Control and prevention of Chagas disease in Europe

Report of a WHO Informal Consultation (jointly organized by WHO headquarters and the WHO Regional Office for Europe)

Geneva, Switzerland
17–18 December 2009

World Health Organization

Printed by the WHO Document Production Services, Geneva, Switzerland.

WHO/HTM/NTD/IDM/2010.1

Contents

Acknowledgements

The Chagas disease control programme of the World Health Organization's Department of Control of Neglected Tropical Diseases acknowledges all the participants of the consultation for their valuable and unique contributions.

This report is the first of its kind to summarize the epidemiological data on Chagas disease from European countries. The summary of these data annexed to the report was made possible by the contributions of colleagues in European countries where cases of the disease occur, supplemented by information available to the Chagas disease control programme. The many contributors to this summary are gratefully acknowledged.

Special thanks are also due to the Communication and Capacity Building unit of the Department of Control of Neglected Tropical Diseases for their support in finalizing this report for publication.

Abbreviations

AFSSAPS	Agence française de sécurité sanitaire des produits de Santé
AMC	Academic Medical Centre (Amsterdam)
CNM	National Centre for Microbiology (Madrid)
DPL	diagnostic parasitology laboratory
EIA	enzyme immunoassay
EFS	Etablissement français du Sang
ELISA	enzyme-linked immunosorbent assay
GHPS	Groupe Hospitalier Pitié-Salpêtrière (Paris)
HIV	human immunodeficiency virus
ICT	immunochromatographic test
ID	particle gel immunoassay (PaGIA)
IHA	indirect haemagglutination assay
IFA	indirect immunofluorescence assay
InVS	Institut de veille sanitaire
LSHTM	London School of Hygiene and Tropical Medicine
PAHO	Pan American Health Organization
PCR	polymerase chain reaction
PRL	pathozyme prolactin
RIPA	radioimmunoprecipitation assay
RIVM	National Institute of Public Health and the Environment (Bilthoven)
RNA	ribonucleic acid
T. cruzi	*Trypanosoma cruzi*
SPDL	Scottish Parasite Diagnostic Laboratory (Glasgow)
TESA	trypomastigote excretory–secretory antigen
UK NEQAS	United Kingdom National External Quality Assessment Service
WHO	World Health Organization

Introduction

The World Health Organization (WHO) held an informal consultation on the control and prevention of Chagas disease in Europe at its headquarters in Geneva, Switzerland, on 17–18 December 2009. The meeting was jointly organized by WHO headquarters and the WHO Regional Office for Europe. A total of 31 participants representing nine countries, WHO and the Special Programme for Research and Training in Tropical Diseases attended the meeting (see List of participants, Annex 1).

The two-day meeting was divided into three parts (see Agenda, Annex 2):

(i) presentation of country reports
(ii) thematic working groups
(iii) recommendations and conclusions.

2. Background and rationale

2.1 *Trypanosoma cruzi* infection and Chagas disease

Chagas disease (American trypanosomiasis) results from an infection with the protozoan parasite *Trypanosoma cruzi*. The parasite is mainly transmitted to humans through the infected faeces of triatomine bugs. Other modes of transmission include transfusion of infected blood and congenital infection. More rarely, transmission occurs through oral contamination, organ transplant from an infected donor and laboratory accident. Morbidity and mortality may be important in the acute phase of the disease – especially in children aged <5 years, the elderly, those who are immunosuppressed or in individuals infected with a high number of parasites, as may occur during outbreaks of foodborne disease – and where cardiac and digestive clinical forms are present during the subsequent chronic phase. Nevertheless, the majority of patients show no clinical symptoms and remain in a latent chronic phase carrying a hidden infection that is unknown even to themselves. Such asymptomatic patients may transmit the infection either by the congenital route or by blood or organ donation.

Infected patients are mainly present in the endemic countries of Latin America where infected insects responsible for vectorial transmission are found. These endemic countries have important experience in clinical management of the disease and have developed successful strategies to control the vector and prevent transfusional transmission. Since 1991, the technical secretariat of the Pan American Health Organization (PAHO) has supported the organization of control programmes – primarily against vectorial and blood transmissions – through various intergovernmental initiatives that group endemic countries of the South cone of South America, the Andean region, Central America and the Amazon basin. Control strategies vary according to the country's resources and the specific organization of its health system. Additionally, in the past decade, some countries have also incorporated control of congenital transmission and medical care for the millions of infected people.

2.2 Chagas disease as an emerging global public health challenge

Transmission of Chagas disease in non-endemic countries – that is, transmission in countries outside Latin America with exceptional or no vectorial transmission – has emerged since the beginning of 2000. This phenomenon is mainly linked to population mobility, notably migration (*1*). During the past decades, transmission has occurred in non-endemic countries in North America (Canada and the United States of America), the Western Pacific Region (mainly Australia and Japan) and, more recently, in Europe (*2*).

Sporadic cases of *T. cruzi* infection or Chagas disease have been reported from European countries for >15 years. In 1981, the first probable case of congenital transmission was described in a child born in 1975 in Romania (*3*). In 1982, the first case of probable congenital transmission in an adopted Latin American child by a Swedish family was published (*4*).

In Spain, the first European case linked to a laboratory accident was reported in 1983 (*5*). In 1992, an acute case was reported in a patient who had received blood transfusions during a bone marrow transplant (*6*). In 2001, a congenital case was initially confused with congenital leishmaniasis (*7*).

In 1984, Chagas disease was raised as a possible diagnosis in Denmark (*8*). In 2000, a chronic case was described in a Venezuelan patient who had lived in Denmark for 32 years (*9*).

In 1988, the *Lancet* published the first case of acute disease in a French woman who had travelled to Colombia (*10*). The first European case of Chagasic cardiomyopathy was described in 1996 in a Bolivian patient living in Switzerland (*11*). In 1997, the first case of acute disease in an Italian traveller to an endemic country was published (*12*). In Berlin (Germany), a survey conducted in 1997 among Latin American immigrants showed a prevalence of infection of 2% (*13*).

Since 2000, increasing numbers of cases have been reported in many European countries in the scientific literature (*14*). According to the International Organization for Migration, Latin American migration to Europe has grown rapidly since then. Southern European countries – mainly Spain – have received most of these migrant flows, although other European countries have also seen significant increases. Economic hardship caused by the recession and high poverty levels in Latin America, as well as the tightening of visa regimes in the United States after 2001, are important contributing factors. The close cultural and historic ties of Latin American countries to Europe coupled with many Latin Americans returning to Europe by invoking dual nationality have undoubtedly also facilitated such population movements.

Demographically, the immigrant population mainly comprises young adults with high rates of participation in the labour force and relatively high rates of educational attainment; this population has the capacity to integrate into European societies. Immigration from Latin American countries and the increasing trend towards the feminization of migration is relevant for congenital transmission of *T. cruzi* infection. Illegal immigration is also a challenge given the significant number of undocumented immigrants (*15*).

2.3 Building the non-endemic countries initiative

In 2007, WHO and PAHO convened a meeting[1] of endemic Latin American countries and non-Latin American countries. A major outcome of the meeting was to highlight the presence of *T. cruzi* infection outside Latin America in so-called "non-endemic countries". Recognizing the globalization of Chagas disease, the 28 participating countries called for the establishment of an additional initiative to deal with Chagas disease in the non-endemic countries.

2.4 General objective of the non-endemic countries initiative

The general objective of the new initiative is to control Chagas disease in non-endemic countries and contribute to global efforts to eliminate the disease by (i) diagnosing, managing and treating patients, including infected newborns, from congenital transmission, (ii) preventing transmission of infection by systematically screening blood used for transfusions and organs intended for transplantation, (iii) sharing information about Chagas disease, and training health personnel to facilitate diagnosis and medical care.

The non-endemic countries initiative aims to reach national and regional consensus on strategies to prevent and control Chagas disease in Canada and the United States and in countries of the European and Western Pacific regions where the disease is present.

[1] The meeting – "Revisiting Chagas disease: from a Latin American health perspective to a global health perspective" – was held at WHO headquarters in Geneva (Switzerland) on 5–7 July 2007.

A network of clinicians, biologists, public health specialists, academics and researchers is working together with national health authorities to address this subject under the auspices of WHO.

2.4.1 International meetings

WHO has convened a series of meetings to assess the burden of Chagas disease as a public health problem in non-endemic countries and to formulate an appropriate response.

The first meeting was held at the Etablissement français du sang (EFS) in Paris (France) on 22–23 November 2007. The objectives of the meeting were (i) to define the list of non-endemic countries for Chagas disease, (ii) to identify problems and define priorities and practical actions to be undertaken during the next 1–2 years (with precise milestones), recognizing that some of these problems are specific to non-endemic countries while others should be addressed globally, (iii) to specify the tasks ahead and set up working groups accordingly.

The objectives of second meeting, which was held in Barcelona (Spain) on 5–6 February 2008, were (i) to assess the current situation and update the status of preventive and control measures already implemented in the non-endemic countries, (ii) to discuss the objectives, establishment, structure and functioning of the non-endemic countries initiative, (iii) to implement an information database with the following items: Chagas disease non-endemic countries, reference institutions and human focal points, as well as available epidemiological information and preventive and control measures already implemented.

Participants at the third meeting – held during the 6th European Congress on Tropical Medicine and International Health in Verona (Italy) on 6–10 September 2009) – prepared the first set of recommendations for implementation at the European level. The meeting agreed the urgent need to harmonize policies in European countries and to issue technical and general recommendations to be endorsed by countries.

Non-endemic countries

Non-endemic countries for Chagas disease are defined as those:

- outside Latin America;
- with or without exceptional vectorial transmission to humans;
- where there is population exchange with Latin America.

Countries identified for the initiative	
Europe	Romania
Austria	Sweden
Belgium	Spain
Croatia	Switzerland
Denmark	UK
France	
Germany	**North America**
Greece	Canada
Ireland	USA
Italy	
Luxembourg	**Western Pacific**
Netherlands	Australia
Norway	Japan
Portugal	

The main issues to be addressed in Europe are as follows: