

for the treatment of fungi that have also proven effective for *Trypanosoma cruzi* in animal models.

Lastly, I would like to stress the role of the international NGO Drugs for Neglected Diseases Initiative (DNDi), which is tirelessly struggling to secure greater access to drugs worldwide, and Doctors Without Borders, with its vast experience in diagnosis and treatment in different countries of the Americas. Other Argentine foundations with active participation in Chagas disease control are Mundo Sano and Bunge y Born. I would also like to point out that Chagas disease has undergone a great epidemiological change: it has been urbanized owing to migrations from endemic areas. A large number of infected children and adults live in big and small cities in different parts of the world. In Argentina, medical care must be promoted in the three existing health care systems: the public system, the employment-based insurance system and the private system. In all three patients with Chagas disease can be found.

Albeit with ups and downs, both vectoral and non-vectoral actions are progressing in Argentina and the figures are encouraging. Much has been done, but there is still much more to do.

## Commentary on the criterion of visibility and invisibility in Chagas-Mazza disease

### Comentario sobre el criterio de visibilidad e invisibilidad en la enfermedad de Chagas-Mazza

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**Commentary on:** Zabala JP. The disease in its labyrinth: advances, challenges and paradoxes over 100 years of Chagas in Argentina. *Salud Colectiva*. 2012;8(Suppl 1):S9-S21.

Juan Pablo Zabala's article (1) puts into evidence the paradoxes of Chagas disease since its

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discovery, based on a criterion of the "visibility and invisibility of the disease." Unfortunately, the disease generally becomes visible when the elections of municipal officers, governors or presidents draw near. The promises made to this population living in conditions of poverty are decent housing, periodic fumigation, better nutrition, electricity and running water. However, after the elections these promises are not fulfilled. The people who do have the disease in mind are field researchers and those who devote themselves to the everyday care and follow-up of these patients in big cities.

The invisibility is created by society, which is generally unaware of the existence of people with this disease because they believe that only the poor are affected, never imagining that the disease can be contracted through blood transfusion, vertical (mother to child) transmission, or addiction to intravenous drugs by endogenous reinfection due to sharing a needle with a person with reactive serology (2). This disease is hidden by those infected to avoid employment discrimination, by health

care professionals uninterested in carrying out the follow-up of patients who cannot afford to pay a private medical consultation or supplementary tests, and laboratories that avoid researching and producing drugs for people with little purchasing power with which to buy them. Thus, we continue to use antiparasitic drugs over 40 years old that have uncertain impact in the chronic stage without demonstrable cardiac pathology (indeterminate stage) and whose use has only been demonstrably justified in newborns until they reach the age of 15 years, when they are in the indeterminate or acute stage of the disease. Another cause of invisibility is the way States have concealed the actual figures of the pathology, since it is a disease of the poor and its existence therefore speaks to the level of poverty in a population (3). Nonetheless, above all I must highlight the indifference and discrimination of society and even of some health care professionals who avoid treating these patients (many of them belonging to other ethnic groups). From 2004 to 2012, I had the chance to study uninterruptedly extremely poor populations of the *qom (toba)*, *wichi* and *mocoví* ethnicities, and also poor Argentines of mixed backgrounds. I witnessed the neglect of these populations, the lack of respect for their culture and, in some provinces of Argentina, unwillingness to provide them with health care. Such behavior on the part of health teams toward these ethnic groups is a shameful social behavior that we should seriously revise (4).

Another issue to take into consideration is that Chagas disease is a condition whose evolution depends on many exogenous and endogenous factors. It is a multifactorial condition. That is why, as stated by Zabala (1), one of the most brilliant Secretaries of Health of the Argentine Republic (Ramón Carrillo) could not eradicate Chagas disease although he fought against it, and although he eliminated the epidemics of paludism, typhus and brucellosis, notably lowered the incidence of syphilis and drastically reduced the incidence of tuberculosis and the child mortality rate, during General Juan Domingo Perón's government, in the period around 1946. This is because combined action, finely synchronized and prolonged over time, is needed to achieve definite success – a daunting achievement in Argentina, which lacks such sustained joint actions. Building vinchuca-resistant homes, made of brick and with a water collection system in the roof

(in arid regions), keeping chicken pens and animal corrals away from houses and carrying out proper fumigation, epidemiological vigilance over appropriate periods and, primarily, public health education (a dismal failure in the campaigns conducted in Argentina) are the main pillars needed to prevent and definitely eradicate Chagas disease.

One of the worst failures in our country is the poor education on Argentine regional diseases provided at universities, where priority is given to other diseases typical of developed countries. It is necessary to reform the curriculum of Argentine universities so that physicians, irrespective of the subsequent specialty they choose for their professional practice, at least know to suspect Chagas disease given a patient with certain signs that presuppose its presence.

In 2011, the Chagas Network of the Buenos Aires City Government (GCBA) [*Gobierno de la Ciudad de Buenos Aires*] published a study aimed at “evaluating the work, social, and educational situations of Chagas patients in the present” (5). The population observed were young adult patients in the chronic stage, without cardiac pathology demonstrable by supplementary tests, and incorporated in the Chagas Network of the GCBA. The results of the study were as follows: 4,819 Chagas disease patients from 24 hospitals of the GCBA were included in the protocol during 2011, 3,084 (64%) of whom were men. The average age was 42 years ( $\pm 7$  years). Out of the total number of patients, 3,951 (82%) were unemployed and 868 were employed (18%) ( $p < 0.001$ ). Of the employed patients, 634 (73%) did not have an employment contract and 234 (27%) did have a contract; 522 (60%) performed their duties in the construction field, 154 (18%) in the textile industry, 116 (13%) in cleaning services, 56 (6%) in food sales and 20 (2.3%) in other fields. Out of the total number of patients, only 636 (13%) had a health insurance plan. Regarding the patients' level of education, 964 (20%) were illiterate, 2,168 (45%) had incomplete primary education, 1,539 (32%) had complete primary education, 101 (2%) had incomplete secondary education, 45 (1%) had complete secondary education and 2 (0.04%) had complete higher education. Out of the total number of patients, 2,707 (56%) lived in shantytowns, 865 (18%) in squatted homes and 1,247 (26%) in homes made of brick. Poverty was defined by the existence of 2 of the following 3 variables: poor nutrition (one

or two full meals per day), poor housing (precariously constructed) and/or poor education (illiterate or with incomplete primary education). Thus, in the study population, 3,572 patients (74%) ( $p < 0,001$ ) were considered to be at poverty level. The conclusions of the study were compelling:

1. In a population with Chagas, healthy according to cardiological studies by the Chagas Network of the GCBA, a significant unemployment rate due to discrimination was observed, which in turn favors the presence of poverty and low levels of education.
2. Those employed were paid "under the table" (without an employment contract). Therefore, high unemployment added to the prevalence of under-the-table work determines the lack of access to a health insurance plan, in order to receive better medical care and discounts on drugs when necessary.
3. The rights to work, education and decent housing are seriously compromised in a population "stigmatized" for having Chagas disease although they are healthy enough to perform all types of activities.
4. "Poverty" may be the cause or the consequence of Chagas disease. Whichever the case, those affected are placed in a serious position of inferiority before the population without Chagas. Social ethics does not seem to cover people stigmatized simply because they have a reactive blood test.

All of this serves to demonstrate that it will be very difficult to change this characteristic of the disease in a few years' time, as accurately described by the author (1) using the criterion of "visibility and invisibility of the disease," still relevant today.

## Chagas disease: a complex problem

### Enfermedad de Chagas: un problema complejo

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I share Zabala's view (1) that Chagas is a complex entity, with biological, environmental, economic, labor, political, educational, and sociocultural factors whose convergence creates a vicious circle in which the subjects and their environment are immersed and from which it is difficult for them to escape.