Effectiveness of the Immigration Medical Surveillance Program for Tuberculosis in Ontario

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ABSTRACT

Background: Citizenship and Immigration Canada (CIC) screens immigrants for TB and permits those with inactive pulmonary TB to enter Canada conditionally, subject to medical surveillance; we studied this program in Ontario.

Method: This was an administrative database study with linkage of national and provincial data.

Results: In 1994-95, 1,341 cases of foreign-born active TB were diagnosed and a CIC record was found for 1,095. 149 (14%) were classified for surveillance and 142 were included in the analysis. A significant proportion (39/142: 27%) were diagnosed either before or as a result of immigration screening in Canada. These persons had arrived as visitors or refugees and were excluded from further analysis. Only 21 of the remaining 103 persons (20%) with immigration screening before the diagnosis of TB adhered to surveillance. Only 1 of 16 (6%) eligible persons was given therapy to prevent future episodes of active TB. Most presented with symptoms (82/103: 82%) suggesting potential for TB transmission in Ontario.

Interpretation: The current TB surveillance system for high-risk immigrants to Ontario is not effective in identifying and treating latent infection, and thus not effective in preventing future cases.

The translation of the Abstract appears at the end of the article.

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Immigration medical surveillance for TB among foreign-born individuals in Ontario who were classified for MSTB and who were diagnosed with active disease.

**METHODS**

Tuberculosis is a reportable disease in Ontario. All foreign-born individuals who developed active TB in 1994-95 in Ontario were identified using the provincial TB surveillance system (Reportable Disease Information System - RDIS). RDIS is a non-nominal database, so nominal data were provided by the public health units. RDIS data included date of birth, gender, method of detection, date of arrival in Canada, date of diagnosis of TB, and method of diagnosis. Cases were linked to the databases at CIC to determine surveillance classification as well as time of immigration, refugee claims and other visa applications. Cases of TB who had been referred for medical surveillance were included in this study. Health unit charts were acquired and provided information regarding adherence to medical surveillance and utilization of treatment for latent tuberculosis infection.

Persons who were diagnosed with TB before their immigration medical exam and those who were diagnosed as a result of this exam (both in Ontario) were quantified and excluded from further analysis. The remainder were analyzed according to whether they adhered to medical surveillance or not. Data were maintained using Microsoft Access software and record linkage was performed using EpiInfo and Foxpro. Analysis was performed using SPSS software. Chi square test was used for categorical variables and ANOVA (f-statistic) was used for continuous variables.

**RESULTS**

There were 1,653 cases of TB in Ontario in 1994-95. 81% (1,341) among foreign-born individuals. A record was found for 1,095 (82%) of these individuals in the CIC databases. A total of 149 (14%) cases had been classified for MSTB. All of these cases were enrolled in the study. Charts for 146/149 (98%) were located and sufficient data were available for 142.

Figure 1 demonstrates the method of detection of the 142 cases. Thirty-nine of 142 (27%) of the cases were diagnosed either prior to the immigration screening (13/39) or as a result of the immigration screening (26/39) and had entered Canada without being screened for TB. These persons had arrived in Canada primarily as refugees or visitors. Refugee claimants comprised 49% (19/39); visitors 30% (10/39); and those on a work or student visa 15% (6/39). The status of 4 was unknown.

Among the 103 persons who were diagnosed after their immigration medical exam, 21 (20%) adhered to the requirements of MSTB and were in contact with the health unit. However, only 10 (10%) reported to a provincial health unit within 30 days of arrival in Canada as required. The majority of the cases (82/103) did not have any documentation of adherence to medical surveillance requirements and presented with symptoms. Characteristics of each group are compared in Table I. Of the 82 cases not adherent to medical surveillance (group 4), 16 (20%) had the original immigration medical examination in Canada, 66 outside Canada. Among those adherent to medical surveillance, the median time between their original immigration medical exam and arrival in Canada (40 weeks; range 22-94) was within the one-year requirement. This was not the case among those not adherent (median 54 weeks; range 33-83). Persons who did not adhere to surveillance were diagnosed significantly later than those who adhered (p<0.02). Of the 21 persons who adhered to medical surveillance, 5 were diagnosed with active TB at their first assessment in Canada. The rest of the 16 cases who were identified later and only 1/16 (6%) began...
treatment for latent tuberculosis infection (LTBI).

DISCUSSION

The Canadian immigration TB screening program has two aims: 1) to prevent persons with active TB from entering the country, and 2) to identify people who are at high risk for future development of TB. This study deals only with the latter. This study assessed how well the current surveillance system works in following up immigrants with latent TB infection and at high risk of reactivation in Ontario. We found that all active cases of TB in the foreign-born population in Ontario, 86% had not been classified for medical surveillance. Of those who were classified for surveillance, 80% did not adhere to screening recommendations and presented with symptoms of active TB. This suggests that the current TB prevention strategy for high-risk immigrants in Ontario is not working.

Adherence to medical surveillance was very poor – 20% overall and 10% within 30 days as recommended by Canadian medical surveillance guidelines.4 As most presented with symptoms, there was a real potential for transmission in Canada. Other studies have also shown poor but better results. In BC and Manitoba, 4-19% of referred persons were never seen at least once and many did not attend follow-up visits.2,5 Some American programs appear to be doing better, with a similar program in California reporting 97% follow-up with prompt notification and sequential follow-up.12 This program also had a notably short time from arrival to reporting (mean 9 days; range: 1 to 920 days). This suggests that it is possible to improve program performance. This would obviously not be without cost, however may be justified to protect our population from the deadly and increasingly prevalent world-wide multiple drug-resistant TB.

The low adherence rate in Ontario could be a reflection of significant barriers faced by persons immigrating to Canada in terms of access to medical care, lack of understanding, mistrust and fear of deportation.13,14 Failure to report for further medical evaluation and physician non-adherence to procedures relating to TB screening have been found to be dependent on a variety of socio-demographic characteristics.13 Recent immigrants to Ontario are faced with several financial and social challenges, including the lack of medical insurance for a minimum of 3 months after arrival. In Australia, being a refugee was found to be an independent predictor of failure to seek further medical evaluation.15 In-Canada refugee claimants are provided with health care coverage by way of the interim federal health (IFH) program. It is not known if the existence of such a program improves adherence to medical follow-up in Canada.

Contrary to recent American and Canadian guidelines,8,9 treatment for latent tuberculosis infection was rarely offered to persons who should be among the highest risk for future development of TB. Most persons referred for medical surveillance have fibrotic changes on chest x-ray and would be considered good candidates for treatment. In Australia, one study showed that 5% of immigrants screened were offered treatment.16 Some immigrant screening programs have been able to achieve significantly higher rates of treatment for LTBI, which may reflect the provision of good primary medical care and a well-organized and motivated program.17,18 The key factor in the success of these programs (with 63% referral for treatment) appeared to be the assignment and training of a specific staff person to manage the tracking and follow-up of clients needing and receiving treatment for LTBI.18

Poor adherence may also have been caused by delays in or lack of notification by CIC. Another recent unpublished study19 by the authors has shown that notification rates of the provincial public health authorities of persons referred for medical surveillance are less than 60%. Often health units were given addresses that were provided at the time of immigration but that on follow-up proved to be incorrect or invalid. By working in conjunction with the Ontario Health Insurance Program (OHIP), it may be possible to obtain a more accurate address and improve follow-up.

This is the first definitive study of the Ontario medical surveillance program. The study included only those persons who were classified for medical surveillance and were later diagnosed with active TB. As such, it does not include those who were classified for surveillance and did not develop TB, nor does it include those who may have developed active TB and were not yet diagnosed. The evaluation of the surveillance program is complicated by the fact that medical surveillance requirement is not routinely captured with a notification of TB. To gather medical surveillance classification, it was necessary to link back to the immigration file. As well there is no routine collection of information on this group nor standard protocols for management. Currently there is variable funding and attention paid to the medical surveillance of immigration based on funding of the interim federal health (IFH) program. It is not known if the existence of such a program improves adherence to medical follow-up in Canada.

TABLE I

<table>
<thead>
<tr>
<th>Characteristics of Persons Classified for Medical Surveillance by Adherence (Ontario, 1994-95)*</th>
<th>Adherent to Surveillance</th>
<th>Non-Adherent to Surveillance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age at Diagnosis (Median (range))</td>
<td>40 (16 – 82)</td>
<td>43 (17 – 88)</td>
</tr>
<tr>
<td>Gender Male</td>
<td>10 (49.1%)</td>
<td>44 (53.8%)</td>
</tr>
<tr>
<td>Female</td>
<td>11 (50.9%)</td>
<td>38 (46.2%)</td>
</tr>
<tr>
<td>Duration (weeks) from Date of Medical Exam to Arrival (Median (range))</td>
<td>40 (22 – 94)</td>
<td>54 † (33 – 83)</td>
</tr>
<tr>
<td>Duration (weeks) from Date of Arrival to Diagnosis (Median (range))</td>
<td>104 (22 – 321)</td>
<td>232 (40 – 780)‡</td>
</tr>
<tr>
<td>Active TB at initial visit</td>
<td>5 (23.8%)</td>
<td></td>
</tr>
<tr>
<td>Not active at initial visit, started preventive therapy</td>
<td>1/16 (6.25%)</td>
<td></td>
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</tbody>
</table>

* 39 cases diagnosed either before or as a result of an in-Canada immigration medical are excluded
† data available for only 60% of cases
‡ p<0.02
Un article récent qui fait ressortir les inégalités sociales et économiques dans le secteur de la santé a comparé la richesse et les services de santé entre les régions du monde et dans lequel nous sommes invités à réfléchir « aux activités qui plus tard développeront la maladie ». 


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Zumla et Grange vont même jusqu’à dire que ce ne pas le faire est immoral.24 On retrouve ce même point de vue dans un article récent qui fait ressortir les inégalités dans la richesse et les services de santé selon les régions du monde et dans lequel nous sommes invités à réfléchir « aux activités locales et internationales susceptibles d’améliorer le bien-être et la santé au niveau mondial ». 


En conclusion, si l’on veut contrôler et prévenir les cas futurs, il faut s’attaquer à la tuberculose au sein de la population immigrée. Les programmes actuels de dépistage permettent de détecter que de 10 à 14 % des immigrants qui plus tard développeront la maladie. Les politiques de chimio prophylaxie actuelles sont chères et inefficaces. Notre objectif d’éradication de la tuberculose au Canada sera plus facilement atteint en mettant au point de nouveaux programmes et en débloquant de nouveaux crédits. Dans le meilleur des cas, et en définitive, ces nouveaux programmes doivent s’attaquer à la tuberculose dans le monde et ne pas être de simples opérations locales, coûteuses et largement superficielles.