

# HUMAN T-LYMPHOTROPIC VIRUS TYPE I AND II INFECTIONS IN FIRST NATIONS ALCOHOL AND DRUG TREATMENT CENTRES IN BRITISH COLUMBIA, CANADA, 1992-2000

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## ABSTRACT

Since 1992, prevalence data on HTLV-I and II have been collected as part of an ongoing viral seroprevalence study in clients of six First Nations alcohol and drug treatment centres in British Columbia, Canada. Prior studies indicate that the lifetime risk of clinical disease (neurologic or hematologic) resulting from HTLV-I infection is low (less than 5%) and HTLV-II to date has not been clearly associated with clinical disease. In 1993, the first cases of HTLV-I-associated myelopathy or tropical spastic paraparesis (HAM/TSP) were reported in four Aboriginal residents of British Columbia; these were the first reports of HTLV-I linked disease among Aboriginal persons in Canada. All clients of the treatment centres involved in this study were offered confidential, voluntary testing following pre-test counseling, and the results are given to participants before the residential session is complete. 1953 men and women were tested; 11 were positive for HTLV-1 (0.56%) and 33 were positive for HTLV-2 (1.8%). (*Int J Circumpolar Health* 2002; 61; 2: 98-103)

**Keywords:** HTLV-1, HTLV-2, First Nations, Aboriginal, North American Indian, HAM/TSP, Canada, British Columbia

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This study was designed to track the prevalence of HTLV infection in First Nations people entering several residential alcohol and drug treatment centres in British Columbia.

Human T-cell lymphotropic virus (HTLV) is a retrovirus, similar to HIV, but which replicates at a much slower rate. The virus is spread through breastfeeding, by sexual transmission (mainly male-to-female), and parenterally, by blood product transfusion and injection drug use. HTLV-I and II are endemic in various populations around the world; they also are found in intravenous drug users (IDUs). Coastal communities generally have a higher prevalence of HTLV-I. Both viruses are present in the indigenous peoples of South,

Central, and North America, including in BC First Nations (7,8). Phylogenetic studies have been unable to conclusively determine the source of the viruses in Amerindians, but the best available evidence suggests that they were present in at least one wave of the original colonization of the Americas 15,000 to 40,000 years ago.

HTLV-I infection is prevalent in central Africa and southern Japan; there are also clusters in isolated populations in northern Iran, the Philippines, Papua New Guinea, northern Australia and in other scattered pockets of indigenous peoples throughout the world (1,12). Several strains of the virus are known to be present in coastal First Nations people in British Columbia (8); they show similarities to strains from Japan (8) and Iran (13). Infection carries a 2-4% lifetime risk of HTLV-I associated myelopathy/tropical spastic paresis (HAM/TSP), a progressive, multiple-sclerosis-like spinal degenerative disease, and approximately the same risk of adult T cell leukemia/lymphoma; it may also cause arthropathy and uveitis (5). The first case reports of HAM/TSP amongst Canadian Aboriginals were published by Oger et al. in 1993 (6), involving four British Columbian First Nations people. This underscores the importance of tracking the seroprevalence of this virus.

HTLV-II is endemic in many Indian tribes in North and South America (10). It is also the predominant strain encountered in the intravenous drug user population in the United States (11). It has yet to be conclusively proven that HTLV-II causes any illness in those infected. Preliminary epidemiologic data suggests it may be associated with an increased relative risk of various infections, including abscesses, pyelonephritis, pneumonia, and possibly tuberculosis (3,4). Several cases of neurologic disease, similar to HAM/TSP, in the setting of HTLV-II infection have been reported. Reports of a link between HTLV-II and lymphoproliferative disorders have not been supported by epidemiologic evidence.

## METHODS

The testing program, which began in January 1992, consists of an information workshop on sexually transmitted diseases and voluntary testing for HIV, viral hepatitis, HTLV-I and HTLV-2 (the results for HIV and Hepatitis B testing are reported separately). Part-time nurses are hired and trained

to coordinate the program.

All clients are offered the education workshop within two weeks of entering the centres. Clients are given the opportunity to participate in the testing program; those participating are given pre-test counseling by the nurse, and post-test counseling is carried out if at all possible prior to discharge from the centre.

Blood is submitted to the Provincial Laboratory at the British Columbia Centre for Disease Control Society in Vancouver, where testing by ELISA, with confirmation and viral typing by Western Blot, is performed. The provincial laboratory can usually determine the HTLV type present in positive tests, although occasionally the result is indeterminate; these results are excluded from the final analysis. The rate of positive tests were treated as negative results. The staff at the provincial laboratory and the researchers at the University of British Columbia provide, receive, and enter the test results in such a way that individuals cannot be identified except by the study nurses, in order to preserve confidentiality. The data are collected and reported by one of the investigators (RGM) at the Department of Health Care and Epidemiology, Faculty of Medicine, University of British Columbia.

## RESULTS

A total of 1,953 men and women were tested.

In males the rate of HTLV-I infection is 3.1/1000 (95% CI 0.0-6.5/1000). For females the rate is 8.3/1000 (95% CI 2.6-14.0/1000). The overall rate is 5.6/1000 (95% CI 2.3-9.0/1000). When looked at by region, 8 of 10 positives were from Vancouver Island (Nanaimo or Campbell River regions).

For HTLV-II, the rate in males is 15.3/1000 (95% CI 7.6-23.0/1000), and in females 20.8/1000 (95% CI 11.8-29.8/1000). The overall rate is 17.9/1000 (95% CI 12.0-23.8/1000).

The rate rates of positive tests for HTLV-I and HTLV-II have not changed over the years (Table I).

## DISCUSSION

For HTLV-I, the infection rates in this population are similar to rates of HIV (3.7/1000) and to chronic hepatitis B infec-

Table 1. Gender, HTLV results and ages.

	Negative	HTLV-I positive	HTLV-2 positive	Not tested	Total
Male	963	3	15	242	1223
Female	934	8	20	219	1182
Not specified	9	0	0	24	33
Total	1907*	11	35	485	2438
Average age	33	35.1	40.9	33.9	33.4
Male rate positive (per 1000)		3.1	15.3		
Female rate positive (per 1000)		8.3	20.8		
Overall rate		5.6	17.9		

\*Includes 13 who tested positive but HTLV type could not be determined, and 4 whose results were equivocal (treated as negative in analyses). Also includes one person of unspecified gender.

tion (3.0/1000) (2). The seroprevalence rate of HTLV-I infection in clients entering First Nations alcohol and drug treatment centres (5.6/1000) is higher than that among volunteer blood donors in the United States (0.9/1000) (5), but lower than in some endemic areas, where seroprevalence rates are as high as 15% (8). The relatively high HTLV-I rate found on Vancouver Island is consistent with studies done by Oger and Werker, who found higher HTLV-I prevalence in coastal communities in BC (6). The overall HTLV-II rate of 17.9/1000 is similar to the prevalence of 16/1000 reported in samples drawn in the 1980s from the Nuu-Chah-Nulth of Vancouver Island (7), and higher than the rate in US blood donors of 2.2/1000 (5).

Rates of HTLV-II infection were three times higher than HTLV-I. The predominance of HTLV-II infection in this study, while typical of many more southern Native Americans, contrasts with the predominance of HTLV-I recently found in the Nuu-Chah-Nulth (7); this may reflect parenteral transmission of HTLV-II through intravenous drug use in our study population. The rates of positive tests for HTLV-I and HTLV-II have not varied much by year (Table II).

There is no treatment currently available or recommended for either HTLV-I or HTLV-II infected individuals. Those that test positive are notified of their status and told to inform their family physician. These individuals are advised to take precautions (condom use, avoid breast feeding and sharing of needles) to prevent virus transmission. Their contacts are not tested and it is not known whether they abide

Table II. HTLV-I and II test results by year.

Year	1992	1993	1994	1995	1996	1997	1998	1999	2000	All years
Anti-HTLV negative*	128	169	156	322	257	196	245	240	194	1907
HTLV-I positive	1	0	0	1	5	0	3	1	0	11
HTLV-II positive	3	8	3	3	3	3	5	5	2	35
Not tested	60	27	235	44	58	11	19	20	11	485
Total	192	204	394	370	323	210	272	266	207	2438
HTLV-I rate**	0.8	0	0	0.3	1.9	0	1.2	0.4	0	0.56
HTLV-II rate**	2.3	4.5	1.9	0.9	1.1	1.5	2.0	2.0	1.0	1.79

\*includes those who tested positive but whose HTLV type could not be determined, and those whose results were equivocal (treated as negative in analyses).

\*\*Prevalence of seropositivity per 100 people tested.

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by the advised precautions. Health practitioners in British Columbia, including physicians and community health nurses, were provided HTLV information in a comprehensive media campaign conducted in 1994.

At present there is no central registry and no way to effectively track those who test positive for HTLV. It is the authors' opinion that there is a need for an enhanced surveillance system to better track these individuals. This would permit them to be informed if there is a change in the availability of treatment, and could also be used for tracing if treatment options improve. In addition, these individuals could be followed to detect early disease in the HTLV-I infected and to determine whether the HTLV-II infected persons are at increased risk for any adverse health outcome.

## Acknowledgements

The cooperation of the treatment centres who have participated over the years and the nurses who have done the counseling and taken the samples is gratefully acknowledged. Without the participation of the field staff, no results would be possible. The authors would like to thank the following nurses for their support of the program: Bruce Self, Dana Fetherstonhaugh, Debbie Miller, Sarah Day, Debbie Sullivan, Marg Horvath, and Sharon Cullen. No information would be gathered without the participation of the persons

who come for the treatment programs.

This surveillance program is funded by First Nations and Inuit Health Branch of Health Canada and supervised by Dr. J. David Martin.

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