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GLOBAL COLLABORATION FOR DEVELOPMENT OF PESTICIDES FOR PUBLIC HEALTH (GCDPP)

Challenges of Chagas Disease Vector Control in Central America

Position Paper
by:
Dr C. J. Schofield

World Health Organization
Communicable Disease Control, Prevention and Eradication
WHO Pesticide Evaluation Scheme (WHOPES)

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1. Introduction

With the continuing success of the Southern Cone Initiative against Chagas disease, launched in 1991 by the governments of Argentina, Bolivia, Brazil, Chile, Paraguay and Uruguay, two further regional initiatives against Chagas disease were launched in 1997 in the Andean Pact countries (Colombia, Ecuador, Peru and Venezuela) and in Central America (Belize, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua and Panama) (WHO, 1997, 1998). In each case, the basic control strategy involves strengthening national systems for screening blood donors to avoid the risk of transfusional transmission, together with measures to eliminate domestic populations of the insect vectors (Triatominae) in order to eliminate vector-borne transmission. To these are added improved health education, and measures to provide at least supportive treatment for those already infected with *Trypanosoma cruzi* – causative agent of Chagas disease.

This paper discusses the current status of vector-borne transmission of *T. cruzi* in Central America, seeking to identify technical aspects that could merit particular attention.

2. Chagas Disease in Central America

At the time of writing, the prevalence of *T. cruzi* infection in Central American countries is not precisely known, since few large-scale surveys have been completed. Currently available data suggest a combined prevalence of around 2.3 million people infected in Central America and Mexico (Table 1) which, using the model of Hayes & Schofield (1990) would indicate an overall incidence of over 70,000 new infections per year in the absence of control measures. However, recent studies in parts of Guatemala (Cordon-Rosales *et al.*, 1997; Paz Bailey, 1998; Tabaru *et al.*, 1999a,b) and Honduras (Ponce *et al.*, 1995) show that village prevalence rates can exceed 40%, with a calculated

incidence rate of nearly 5% per year in some areas (Paz Bailey, 1998).

Table 1. Estimated prevalence and annual incidence of Chagasic infection in Mexico and Central America

Country	Seroprevalence[1]	Annual Incidence[2]	Main vector
Mexico	540 000	10 854	Various
Belize	600	26	*T. dimidiata*
Guatemala	730 000	28 387	*R. prolixus* *T. dimidiata*
Honduras	300 000	11 490	*R. prolixus* *T. dimidiata*
El Salvador	322 000	10 594	*T. dimidiata*
Nicaragua	67 000	2 660	*R. prolixus* *T. dimidiata*
Costa Rica	130 000	3 320	*T. dimidiata*
Panama	220 000	5 346	*R. pallescens* *T. dimidiata*
TOTAL	2 309 600	72 677	

[1] Mexico according to Guzmán Bracho *et al.* (1998); other countries from WHO estimates.
[2] Incidence calculated according to the model of Hayes & Schofield (1990).

There are no studies that directly illustrate the economic impact of Chagas disease in Central America. However, we can use recent data from Argentina on the costs and benefits of Chagas disease control (Basombrio *et al.*, 1998) to estimate that the