The changing face of Canadian immigration: Implications for infectious diseases

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I
n the May/June issue of The Canadian Journal of Infectious Diseases & Medical Microbiology, in the Adult Infectious Disease Notes section, two infectious diseases that were frequently seen in the “Lost Boys and Girls of Sudan” were reviewed (1). However, the Sudanese refugees represent only a very small proportion of the immigrant population, many of whom experience other significant infections and resettlement issues. In the present issue, we consider the changing face of Canadian immigration and how that impacts infectious disease clinicians.

While they represent just fewer than 1% of the Canadian population, the number of immigrants to Canada more than doubled between 1986 and 2006, increasing from 99,351 per year to over 251,649 per year, respectively (2). A similar number of individuals entered Canada in 2006 as temporary residents, and the majority entered as temporary foreign workers or students (3). If Canadian population growth continues to decline as expected, the proportion of the population represented by immigrants and temporary residents will continue to increase.

Concomitant with this growth in immigration has been a distinct change in the composition of the immigrant population, with the biggest shift beginning after approximately 1971. Immigrants from Europe represented 75.9% of the total immigrant population in 1921, 79.4% in 1971 and 42% in 2001 (4). Asians, who represented 2.7% in 1921 and 3.6% in 1971, were up to 36.5% of the immigrant population in 2001 (4). From essentially 0% in 1921 to 1% to 2% in 1971, those from the Caribbean, Latin America and Africa each represented 5% of the immigrant population in 2001 (4). In 2004, refugees accounted for 13.9% of immigrants (4). From within Asia, China was the leading country of birth for new immigrants in 2001, followed closely by India (5). Among African immigrants, Egypt was the leading country of birth for immigrants to Canada in 2001, followed closely by South Africa (6).

More than 50% of immigrants in 2002 settled in Ontario, and 43.7% of Toronto’s metropolitan population in 2001 was foreign-born (4). Almost 80% of Asian immigrants lived in Ontario and British Columbia in 2001, with a similar proportion of African immigrants living in Ontario and Quebec (5,6). Foreign-born persons account for fewer than 5% of the metropolitan population in Atlantic Canada, but 37.5% of the population in metropolitan Vancouver, British Columbia (4). Unfortunately, in Canada, 42.4% of immigrant children live in poverty, similar to the poverty rate among Aboriginal children in Canada (4).

Although the immigration patterns have changed over the years, they are still quite different from one part of the country to the other. More of the immigrants are coming from countries with high rates of certain infectious diseases. The poor socioeconomic conditions faced by many of them during their initial settlement phase places them at continued risk for certain infectious illnesses (7). How well are infectious disease clinicians able to address their health concerns?

Several groups have reported their experience with illnesses diagnosed in immigrants and/or refugees. An epidemiological survey (8) was conducted in 46 Italian health centres in 2002, examining the number and type of hospital and outpatient clinic admissions among immigrants. They evaluated 2555 immigrants (6% of the total population), of whom 44% were from Africa, 20% from Asia and 22% from eastern Europe. The three main infectious diseases seen were HIV infection (16.8%), tuberculosis ([TB]; 13.4%) and viral hepatitis (12.5%), with so-called tropical infections (eg, malaria, dengue and schistosomiasis) seen in only 5.8% of admissions in immigrants, the majority (70.4%) of whom had malaria (8). HIV and TB were most common in African immigrants, whereas eastern Europeans accounted for the largest proportion of viral hepatitis (8). To put this into the larger context of health-related concerns among immigrants, Sabbatani et al (9) analyzed admissions to a general teaching hospital in Bologna, Italy, over five years beginning in 1999. Foreign-born patients represented only 2.2% of total hospitalizations (5% of the total population), of which only 12.1% of the hospitalizations were due to infectious diseases, either alone or with concurrent disorders (9). In that catchment area, most immigrants came from North Africa (31.5%), followed by Asia (26.3%), eastern Europe (22%) and sub-Saharan Africa (7.4%) (9).

An Australian study by O’Brien et al (10) had somewhat different findings. They prospectively studied 189 immigrants and refugees from January 1, 1997, to September 30, 2004. The majority were from Africa (43%) and Asia (42%). The most common diagnoses were TB (50%), schistosomiasis (13%), helminth infection (10%) and chronic hepatitis (9%). More specifically among refugees in New Zealand (almost one-half from the Middle East), Hobbs et al (11) found that 3.2% tested positive for schistosomiasis, 4% for chronic hepatitis and 13.2% for other helminths; 36.4% had latent TB. The observed differences in prevalence of infection are, no doubt, related in large part to the proportionate differences in the country of origin, and in part to the intensity of the investigations undertaken.

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Immigrants seen at one tropical medicine unit in Madrid, Spain, from 1989 to 2000 were offered a comprehensive battery of tests, including serology (hepatitis B, hepatitis C, HIV and syphilis), tuberculin skin test, three fecal samples for detection of ova and parasites, blood and skin samples for microfilariae, and from those from sub-Saharan Africa, blood smears for malaria (7). Of the 988 immigrants tested, 80% were from Africa, 16% from the Americas and 3% from Asia. Latent TB was common (44%) and did not differ among the different source regions (7). Filariasis was found in 24.8% of immigrants (almost entirely among the African immigrants). Intestinal parasites were detected in 23%, with similar frequencies among the different immigrant groups, among whom 53% had eosinophilia (7). Only 27.3% of patients with intestinal parasites had gastrointestinal symptoms and 31% were coinfected with several parasites. Chronic hepatitis was present in 16% (hepatitis C 8.8% and hepatitis B 7.6%), and HIV in 5%. Twelve per cent of adults had malaria, 8% of whom had no symptoms.

Comprehensive data for Canada could not be found. However, Boggild et al (12) reported their prospective analysis of parasitic infections in immigrants and travellers who were seen at the Toronto General Hospital (Toronto, Ontario) tropical disease unit between November 1997 and June 2003. There were 1213 new immigrants or refugees in this cohort. While it is not possible to identify the exact disease frequency among the subgroups in this study, immigrants were more likely to be diagnosed with parasitic infections than were other travellers (12). Within the immigrant and visiting friends and relatives groups combined, 6.8% had malaria, 2.9% strongyloidiasis, 2.7% schistosomiasis and 2.1% filariasis. Residence in Africa was associated with a higher risk of schistosomiasis and strongyloidiasis, whereas residence in Africa, 16% (hepatitis C 8.8% and hepatitis B 7.6%), and HIV in 5%. Twelve per cent of adults had malaria, 8% of whom had no symptoms.

Under Canadian immigration law, all immigration applicants must comply with medical screening requirements (13). These requirements are applied to all regular applicants for permanent settlement (immigrants and refugees) or temporary residence from designated countries, and refugee claimants (13). Applications for permanent residence will not be accepted if the person’s health is a danger to public health or safety, or (apart from refugees, protected persons or certain individuals in the family class) would cause excessive demand on health or social services (24). For the most part, the specifics of the medical examination are not readily available. The Citizenship and Immigration Canada Web site (24) states that instructions on how to take the medical examination are normally sent after an application is submitted to the visa office, and that the medical examination must be performed by a designated medical practitioner. However, as noted, mandatory HIV serological testing began in January 2002 (13), and chest radiographic screening for TB has been performed since the 1940s (23). Syphilis testing is also required (T Kawchuk, personal communication). It appears that additional testing is left to the discretion of the designated medical practitioner or the immigrant’s subsequent personal physician, depending on the clinical situation.
AID Notes

In 2004, Gushulak and MacPherson (25) wrote that the impact of migration-associated changes in global infectious diseases epidemiology would have implications for those providing clinical infectious disease and laboratory diagnostic services. Two overriding needs were identified — international public health information, and an understanding of the immigration and migration process (25). It is becoming increasingly clear that the foreign-born are a heterogenous group. Primary care and infectious disease physicians, and diagnostic microbiology laboratories and indeed their foreign-born patients, would be well-served by a standardized nation-wide protocol for postarrival health assessment, adapted for specific immigrant and refugee populations.

REFERENCES
