

Does Chagas disease present a health risk to Canadians?

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Triatomine also known as 'Kissing bug' is a bloodsucking insect endemic to Latin America that spreads Chagas disease by allowing the parasite to move on to its new host (human or animal). Credit: Dr. Momar Ndao, Research Institute of the McGill University Health Centre

Believe it or not, a tropical blood parasite native to Latin America could be harmful to Canadians. Infectious diseases like malaria or Zika may have dominated recent headlines but Chagas - the "Kissing Bug" disease - is in the spotlight following the publication of a new case study in the *Canadian Medical Association Journal (CMAJ)*. Tropical and laboratory medicine experts from Winnipeg and Montreal warn natives of specific Central and South American nations and their offspring are at risk of contracting Chagas disease - even after they have moved to Canada. The study reports on a family case of transmissions from mother to unborn children, raising questions over prevention and diagnosis of Chagas disease in Canada, where thousands of individuals live with potentially undetected infection.

Chagas disease is caused by a parasite called *Trypanosoma cruzi*, which is mostly found in Latin America and, occasionally, in southern parts of the United States. It spreads through the bite of triatomine - bloodsucking insects targeting a person's face, referred to as "Kissing bugs." The parasite is transmitted via the bugs' feces: The insects defecate while feeding, allowing the parasite to move on to its new host. The disease can spread via transmission from mother to child during pregnancy and from infected blood transfusions or organ transplantation.

"Chagas disease is a real public health problem due to the transmission from mother to child (baby) up to at least three generations," says co-author Dr. Momar Ndao, a scientist from the Infectious Diseases and Immunity in Global Health Program at the Research Institute of the McGill University Health Centre (RI-MUHC), and an associate professor in the Department of Medicine at McGill University. "As Chagas disease is not a notifiable communicable disease in Canada, there are little data on the number of undiagnosed, untreated cases."

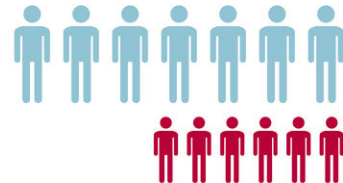
Dr. Pierre Plourde, Medical Officer of Health and Medical Director of Travel Health and Tropical Medicine Services with the Winnipeg

Regional Health Authority (WRHA), was the study's corresponding author and worked in partnership with parasitic diseases laboratory specialists Dr. Kamran Kadkhoda, Clinical Microbiologist from Cadham Provincial Laboratory in Winnipeg, and Dr. Ndao, head of the National Reference Centre for Parasitology (NRCP) at the RI-MUHC.

CHAGAS DISEASE

What Canadians need to know

Chagas disease is caused by a blood parasite (*Trypanosoma cruzi*) that is found throughout Central and South America. It is spread by the bite of triatomine insects called "Kissing bugs". It can also be spread via transmission from mother to unborn child during pregnancy and from infected blood transfusions or organ transplantation.



70 million people in the Americas live in areas of exposure and are at risk of contracting Chagas disease

6 million people in the Americas affected by Chagas disease

30,000 average of new cases per year
14,000 deaths per year
8,000 newborns infected

Source: Organización Panamericana de la Salud • www.paho.org/chagasdisease • © OPS/OMS, 2017



Who will get Chagas disease in Canada?

People who travelled to or immigrated from Central and South America (Argentina, Bolivia, El Salvador, Guatemala, Honduras, Panama and Paraguay...) and were bitten by an infected kissing bug

Children born from mothers who travelled to or have immigrated from Central and South America and were infected

What to look out for

People directly bitten by the "Kissing bug"

- Fever
- General ill feeling
- Swelling of one eye
- Swollen red area at the site of insect bite

People who may have been given the disease through blood from mother, transfusion or transplantation (could take more than 20 years)

- Constipation and digestive problems
- Pain in the abdomen
- Difficulty swallowing
- Chronic heart disease (cardiomyopathy)



What to do if you think you might have Chagas disease

Ask your doctor to screen you for Chagas disease

If Chagas is detected, ask for a referral to a specialist in Tropical Medicine or Infectious Diseases for follow up care and treatment



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They reported on a case cluster of a family in Winnipeg that reinforces the generational connection between mother and their children. Soon after the mother received a positive diagnosis, three of her four adult children - two sisters and one brother, born in Canada but with family in South America - also tested positive for Chagas disease. More importantly, the brother reported donating blood for many years until 2010 when Canadian Blood Services discovered he had positive Chagas antibodies.

"The overall risk of mother to fetus transmission of Chagas disease is only about 6 per cent but when the mother has a high number of parasites in her blood during pregnancy the risk of transmission has been described as high as 30 per cent," explains Dr. Plourde.

According to the authors, the countries known to pose the highest risk for contracting Chagas includes Argentina, Bolivia, El Salvador, Guatemala, Honduras, Panama, and Paraguay.

"Anyone who lived in or visited those countries for an extended period of time and was bitten by a kissing bug, who received a blood transfusion in Chagas-endemic countries, or who was born to a mother diagnosed with Chagas disease should ask their healthcare providers to be tested for the disease," states Dr. Ndao who has been an infectious disease researcher for more than 20 years. The NRCP laboratory is known for its expertise in the Chagas disease diagnosis.



The parasite *Trypanosoma cruzi* (causing Chagas disease) among human red blood cells. Credit: Dr. Momar Ndao, Research Institute of the McGill University Health Centre

"Chagas disease affects approximately one in four people who have contracted it at some point in their lifetime," adds Dr. Plourde. "The danger is not immediate upon infection, but it can affect cardiac muscle tissue leading to heart failure in later years if left untreated."

Early detection and treatment can prevent serious long-term effects such as heart failure and improve health outcomes for those at risk. The younger a person is when treated, the more likely it will be successful. There is currently no licensed vaccine to prevent Chagas disease.

Chagas antibody testing, as the first step screening, can be requested by any clinicians in Canada. The management of the disease requires

ongoing evaluation and follow-up with a specialist in Tropical Medicine or Infectious Diseases.

More information: Pierre J. Plourde et al, Congenitally transmitted Chagas disease in Canada: a family cluster, *Canadian Medical Association Journal* (2017). [DOI: 10.1503/cmaj.170648](https://doi.org/10.1503/cmaj.170648)

Provided by McGill University Health Centre

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