

## Prevalence of selected preventable and treatable diseases among government-assisted refugees

### *Implications for primary care providers*

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#### ABSTRACT

**OBJECTIVE** To discover the prevalence of 4 preventable and treatable diseases among newly arriving refugees.

**DESIGN** Retrospective cohort study.

**SETTING** An immigrant-friendly family medicine centre in Ottawa, Ont, that offers newly arriving refugees a clinical preventive program following a specially designed protocol.

**PARTICIPANTS** A total of 112 adult government-assisted refugees seen during 2004 and 2005 within 6 months of arrival.

**MAIN OUTCOME MEASURES** Demographic information and prevalence of HIV infection, latent tuberculosis (TB), chronic hepatitis B surface antigen-positive status, and intestinal parasites.

**RESULTS** Descriptive analysis revealed that 71% of the adults were younger than 35 years and 83% of them had come from sub-Saharan Africa. Disease prevalence rates were 6.3% for HIV (95% confidence interval [CI] 1.8 to 10.8), 49.5% for latent TB (95% CI 39.5 to 49.8), 5.4% for chronic hepatitis B surface antigen-positive status (95% CI 1.2 to 9.5), and 13.6% for intestinal parasites (95% CI 7.2 to 20.0). Most refugees (83%) successfully completed the preventive care program. Performing  $\chi^2$  analysis revealed a statistically significant higher risk of latent TB among the men ( $P < .032$ ). Most of the women had never had a Papanicolaou test.

**CONCLUSION** Refugees are a vulnerable population with unique, but often preventable or treatable, health issues. This study demonstrated substantial differences in the prevalence of HIV, TB, chronic hepatitis B, and intestinal parasites between government-assisted refugees and Canadian residents. These health disparities and the emerging field of health settlement are new challenges for family physicians and other primary health care providers.

#### EDITOR'S KEY POINTS

- In 2002, Canada waived the burden-of-illness barrier for refugees who have fled their countries of origin because of well-grounded fears of persecution. Unlike most other immigrants, many government-assisted refugees have come directly from refugee camps in the developing world and are at increased risk of infectious and other preventable diseases.
- Almost half of the refugees in this study had latent tuberculosis and more than 13% had intestinal parasites. About 1 in 17 refugees had HIV infection or were positive for hepatitis B surface antigen. Most required immunization and, for women, Papanicolaou smears.
- These results highlight the importance of good disease surveillance systems at the federal and provincial levels and follow-up once refugees are settled into the community with regular health care providers.

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## Prévalence de certaines maladies évitables et traitables chez les réfugiés sous assistance gouvernementale

*Conséquences pour le personnel soignant de première ligne*

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### RÉSUMÉ

**OBJECTIF** Établir la prévalence de 4 maladies évitables et traitables parmi les réfugiés nouvellement arrivés.

**TYPE D'ÉTUDE** Étude de cohorte rétrospective.

**CONTEXTE** Un centre de médecine familiale d'Ottawa, Ontario accueillant les immigrants et offrant aux réfugiés nouvellement arrivés un programme clinique préventif suivant un protocole spécialement élaboré.

**PARTICIPANTS** Un total de 112 réfugiés adultes sous assistance gouvernementale ayant consulté en 2004 et 2005, moins de 6 mois après leur arrivée.

**PRINCIPAUX PARAMÈTRES À L'ÉTUDE** Information démographique et prévalence d'infection au VIH, de tuberculose (TB), d'hépatite B chronique avec antigènes de surface positifs et de parasitose intestinale.

**RÉSULTATS** Selon l'analyse descriptive, 71% des adultes avaient moins de 35 ans et 83% d'entre eux venaient d'Afrique subsaharienne. Les taux de prévalence étaient de 6,3% pour le VIH (intervalle de confiance [IC] à 95% : 1,8-10,8), 49,5% pour la TB latente (IC à 95%: 39,5 à 49,8), 5,4% pour la présence d'antigènes de surface de l'hépatite B chronique (IC à 95%: 1,2-9,5) et 13,6% pour la parasitose intestinale (IC à 95%: 7,2 à 20,0). La plupart des réfugiés (83%) ont complété le programme de soins préventifs. L'analyse du  $\chi_2$  a révélé un risque de TB latente significativement plus élevé chez les hommes ( $P < 0,032$ ). La plupart des femmes n'avaient jamais eu de test de Papanicolaou.

**CONCLUSION** Les réfugiés constituent une population vulnérable avec des problèmes de santé particuliers souvent évitables ou traitables. Cette étude a révélé que les résidents canadiens et les réfugiés sous assistance gouvernementale présentent d'importantes différences de prévalence pour le VIH, la TB, l'hépatite B chronique et la parasitose intestinale. Ces disparités et le domaine en émergence de la santé des immigrants représentent de nouveaux défis pour le médecin de famille et les autres dispensateurs de soins primaires.

### POINTS DE REPÈRE DU RÉDACTEUR

- En 2002, le Canada a levé l'obligation de bonne santé pour les réfugiés qui ont fui leur pays d'origine par crainte de persécution suffisamment démontrée. À la différence de la plupart des autres immigrants, plusieurs réfugiés sous assistance gouvernementale proviennent directement de camps de réfugiés du tiers monde, et présentent un risque accru d'infections et d'autres maladies évitables.
- Près de la moitié des réfugiés étudiés avaient une TB latente et plus de 13% hébergeaient des parasites intestinaux. Environ 1 réfugié sur 7 avait une infection au VIH ou était positif pour l'antigène de surface de l'hépatite B. La plupart avaient besoin d'immunisation, et les femmes nécessitaient un test de Papanicolaou.
- Ces résultats soulignent l'importance d'un bon système de surveillance des maladies aux niveaux fédéral et provincial, et d'un suivi des réfugiés après leur établissement dans la communauté et leur prise en charge par les intervenants réguliers de la santé.

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In 2002, Canada waived the burden-of-illness barrier for refugees who fled their countries of origin because of well-grounded fears of persecution. Unlike most other immigrants, many refugees come directly from refugee camps in the developing world and are at increased risk of infectious and other preventable diseases.

Almost half the refugees in this study had latent tuberculosis (TB) and more than 13% had intestinal parasites. About 1 in 17 refugees had HIV infection or tested positive for hepatitis B surface antigen. Most of the refugees required immunization, and most of the women required Papanicolaou smears.

These results highlight the importance of good disease surveillance systems at the federal and provincial levels for newly arriving refugees and the need for follow-up once refugees are settled into the community with regular health care providers.

In 2005, Canada took in 262 000 immigrants from 208 countries; more than 35 000 of these immigrants were refugees.<sup>1</sup> Ottawa, Ont, was the fourth most popular city for newly arriving refugees; it received 1268 refugees in 2005.<sup>1</sup> The purpose of this study was to obtain demographic information and prevalence rates of certain diseases in a consecutive sample of refugees newly arriving in Ottawa.

Immigrants experience fewer chronic diseases<sup>2,3</sup> and report better health than age-matched Canadian-born people do.<sup>4-6</sup> Important health issues are emerging, however, in subgroups of immigrants with various social, cultural, ethnic, demographic, or economic characteristics.<sup>7,8</sup> Recent evidence from a large national Canadian study showed disparities in mortality patterns between immigrants—particularly refugees—and Canadian-born people.<sup>9</sup> In the United States, studies have shown that refugees have elevated rates of a number of infectious diseases, including preventable and treatable illnesses such as TB, chronic hepatitis B, and intestinal parasites.<sup>10</sup> Several authors have suggested the need for domestic refugee health assessment programs with a focus on infectious diseases.<sup>11-13</sup> In Canada, Beiser<sup>7</sup> has suggested that current policies on the health of refugees

upon arrival and on their integration into the Canadian health care system remain inadequate.

All immigrants to Canada, including refugees, undergo an Immigrant Medical Examination (IME) as part of their immigration process. In most cases, this happens in other countries before arrival in Canada, but refugee claimants and in-Canada applicants receive their IMEs in Canada. The IME is designed to identify diseases that could put the Canadian population at risk or place an excess burden on the health care system, and does not focus on treatment or clinical preventive services.<sup>14</sup> The IME for adults consists of a detailed medical history and physical examination as well as chest radiography, urinalysis for protein, Venereal Disease Research Laboratory tests, and testing for HIV.<sup>15</sup> Immigrants found to have infectious TB are treated before being allowed to enter Canada; immigrants with HIV infection or suspected latent TB are notified in writing, and reports are sent to local Canadian public health departments for follow-up after resettlement.

With the passing of the Immigrant and Refugee Protection Act in 2002, Canada waived the burden-of-illness barrier for convention refugees.<sup>16</sup> Under the Geneva Convention, “refugees” are people who have fled their countries of origin owing to well-founded fear of being persecuted for reasons of religion, race, nationality, membership in a particular social group, or political opinion.<sup>17</sup> Asylum seekers are referred to in Canada as “refugee claimants.” They are people who have arrived in Canada and have made a refugee claim. They have yet to be recognized as official refugees. The Refugee Review Board of Canada reviews each claim and accepts or rejects the asylum seeker as an official refugee. This article does not address refugee claimants, but rather focuses on government-assisted refugees who represent up to 40% of all refugees coming to Canada (can vary by year) and who are often the most vulnerable: many arrive without local family support and many come directly from refugee camps in the developing world.

## METHOD

We did a retrospective cohort study on 112 consecutive post-immigration refugee patients seen between December 1, 2004, and November 30, 2005. The sample consisted of medically stable government-assisted refugees referred to a migrant-friendly family medicine centre, the Immigrant Health Clinic, from a federally funded shelter for newly arriving refugees. Settlement workers referred refugees, as part of an elective health settlement process, for primary health care assessments, immunizations, and health promotion maneuvers. Ethics approval was obtained from the Research and Review Ethics Boards at the Élisabeth Bruyère Research Institute in Ottawa.

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The "Immigrant Health Clinic: Visiting Friends and Relatives Program" includes an academic family medicine teaching centre that incorporates an interdisciplinary team approach to service delivery. The health settlement process typically requires a minimum of 3 clinic visits, although the number of visits varies depending on diseases identified. Using a standardized checklist, health care workers take a medical and social history and conduct a full physical examination. All patients are offered a series of screening tests including, but not limited to, serologic testing for HIV, a tuberculin skin test, hepatitis B serology, and stool tests for ova and parasites. Immunizations are provided according to recommendations in the *Canadian Immunization Guide*.<sup>18</sup>

For this study, we included patients who were 17 years old or older, were recent arrivals (seen within 6 months of arrival in Canada), and were government-assisted refugees. Medical records were reviewed for age, sex, country of origin, languages spoken, Mantoux test (tuberculin skin test) results and evidence of active TB, HIV results, hepatitis B serology, recorded vaccinations, Pap test results, and whether patients had attended 3 consecutive preventive care visits. Quality control measures included development of a standardized abstraction checklist and all charts being reviewed by 2 researchers (P.T. and P.J.). Descriptive statistics were used to analyze data on demographics and diseases, and  $\chi^2$  tests were used to look for associations between variables.

The definition of a positive Mantoux test result was a  $\geq 10$ -mm induration after 48 to 72 hours ( $\geq 5$  mm for immunocompromised people, such as those with HIV).<sup>19</sup> Latent TB was defined as a positive Mantoux test in the context of negative chest x-ray results and no symptoms of fever, cough, or unexplained weight loss. We defined preventive program completion as the patient having returned for 3 consecutive health visits and having received immunizations, screening, and health promotion information and maneuvers.

## RESULTS

Between December 1, 2004, and November 30, 2005, 236 government-assisted refugees, 17 years old and older, arrived in Ottawa. Of these, 112 were assessed at the Immigrant Health Clinic. We were successful in finding detailed data on all 112 identified cases. Results of our chart review showed that more than half the refugees were women (59.8%), most were younger than 35 years (71.4%), and the vast majority came from sub-Saharan Africa (83.0%). One-third (32.5%) spoke neither English nor French upon arrival, and 26.8% reported no family support in the Ottawa area (Table 1).

Among the refugees studied, 6.3% had positive HIV test results (confirmed with Western blot analysis); all

**Table 1. Demographic characteristics of refugees:**

*N* = 112.

CHARACTERISTICS	N (%)
Age (y)	
• 17-25	43 (38.4)
• 26-35	37 (33.0)
• 36-45	20 (17.9)
• 46-55	11 (9.8)
• >55	1 (0.9)
• $\leq 35$	80 (71.4)
• >35	32 (28.6)
Sex	
• Male	45 (40.2)
• Female	67 (59.8)
Languages (spoken)*	
• English	49 (43.7)
• French	28 (25.0)
• Arabic	16 (14.3)
• Swahili	9 (8.1)
• Amharic or Tigrinya	10 (8.9)
Type of social support	
• Immediate family	63 (56.2)
• Extended family	13 (11.6)
• Church or community group	6 (5.4)
• None	30 (26.8)
Geographic area of origin	
• Sub-Saharan Africa	93 (83.0)
• North Africa	7 (6.3)
• East Asia or Middle East	10 (8.9)
• Eastern Europe or central Asia	2 (1.8)

\*Refugees reported speaking 17 different languages; we have reported data from the top 5.

of these were refugees from sub-Saharan Africa. Almost half the refugees (49.5%) had positive Mantoux test results, 5.4% were positive for hepatitis B surface antigen, and 13.6% had positive stool test results for pathogenic intestinal parasites. On  $\chi^2$  testing, significantly more men than women tested positive for latent TB ( $P = .032$ ). Most of the female refugees reported never having had a Pap test. Of the women who qualified for Pap tests, 77.6% accepted this screening maneuver (Tables 2 and 3).

Of the 112 refugee patients, 93 returned for all 3 preventive care appointments within the usual 2-month period. An additional 13 returned for follow-up of other illnesses outside the normal 2-month scheduled follow-up period. A few patients (6) did not return for follow-up because they had found other health care providers in the community and had requested chart transfer or had

**Table 2. Results of screening: A) Prevalence of 4 diseases; B) Preventive maneuvers carried out.**

A)			
DISEASE	NO. SCREENED	NO. (%) OF POSITIVE CASES	95% CONFIDENCE INTERVAL FOR %
HIV infection	112	7 (6.3)	1.8-10.8
Latent tuberculosis	112	48 (49.5)	39.5-49.8
Chronic hepatitis B surface antigen-positive status	112	6 (5.4)	1.2-9.5
Intestinal parasites	110	15 (13.6)	7.2-20.0
B)			
IMMUNIZATION OR MANEUVER	NO. REQUIRING MANEUVER	NO. (%) RECEIVING MANEUVER	95% CONFIDENCE INTERVAL FOR %
Diphtheria, tetanus, polio	112	108 (96.4)	93.0-99.9
Measles, mumps, rubella	112	100 (89.3)	83.6-95.0
Cervical cancer screening	67	52 (77.6)	70.3-89.7

**Table 3. Prevalence of 4 diseases in relation to sex, age, and region of origin**

CONDITION	TOTAL NO. WITH CONDITION	NO. OF MEN	NO. OF WOMEN	NO. ≤35 YEARS	NO. >35 YEARS	NO. FROM SUB-SAHARAN AFRICA	NO. FROM NORTH AFRICA	NO. FROM EAST ASIA OR MIDDLE EAST	NO. FROM EASTERN EUROPE
Parasites	15	9	6	13	2	15	0	0	0
HIV infection	7	4	3	7	0	7	0	0	0
Hepatitis B surface antigen-positive status	6	3	3	4	2	6	0	0	0
Latent tuberculosis	48	25	23	32	16	42	3	2	1
HIV infection and tuberculosis	4	2	2	4	0	4	0	0	0

moved from Ottawa to other locations. We do not have data on another 124 refugees who arrived in Ottawa during the study period. We do know that some refugees are referred for emergency care to hospitals and specialists, some leave the city immediately after arrival to join other family members, and some seek health care elsewhere in the Ottawa region.

## DISCUSSION

Systematic screening, early identification of health problems, and targeted health promotion are key to maintaining and enhancing the health of all populations.<sup>20</sup> In Canada, there are no clinical preventive guidelines to help practitioners handle the health settlement period for newly arriving refugees. This study demonstrated that refugees had significantly higher rates of treatable and preventable infectious and chronic diseases compared with Canadian-born people: latent TB (49.5%), HIV (6.3%), hepatitis B (5.4%), and intestinal parasites (13.6%).

Most government-assisted refugees in Ottawa had come from war-torn sub-Saharan Africa. Not surprisingly, their infectious disease rates mirrored many of the disease rates in their countries of origin.<sup>21</sup> For example,

a notable portion of the African refugees had HIV infections. A recent systematic review of data from 7 African countries found no evidence that refugees had higher rates of HIV infection than others in their region.<sup>22</sup>

Refugees, many of whom are victims of war and sexual violence, are admitted to Canada if they are accepted as convention refugees.<sup>23</sup> A retrospective study of refugees attending a tropical medicine unit in Madrid, Spain, demonstrated a 5.2% prevalence of HIV.<sup>24</sup> In our study, the prevalence of HIV infection was substantially higher than the prevalence in the Canadian population, which in 2005 was estimated at 0.18%.<sup>25</sup> Early recognition and management of HIV is important, not only for an individual's health but also for public health.

All the patients had been tested for HIV as required by the IME, but none of them had informed us of their HIV status before we tested them. This is consistent behaviour among our clinic's HIV-positive refugee patients. Patients often later mention that they either did not believe the IME result or that they did not want to disclose the diagnosis for fear of stigma. Public health is mandated to follow up on positive results, but this is difficult to do given the mobility of refugees after arrival, and it often does not happen. These results highlight the importance of having good disease surveillance systems at the federal



and provincial levels that would help ensure timely health care and, more importantly, follow up with refugees once they have settled into communities and have regular health care providers. This is particularly important for women given the higher fertility rates among foreign-born Canadians and the risk of vertical transmission of HIV.<sup>26</sup>

The prevalence of latent TB we documented compares with that found during domestic refugee health screening programs in Minnesota, USA, where 51% had positive Mantoux test results,<sup>27</sup> and in Madrid, Spain, where 44% had positive results.<sup>24</sup> These results reflect rates in the countries of origin and are higher than the overall estimated prevalence in Canada of <10%.<sup>28</sup> Foreign-born Canadians account for 65% of all active TB cases in Canada.<sup>29</sup> An analysis of the reported incidence of TB in Canada from 1981 to 1996 shows that risk of active TB disease developing in foreign-born people varies according to region of origin with particularly high rates among immigrants from Africa and Asia.<sup>23</sup> Most government-assisted refugees have endured poor living conditions in refugee camps with inadequate housing, health care, nutrition, water, sanitation, social services, and education.

The prevalence of chronic hepatitis B and intestinal parasitosis is also high among foreign-born people compared with Canadian-born people. The recent addition of albendazole treatment for certain refugees before they migrate has decreased intestinal parasite rates, yet these rates remain higher than would commonly be seen in most Canadian primary health care settings.


The fact that 83% of refugees completed the elective preventive program suggests that they are interested in preventive health care. Acceptance of vaccination was very high: 89.3% for MMR (measles, mumps, rubella) and 96.4% for DPT (diphtheria, tetanus, polio). This suggests that vaccination is a good starting point for preventive services.

It is important to note that these preventive services were delivered despite the finding that 32.5% of the refugees faced language barriers. During prescreening teaching, we discovered that most of the refugee women had never been screened with Pap tests<sup>30</sup> (50% of invasive cervical cancer occurs in women who have never had Pap tests, and the most advanced cervical cancer occurs in unscreened or underscreened women).<sup>31,32</sup> In our study, 77.6% of women agreed to have Pap tests on either the second or third clinic visit; 11.6% of women did not have Pap tests due to age, lack of sexual activity, or cultural beliefs. This high rate of acceptance indicates an opportunity for preventive care in a population in which there are many barriers, such as language difficulties and cultural misunderstandings. The language barriers we identified have implications for both clinical care and health promotion.

## Limitations

This study benefited from a standardized program protocol, but was retrospective and had a small sample size. Because Ottawa is a bilingual area (English and French), it tends to attract a higher proportion of French-speaking African refugees who have come from areas where war and refugee camp conditions could affect disease rates. Our sample did not include all government-assisted refugees in Ottawa, as not all newly arriving refugees made it to our clinic. The government-assisted refugees we studied might not represent all refugees: refugee claimants might face fewer infectious disease health issues. Refugees' countries of origin vary depending on world crises, and this limits the generalizability of the results gathered during our 1-year study period. Results from this local sample should not be generalized to other refugee receiving centres. We recommend further prevalence studies be done across Canada and across a wider spectrum of diseases. Although this health settlement initiative was an elective program aimed at all refugees, it is possible that refugees with health problems could have been more motivated to come for screening. This bias should be considered in relation to the immense stigma attached to HIV that could lead to fewer people seeking medical screening.

## Conclusion

This retrospective study showed that the prevalence of HIV, TB, chronic hepatitis B, and intestinal parasitosis is much higher among government-assisted refugees than among Canadian residents. This disparity and the emerging field of health settlement are new challenges for family physicians and other primary health care providers. As refugees in Canada seek out health care in our communities, it is very important that family physicians understand the changing face of their patient populations. This study highlights the need for a comprehensive health settlement program and for clinical preventive guidelines for caring for government-assisted refugees; these guidelines should have a focus on women's health. In fact, a national evidence-based guideline initiative to address health outcomes and differences in use of health care services among immigrants and refugees is currently in progress. The Canadian Clinical Preventive Guidelines for Newly Arriving Immigrants and Refugees for Primary Care can be found at [www.intermed.med.uottawa.ca/research/immrefhealth/eng/index.html](http://www.intermed.med.uottawa.ca/research/immrefhealth/eng/index.html). 

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## Contributors

**Dr Pottie** contributed to concept and design of the study, analysis and interpretation of data, and drafting the article. **Dr Janakiram and Ms Topp** contributed to concept and design of the study, acquisition and analysis of data, and drafting the article. **Dr McCarthy** contributed to conception of the study, interpretation of data, and drafting the article. All the authors gave final approval to the article submitted.

## Competing interests

None declared

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