deaths from this disease. El Salvador moved forward in designing a comprehensive surveillance system for noncommunicable diseases, including comprehensive surveillance of CKDnT; it also made progress in reviewing and updating case definitions and the criteria for recording deaths. It also established a registry of patients in kidney dialysis in five Ministry of Health hospitals. In Guatemala, epidemiologists in health departments and hospitals received protocols for epidemiological surveillance of hypertension and diabetes, a manual for registering kidney dialysis and transplantation, and prevention guides. Also, protocols were reviewed and updated for epidemiological surveillance of noncommunicable diseases (diabetes mellitus, cardiovascular disease, cancer, and chronic kidney disease) and the Guatemalan Registry of Kidney Dialysis and Transplantation 2017 was officially presented. Nicaragua, for its part, began implementing a system of electronic clinical files developed for patients with CKD, built a web-based platform for this system, and provided computer technology for the clinics where patients with CKD are treated in the municipalities of Chichigalpa and El Viejo, where the system was validated. In Panama, the Ministry of Health approved the standards for the information system for epidemiological surveillance of CKD and provided training in the application of these standards for health workers in all health regions (9).

14. At the regional level, an operational framework for integrated surveillance has been created (as a visual tool in HTML) and efforts have begun for a detailed description of integrated public health surveillance capacities for CKD and CKDnT, including indicators of occupational and environmental surveillance in four countries (Costa Rica, Honduras, Guatemala, and Panama). Also, a manual has been developed for public health surveillance of these diseases, which includes a set of defined indicators for epidemiological and clinical information; and an initial proposal (still in development) has been made for the environmental and occupational areas. With regard to occupational and environmental epidemiological surveillance, capacities have been developed for surveillance and control of dangerous exposures. A virtual course has been developed for integrated public health surveillance of CKD and CKDnT in order to guide health services personnel in strategies to mitigate the CKDnT epidemic and improve surveillance of CKD in the context of

chronic diseases. A workshop was held on public health surveillance of both diseases, with the participation of key actors from Honduras and Panama (related to health, agriculture, statistics, and censuses, and labor). Results include the analysis of gaps in surveillance and proposals for integrated activities in a preliminary draft of an action plan for each country to strengthen public health surveillance of CKD and CKDnT (9, 12).

15. Countries have strengthened mechanisms for advocacy and intersectoral action. Costa Rica prepared a road map for the Interinstitutional Commission on Mesoamerican Nephropathy, based on guidelines developed through a national forum on the subject. El Salvador issued a situation report on CKD, compiling the existing information on the country and identifying stakeholders (a total of 51 entities, including government organizations, agricultural cooperatives, social and community organizations, independent bodies, and international cooperation agencies). Guatemala developed and validated a municipal plan for CKD risk and prevention with agricultural workers. It also proposed a medical assessment process for the selection of agricultural workers, laboratory tests to evaluate renal function, and promotion of the use of the existing health services in Petén for CKD prevention, especially among agricultural workers involved in African palm oil production. Proposals have also been made for the promotion of healthy habits and lifestyles, emphasizing diet and hydration as preventive measures for CKD, as well as protection from exposure to agricultural chemicals. Nicaragua is encouraging civil society organizations, families, and affected individuals to take an active role in health promotion and in the prevention and care of CKDnT. The country has held monthly meetings in the España de Chinandega Departmental Hospital, with the participation of patients who are candidates for renal replacement therapy and patients who are in the two types of renal replacement therapy available in the unit. Panama, for its part, held a meeting to raise awareness of the situation of CKD in Coclé, aimed at social communicators in the main news media (9).

16. The countries have implemented communication strategies to disseminate research findings and other activities, calling attention to CKDnT as an occupational and environmental disease. Costa Rica compiled research in a dossier published on the PAHO website in Costa Rica as part of the digital memory of the national forum on CKDnT, facilitating health workers' access to scientific literature on CKDnT. El Salvador reproduced materials (posters, promotional and information materials) aimed at raising awareness about CKD and health promotion at the community level and trained more than 300 health promoters in community health teams and more than 12 community organizations in the areas most affected by CKDnT, as well as distributing self-care guides. Two workshops were organized in Guatemala to disseminate the results of the annual operational plan for the project among various actors and authorities of the Ministry of Public Health and Social Welfare. Honduras implemented a communication strategy, promoting virtual courses on CKD and related subjects among first level of care teams. Printed materials were prepared, and health workers were trained in the use of social networks to raise awareness of the issue. Nicaragua systematized research on CKD and evaluated the quality of the related gray literature. Also, a virtual course was given on determinants and risk factors of CKD. The country prepared educational materials on the

disease, including how to incorporate the human factor with patients and families when addressing the disease. Panama prepared a communication strategy on CKD and CKDnT in the province of Coclé (9).

17. At the regional level, progress was made in the harmonization of standards and processes for research on CKDnT in order to improve the quality of standardized protocols for cross-sectional, case-control, and cohort studies, including questionnaires and the associated informed consent forms. A causality framework was developed for CKDnT, with technical documents that include a systematic review and meta-analysis of the evidence. Research carried out in Central America on CKDnT was identified. Research priorities for the Region were established and disseminated in various entities, including the research committee of the Council of Ministers of Health of Central America and the Dominican Republic (COMISCA). The committee met in Panama, where it adopted the regional research agenda and prepared an operational research plan for Central America and the Dominican Republic that includes CKDnT as a research topic (9, 13, 14).

### **Action Necessary to Improve the Situation**

18. Given the progress and challenges facing the countries with regard to CKDnT, it is recommended to continue advancing in the following areas:

- a) Strengthen local capacity for a comprehensive response to CKDnT in the affected municipalities.
- b) Develop options for policies, tools, and technical support to strengthen interventions for the care of people living with CKD and CKDnT.
- c) Strengthen epidemiological, occupational, and environmental surveillance, as well as registry systems, with emphasis on CKDnT.
- d) Intersectoral advocacy and action for the prevention of CKDnT.
- e) Advance in the implementation of the research agenda and strengthen national and international partnerships to promote the use of scientific evidence in public policy-making and in practice, which will help strengthen the health system and access to services.
- f) Improve communication and the exchange of information, research results, experiences, tools, guidelines, and protocols; and strengthen cooperation among countries to increase their response capacity, advocacy, and intersectoral action to tackle this problem.

### **Action by the Directing Council**

19. The Directing Council is invited to take note of this report and provide any comments it deems pertinent.

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