

## HTLV in the Americas

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It has been 25 years since the discovery of the first human retrovirus, human T-cell leukemia virus type 1 (HTLV-1) (1). Soon after HTLV-1 was discovered, a second human retrovirus, HTLV-2, was described (2). In 2005, two new human retroviruses, HTLV-3 and HTLV-4, were reported in central Africa (3, 4). HTLV-1 was the first retrovirus linked to human disease (5). It has been convincingly associated with adult T-cell leukemia/lymphoma (ATL), HTLV-1-associated myelopathy/tropical spastic paraparesis (HAM/TSP), uveitis, and infective dermatitis (6-9).

The viruses, especially HTLV-1, have a worldwide distribution (10). Although the exact number of individuals who are seropositive for HTLV-1 or HTLV-2 is not known, it is estimated that about 15 to 20 millions persons (mostly HTLV-1-seropositive) live with these infections worldwide (10). The areas of the world with the highest prevalence rates for HTLV-1 include south-western Japan, several countries in sub-Saharan Africa, Central America, and localized areas of Iran and of Melanesia. Higher prevalence rates are also found in several countries in the Caribbean, and somewhat lower seroprevalence rates are found in several nations in South America (10). Known modes of HTLV-1 transmission include mother to child, predominantly through breast-feeding; sexual intercourse; and parenteral transmission by transfusion of infected cellular blood products or sharing of needles and syringes.

In the Caribbean, Jamaica and Trinidad and Tobago have relatively high (up to 6%) HTLV-1 or HTLV-1/2 seroprevalence rates in the general population or in specific groups of individuals such as pregnant women and prospective blood donors (11, 12). Although no studies with representative samples of the general population have been conducted so far in South America, lower seroprevalence rates are found in several countries, including Brazil and Colombia (10). Data from Argentina, Brazil, Colombia, and Peru are for the most part restricted to specific groups such as blood donors (up to 2% of seropositivity for HTLV-1/2), pregnant women, Amerindian tribes, and intravenous drug users. Several studies have reported that indicators of lower socioeconomic status, such as having fewer years of schooling, are associated with HTLV-1/2 infection in both endemic and nonendemic areas (13, 14). This suggests that social and environmental factors associated with poverty may influence HTLV transmission. Similarly, HTLV-1-endemic countries (except Japan) have low per capita incomes and fewer resources to deal with a higher burden of HTLV-1/2 infection and associated diseases. The impact of HTLV-1-associated diseases on individuals and their communities is often devastating. No preventive vaccine exists, and the prognosis for ATL and HAM/TSP is poor, in terms of both survival and quality of life (15). HAM/TSP is a long-lasting, progressive disease, and the financial costs for the infected individuals, their families, and health systems are immense. Given these realities, public health interventions such as counseling and the education of high-risk individuals and populations are of great importance.

HTLV screening of donated blood has been routinely implemented in Brazil, Canada, the United States, and other countries in the Americas. Although no specific studies have evaluated this intervention, it has certainly diminished the occurrence of new infections among blood recipients. However, for many other countries in the Americas, this intervention is not systematic and/or permanent, or it is not done at all. The development of adequate, cost-effective strategies for HTLV screening of donated blood should be

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carefully considered in many countries in the Americas. Also, preventing mother-to-child transmission would probably have a substantial impact on the occurrence of HTLV-associated diseases. As is done for blood donations, prenatal screening for HTLV-1 should be implemented at least for countries, states, cities, or even smaller geographic units with high seroprevalence rates for HTLV-1/2. This should be done in combination with counseling of seropositive mothers regarding transmission through breast-feeding. Since HTLV can be transmitted through sexual contact, there should be an emphasis on condom use, avoiding multiple and unknown sexual partners, and not paying or receiving money for sex. Finally, utilizing counseling and education to encourage intravenous drug users to use harm reduction practices may be effective in preventing HTLV-1/2 infection in this population group.

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