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How universal is coverage and access to diagnosis and treatment for Chagas disease in Colombia? A health systems analysis

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ABSTRACT

Limited access to Chagas disease diagnosis and treatment is a major obstacle to reaching the 2020 World Health Organization milestones of delivering care to all infected and ill patients. Colombia has been identified as a health system in transition, reporting one of the highest levels of health insurance coverage in Latin America. We explore if and how this high level of coverage extends to those with Chagas disease, a traditionally marginalised population. Using a mixed methods approach, we calculate coverage for screening, diagnosis and treatment of Chagas. We then identify supply-side constraints both quantitatively and qualitatively. A review of official registries of tests and treatments for Chagas disease delivered between 2008 and 2014 is compared to estimates of infected people. Using the Flagship Framework, we explore barriers limiting access to care. Screening coverage is estimated at 1.2% of the population at risk. Aetiological treatment with either benznidazol or nifurtimox covered 0.3–0.4% of the infected population. Barriers to accessing screening, diagnosis and treatment are identified for each of the Flagship Framework's five dimensions of interest: financing, payment, regulation, organization and persuasion. The main challenges identified were: a lack of clarity in terms of financial responsibilities in a segmented health system, claims of limited resources for undertaking activities particularly in primary care, non-inclusion of confirmatory test(s) in the basic package of diagnosis and care, poor logistics in the distribution and supply chain of medicines, and lack of awareness of medical personnel. Very low screening coverage emerges as a key obstacle hindering access to care for Chagas disease. Findings suggest serious shortcomings in this health system for Chagas disease, despite the success of universal health insurance scale-up in Colombia. Whether these shortcomings exist in relation to other neglected tropical diseases needs investigating. We identify opportunities for improvement that can inform additional planned health reforms.

1. Introduction

Approximately 5.7 million individuals are infected with *Trypanosoma cruzi*—the aetiologic agent of Chagas disease—across the twenty one Latin American countries where the disease is endemic (World Health Organization, 2015). Chagas disease is a leading cause of cardiomyopathy and responsible for considerable social

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and economic hardship. It has been estimated that, on average, an infected individual incurs US$474 in health-care costs annually and $3456 across their lifetime (Lee et al., 2013). Precarious access to care and difficulties in the supply of diagnosis and treatment for those with Chagas disease have been reported, in both endemic and non-endemic countries, as the main obstacles for reaching the World Health Organization (WHO) and London Declaration goals of having all infected and ill patients receiving care by 2020 (Tarleton et al., 2014).

Chagas disease is caused by infection with the parasite *T. cruzi*, which is usually transmitted by a triatomine insect vector. The infection can also be transmitted by blood transfusion, organ transplantation, and via congenital and oral routes. The disease has an initial acute stage, which is usually asymptomatic. However, in a small proportion of cases, this stage can cause severe symptoms. A chronic phase ensues, which is asymptomatic for the majority of those with the infection. However, approximately 30–40% of infected people progress, from a few years to decades after the initial infection, to a chronic, clinically active phase of the disease, involving potentially fatal cardiac or gastrointestinal complications (Rassi and Marin-Neto, 2010; Cucunubá et al., 2016). Public health interventions for Chagas disease in Latin America have focused on interruption of transmission by blood-bank screening and vector control (mainly through insecticide spraying, but also in some cases by housing improvement, health education, and social changes such as migration and modernization) (World Health Organization, 2010). These strategies have shown success in decreasing incidence and burden of disease over time (Hashimoto and Schofield, 2012; Schofield et al., 2006). A reduction by approximately 90% in the prevalence (from 10% to <1%) in children in endemic areas over the last four decades in the Southern Cone countries (Dias, 2007) has led to the goal of interrupting domiciliary transmission in endemic countries (World Health Organization, 2012). These initiatives have not, however, been designed to provide care (diagnosis and treatment) to people already infected. Even if interruption of transmission were achievable, given the chronic course of the disease, people already infected need a responsive health system to meet their health care needs (Manne et al., 2012).

Diagnosis and treatment of Chagas disease is not an easy task. Diagnosis requires conducting at least two different serological tests, which makes it logistically and financially challenging. To date, there are only two drugs available as aetiological treatment: benznidazol and nifurtimox. Both have proven to be more efficacious in early stages and both are associated with frequently reported side effects (Villar et al., 2014). A large clinical trial recently tested the efficacy of benznidazole amongst adults and found an inconclusive effect when heart complications were already established (Morillo et al., 2015), which suggests there is still debate about the impact of such etiological treatments as the disease progresses. Nevertheless, there is consensus on the need to offer these aetiological treatments to patients, particularly in early stages and that symptomatic treatment, (such as heart failure and anti-arrhythmic drugs, pacemakers and transplants) becomes paramount for advanced stages (Carlos Pinto Dias et al., 2015).

This analysis focuses on the epidemiological and health system status of Colombia, where epidemiological data suggest that approximately 437,960 people are infected with *T. cruzi*, 30% of whom have already developed the chronic cardiac form of Chagas disease (World Health Organization, 2015). Blood-bank screening in Colombia was declared mandatory in 1995, and since 2003 it has achieved 100% coverage. However, it was not until 2008 that the Ministry of Health set up a national programme aimed at controlling, preventing and treating Chagas disease (Appendix A, Figure A1 depicts a summary timeline of policy changes). To date, there has been no assessment of whether, and how, these recommended diagnostic and treatment pathways, introduced in 2011 (Ministerio de Protección Social, 2011), have been incorporated into the health system which makes it difficult for policy makers to make informed decisions on resource allocation and improvement of services.

1.1. Overview of health system structure in Colombia

The Colombian health system has been considered a highly successful example of a health insurance-regulated market (Giedion and Uribe, 2009; Lewandowski et al., 2015), with positive effects in terms of health status, financial protection and health care utilisation (Vargas-Zea et al., 2012). A compulsory health insurance system, known as Law 100, was established in 1993, consisting of two main sub-systems, namely, the contributory regime for formal workers and their families, and the subsidised regime for the population outside the formal economy (Londoño et al., 1997). These regimes are administered by private and a few public insurers known as Empresas Promotoras de Salud (EPS)—Health Promotion Enterprises, which are responsible for organising the registration of people in the system and delivering health services through a variety of public and private health care providers (Vargas et al., 2010). Health service delivery is organised across three levels: primary care (basic care attended by general physicians and nurses), secondary care (intermediate care with some specialised physicians, procedures and laboratory), and tertiary care (the most complex procedures and specialisations) (Castillo-Riquelme et al., 2008). According to official sources, the insurance coverage of the health system in Colombia has gradually increased, reaching near 96% of the population, one of the highest coverage rates in Latin America (Vargas et al., 2010). Out-of-pocket expenditure for health represents 17% of the total health expenditure, one of the lowest in the Latin American region (Atun et al., 2015; WHO, 2014). Although access to health care in Colombia has increased in line with insurance coverage, important inequities have been revealed not only between the two insurance regimes but also between geographical areas, urban and rural populations, social strata and ethnic groups (Garcia-Subirats et al., 2014). Activities that do not involve primary health facilities (such as vector control, mass screening, and health education) are the responsibility of governmental institutions (departmental and municipal secretaries of health) and funded from general taxation, usually without involvement of health insurers (Appendix A, Table A1), which leads to fragmentation in the delivery of these services.

Given the increasing global health interest in universal health coverage (UHC), and the noted success of Colombia's move towards UHC, we use a mixed methods approach to understand how such a policy initiative translates into practice. Specifically we explore how the health system serves those suffering from Chagas disease, a traditionally marginalised population group. We (i) estimate the actual coverage of screening, diagnosis and treatment between 2008 and 2014, (ii) identify pathways to provision of services, (iii) highlight supply-side barriers to accessing services for diagnosis and aetiological treatment, and (iv) suggest recommendations for improvement that can inform additional planned health reforms.

2. Data and methods

Access can be defined in terms of two separate components: a) *physical availability*, measured as the distribution of available inputs compared to the appropriate population denominator; and b) *effective availability*, measured by how easy it actually is for this population to obtain care (Frost and Reich, 2008). We have assessed the former (quantifying the supply of diagnosis and aetiological treatment using a quantitative approach) and investigated supply-side barriers associated with the latter (using a qualitative