

DECISIONS

Hepatitis B virus screening and vaccination in a family from Nigeria

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A 42-year-old man born in Nigeria brings his 7-year-old daughter to their family physician's clinic for her well-child visit. The father has been living in Canada for 6 years and sponsored his daughter and wife, who arrived a year ago. Should he and his family be screened for chronic hepatitis B and, if susceptible, offered hepatitis B vaccination?

What are the benefits of screening for chronic hepatitis B for this family?

Chronic hepatitis B affects more than 350 million people worldwide and leads to about 1 million deaths annually from cirrhosis, liver failure and hepatocellular carcinoma.¹ A recent systematic review estimated that more than 285 000 immigrants living in Canada have chronic hepatitis B and that the region of origin is the strongest predictor of infection.¹ In a national cohort study, the rate of death from chronic viral hepatitis and hepatocellular carcinoma was found to be 2–4 times higher among Canadian immigrants than among people born in Canada.² The higher mortality among immigrants was likely due primarily to undetected chronic hepatitis B acquired in their countries of origin.³

Identifying people with chronic hepatitis B through screening has several benefits: appropriately timed treatment can reduce the risk of end-stage liver disease and hepatocellular carcinoma;³ screening for hepatocellular carcinoma in certain groups at risk decreases associated mortality;³ and transmission of hepatitis B virus (HBV) to nonimmune sexual and household contacts can be prevented through vaccination.

Is it likely that this family has been previously screened for chronic hepatitis B?

All immigrants undergo an immigrant health examination before arrival in Canada that includes screening for tuberculosis, HIV infection and syphilis. It does not include screening for chronic hepatitis B, nor is HBV vaccination verified or updated. Furthermore, after arrival in

Canada, there are no systematic programs to screen immigrants for chronic hepatitis B.

The Canadian Collaboration for Immigrant and Refugee Health and the US Centers for Disease Control and Prevention have recommended that immigrants coming from countries where the prevalence of chronic hepatitis B is moderate or high ($\geq 2\%$ positive for hepatitis B surface antigen [HBsAg]) should be screened for chronic hepatitis B and prior HBV immunity.^{3,4} More than 70% of immigrants arriving in Canada fall into this category. Regions with a high prevalence ($\geq 8\%$ HBsAg positive) include sub-Saharan Africa, East Asia and the Pacific region. Regions with a moderate prevalence (2%–7% HBsAg positive) include Eastern Europe, Central Asia and South Asia.

What serologic tests should be done?

Serologic testing for HBsAg should be done to screen for the presence of chronic hepatitis B. Testing for hepatitis B surface antibody (anti-HBs) and hepatitis B core antibody (anti-HBc) should be done to screen for prior HBV immunity.^{3,5} For the typical interpretation of serologic test results for HBV infection, see Table 2 in Appendix 5 of the evidence-based clinical guidelines for immigrants and refugees (available at www.cmaj.ca/content/183/12/E824/suppl/DC1).³

Should this family be offered HBV vaccination?

An estimated 50%–80% of immigrants are not immune to HBV and could benefit from vaccination.¹ Although all provinces and territories offer universal HBV vaccination in childhood, the age at vaccination varies. Many jurisdictions provide free HBV vaccines for children up to 7 years old in families from high-risk countries. There is gen-

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Editor's note: In this article, "immigrants" refers to either refugees or immigrants living as permanent residents in Canada.

erally no catch-up program for children who arrive in Canada before or after the age of vaccination, and adults are not routinely vaccinated. Non-immune immigrant children have a 1%–2% annual risk of acquiring HBV infection in their first 10 years of life if they live in the household of a person with undetected chronic hepatitis B.³ Given that the development of chronic hepatitis B after an acute infection is more likely in children than in adults, priority for vaccination should be given to children if resources are limited.

Case revisited

Because the family is from a country with a high HBsAg seroprevalence, screening for chronic hepatitis B and prior HBV immunity is recommended. The results of screening show that the father has chronic hepatitis B, his wife is immune to HBV, and the daughter does not have chronic hepatitis B and is not immune to the virus. The risk of transmission to the daughter in the year since her arrival in Canada could have been avoided if the family had been offered screening, and vaccination if susceptible, before or soon after arrival in Canada. The father would benefit from appropriately timed treatment, which will decrease the long-term sequelae of the disease.

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Hepatitis B is one of several conditions that need to be considered when addressing the health status of new immigrants. The Canadian Collaboration for Immigrant and Refugee Health has published evidence-based guidelines on many of the most relevant health issues of immigrants (available at www.cmaj.ca/content/183/12/E824.long).