

Resource Guide for Medical Assessment of Immigrants



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1. Introduction

As part of the process of immigrating to Canada, applicants are subjected to medical examinations whose purpose is not to ensure their overall health before travel, but rather to screen for certain communicable diseases and to ensure that additional burden is not placed on the health and social services system. There is often a delay between the medical examinations and the actual arrival to Canada. Immunization verification is not part of the pre-immigration medical examinations. It is important to note that the widely held concept of a physically and mentally healthy immigrant is not always the case, as immigrants are not a homogeneous group. Compared to other immigrants, refugees are more exposed to pathologies linked to the precariousness of their living conditions before immigration. Immigrants face a range of barriers that can affect their physical and mental health. In addition, the limited experience of healthcare professionals regarding the common illnesses among immigrants, combined with the absence of a medical examination adapted to immigrants suggests that despite immigration screening, immigrants coming to Canada, particularly those from low-income countries, may be more likely to experience certain health problems not identified by a health care provider.

There is limited research on information related to the diseases that newcomers are at greater risk for based on the epidemiological profile of their region of origin. This makes it difficult for healthcare professionals to have the necessary information when they meet with an immigrant. The fact sheets that are part of this document were developed by the Centre for Rural and Northern Health Research (CRaNHR) of Laurentian University in partnership with the *Institut du Savoir Montfort*, the *Centre de santé communautaire du Grand Sudbury (CSCGS)* and a group of Francophone immigrants.

The document was produced in several stages. 1) We established a partnership with the institutions. 2) Then, a literature review was conducted to identify the most common health problems in the immigrants' countries of origin, in the refugee camps and in the country of destination. The information collected allowed us to identify the most common health problems among immigrants before or upon arrival. 3) In the next step, the list of the most frequent illnesses and symptoms that immigrants may present was discussed and validated during several meetings with the research team and partners. 4) A draft version of the fact sheets was then developed by the research team. 5) A prototype of four fact sheets (fever, malaria, general medical examination of women and the general medical examination of men) was submitted to the CSCGS health team and a group of French-speaking immigrants to discuss the content and format. 6) Finally, the fact sheets were finalized by taking into account the comments shared by the different partners.

It is important to note that the information contained in this document does not replace the technical information from academic institutions. The goal is to provide guidance to healthcare professionals on health problems and screening tests that can be useful when caring for an immigrant. They do not claim to be exhaustive but target the most recurrent

problems that are not necessarily those that health professionals encounter in daily practice in Canada.

In this study, we focused on the African region because there is little health information available on individuals from this area. The epidemiological picture and the health care system are often different from those in Canada. We also noticed that in Ontario, apart from European Francophone countries, the majority of Francophone immigrants come from African and Caribbean countries. Which is why, for the purpose of this study, when talking about immigrants, newcomers or refugees, they are from Africa and the Caribbean.

There are four types of fact sheets:

1. **Fact sheets on the general medical exam** provide guidance for healthcare professionals on the health problems and screening to look for when working with women, men and children;
2. **Fact sheets on certain tropical diseases** provide guidance on the definition of tropical diseases, who is at risk, how to recognize the disease and how to manage it;
3. **Fact sheets on some signs and symptoms** provide guidance on the questions to ask, signs to look for, additional tests to inquire about, patient care and;
4. **Fact sheets on healthcare in Ontario.**

For more information, please consult:

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2. Fact Sheet on the General Medical Exam

Medical Exam for an Adult Female

Despite immigration screening and some cultural and language barriers, immigrants arriving in Canada from low-income countries are more likely to experience certain health problems. In addition to your usual procedures, this fact sheet provides an overview of potential health problems and screenings that are important to consider when working with an adult female.

Personal medical history	<ul style="list-style-type: none"> • It helps to identify the reasons for the visit, the patient's fears and identify health risk factors. • The medical history includes questions on the reason for the visit, symptoms, medications, allergies and previous illnesses.
Family history on genetic diseases, diabetes, cardiovascular, etc.	<p>Be mindful that immigrants come from areas where certain genetic or chronic conditions are common. For example:</p> <ul style="list-style-type: none"> • Sickle cell disease and hemoglobinosis C are very common in sub-Saharan Africa. • Thalassemias are more frequent in North Africa than in sub-Saharan Africa. • Diabetes is advancing more rapidly in low- and middle-income countries. • More than three-quarters of cardiovascular disease deaths occur in low- and middle-income countries.
The psychosocial assessment will give you a better understanding of the social and mental situation of the person	<p>Several factors (socio-demographic, conditions at departure, living conditions in Canada) may influence the mental health of immigrants. It is important to document these:</p> <ul style="list-style-type: none"> • When the patient arrived in Canada, what is her language proficiency in French and in English, her level of education, what was her job in her country of origin, if she is currently enrolled in school or if she is unemployed. • If she encountered difficulties during immigration (stays in other countries or in refugee camps, torture, injuries, etc.). • If she is adapting well to life in Canada. Does she live alone or with her family, does she have people here to rely on? • Factors that may increase the risk of diseases such as the use of alcohol, tobacco or psychoactive substances. • If the patient is depressed or anxious • Other issues can be raised, but with caution, such as religion (affiliation with a parish, church, mosque, etc.), financial and/or housing problems, food-related issues (may not be able to find ingredients) or access to winter clothing.

Verification of Immunization: for many reasons, many immigrants may be susceptible to vaccine-preventable diseases	<ul style="list-style-type: none"> • Verify that the patient provides you with documentation that she has received vaccinations according to the Canadian Immunization Guide. • If not, she should be considered as insufficiently vaccinated (especially refugees) and will need to receive the series of vaccines deemed essential according to the Canadian Immunization Guide.
When conducting the physical exam it is important to consider the health problems the patient may have been exposed to	<ul style="list-style-type: none"> • Measure weight, height, blood pressure and look for clinical signs that may suggest a tropical or chronic disease. • Check for nutritional status, clinical anemia, fever or recent episodes of fever. • Look for the presence of lymphadenopathy, hepatomegaly and/or splenomegaly, genital anomalies, scars or skin lesions. • Look for abnormalities of the teeth, hearing or vision. The prevalence of oral health conditions, deafness, hearing loss, blindness and hearing impairment, blindness, and visual impairments is generally higher in the African regions from which the immigrant women come.
Gynecological exam	<ul style="list-style-type: none"> • African women are at greater risk of HIV/AIDS, physical and sexual violence and unwanted pregnancies. They are also at greater risk of developing cervical cancer, breast cancer and depression. • The gynecological examination will allow the documentation of gender, number of pregnancies, the number of living children, the presence of an active pregnancy or a need for contraception. • It is important to take the opportunity to offer screening for cervical cancer (periodic Pap test), breast cancer (mammograms when required) and to look for signs of infection or any other genito-urinary problem in progress.
The complete blood count allows for the detection of several diseases	<ul style="list-style-type: none"> • Nutritional deficiencies such as iron, folic acid and vitamin B12 deficiencies are frequent. The prevalence of iron deficiency is high in sub-Saharan Africa among pregnant women. • Eosinophilia may suggest the presence of worms in the body, such as roundworms, schistosomiasis, strongyloidiasis, filaria etc.

<p>Many immigrants and refugees arrive from areas where certain infectious and parasitic diseases are common</p>	<ul style="list-style-type: none"> • It may be appropriate to screen for certain diseases including: tuberculosis, viral hepatitis A, B, C, HIV, vaccine-preventable diseases, parasitosis. Parasitosis are common in sub-Saharan Africa. • Screening for malaria should not be routine unless the patient presents with a fever or reports recent episodes of fever. • Document whether the patient has had malaria prophylaxis and/or if she is returning from a trip from her country.
<p>Screening for chronic diseases allows for early intervention and improves the prognosis</p>	<ul style="list-style-type: none"> • In low-income countries, the prevalence of diabetes is increasing. • Darker skin synthesizes less vitamin D; thus with less sunlight than in Africa, immigrant women are more at risk of developing vitamin D deficiency.
<p>Make sure you rule out one or more of the following diseases:</p>	<ul style="list-style-type: none"> • Malaria, tuberculosis, parasitosis, HIV-AIDS, viral hepatitis A, B, C, typhoid fever, measles, heart disease, diabetes, signs of sexual abuse, signs of physical violence, psychological distress, malnutrition and micronutrient deficiencies (iron, folate, iodine) thalassemia, sickle cell disease, anemia.

For more information, please consult the following:

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Medical Exam for a Child or Adolescent

Despite immigration screening and some cultural and language barriers, immigrants arriving in Canada from low-income countries are more likely to experience certain health problems. In addition to your usual procedures, this fact sheet provides an overview of potential health problems and screening that are important to consider when working with a child or an adolescent.

Personal medical history	<ul style="list-style-type: none"> • It helps to identify the reasons for the visit, the patient's fears and identify health risk factors. • The medical history includes questions about the reason for the visit, symptoms, medications, allergies, previous illnesses, birth history, nutrition, growth, and development.
Family history on genetic diseases, diabetes, cardiovascular, etc.	<p>Be mindful that immigrants come from areas where certain genetic or chronic conditions are common. For example:</p> <ul style="list-style-type: none"> • Sickle cell disease and hemoglobinosis C are very common in sub-Saharan Africa. • Thalassemias are more frequent in North Africa than in sub-Saharan Africa.
A psychosocial assessment will give you a better understanding of the social and mental situation of the person	<ul style="list-style-type: none"> • Childhood and adolescence are critical transition periods (growth, biological changes, physical and sexual maturation, social and economic independence, identity development, social and intellectual skills). During these periods, children's and adolescents' risky behaviours can have serious consequences for the rest of their lives. It is important to document: <ul style="list-style-type: none"> - When the child or teenager arrived in Canada, their proficiency in French and English and their level of education. - If he/she has encountered difficulties during immigration (stays in other countries or in refugee camps, torture injuries, etc.). - Whether he/she is adjusting to life in Canada. Does he/she live with his/her nuclear family or extended family? For those of school age, how are things at school (with teachers, homework, sports activities, is he/she accepted?) Does he/she have friends at school or in the neighborhood? - For accommodation, how many are at home, does he/she have a room to himself or herself? - Factors that can increase the risk of chronic diseases such as alcohol, tobacco or substance abuse - Whether the child or adolescent is depressed or anxious.

<p>Verification of immunization: for many reasons, many immigrants may be susceptible to vaccine-preventable diseases</p>	<ul style="list-style-type: none"> • Ensure that the child or adolescent has documentation that demonstrates immunization according to the Canadian Immunization Guide. • If not, the child or adolescent should be considered insufficiently immunized (especially refugees) and should receive the series of vaccines deemed essential by the Canadian Immunization Guide.
<p>When conducting the physical exam it is important to consider the health problems the child or adolescent may have been exposed to</p>	<ul style="list-style-type: none"> • Although children or adolescents may often be healthier at their age, smoking, alcohol and drug use, poor dietary habits, sedentary lifestyle, sexually transmitted infections, early or unwanted pregnancies can compromise their present or future health. • Children in their country of origin are more exposed to birth complications, malnutrition and infectious diseases (respiratory infections, diarrheal diseases, malaria, measles). • Measure weight, height, blood pressure and look for clinical signs that may suggest tropical or chronic disease. • Document nutritional status, presence of clinical anemia, growth and development, presence of fever or recent episodes of fever. • Look for lymphadenopathy, hepatomegaly and/or splenomegaly, genital anomalies, scars or skin lesions. • Look for dental, hearing or visual abnormalities. The prevalence of oral disease, deafness, hearing impairment, blindness, and visual impairment is generally higher in the regions of Africa from which these immigrants come.
<p>The complete blood count allows for the detection of several diseases</p>	<ul style="list-style-type: none"> • Nutritional deficiencies such as iron, folic acid and vitamin B12 deficiencies. Iron deficiency is common in sub-Saharan Africa in children. • Eosinophilia may suggest the presence of worms in the body such as roundworms, schistosomiasis, strongyloidiasis, filaria, etc.
<p>Many immigrants and refugees arrive from areas where certain infectious and parasitic diseases are common</p>	<ul style="list-style-type: none"> • It would be prudent to screen for these diseases including tuberculosis, congenital syphilis, hepatitis A, B, C, HIV, vaccine-preventable diseases, and parasitosis. Parasitosis is common in sub-Saharan Africa among children. • Screening for malaria should not be routine unless the patient has a fever or reports recent episodes of fever.
<p>Screening for chronic diseases allows for early interventions and improves the prognosis</p>	<ul style="list-style-type: none"> • Screening for sickle cell disease, thalassemia, or G6PD deficiency may be useful because of the high prevalence of these conditions in Africa. • Darker skin synthesizes less vitamin D, so with less sunlight than in Africa, children and adolescents are at greater risk of developing vitamin D deficiency.

Make sure you rule out one or more of the following diseases:

- Malaria, tuberculosis, parasitosis, HIV-AIDS, viral hepatitis A, B, C, typhoid fever, measles, heart disease, diabetes, signs of sexual abuse, signs of physical violence, psychological distress, malnutrition and micronutrient deficiencies (iron, folate, iodine) thalassemia, sickle cell disease, anemia.

For more information, please consult the following:

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Medical Exam for an Adult Male

Despite immigration screening and given some cultural and language barriers, newcomers to Canada from low-income countries are more likely to experience certain health problems. In addition to your usual procedures, this fact sheet provides guidance for health problems and screening indications that should come to your attention in front of an adult male.

Personal medical history	<ul style="list-style-type: none"> • It allows us to identify the reasons for the visit, the patient's fears and to highlight risk factors for their health. • The medical history includes questions about the reasons for the visit, symptoms, medication, allergies, previous illnesses, etc.
Family history on genetic diseases, diabetes, cardiovascular, etc.	<p>Be aware that newcomers come from areas where certain genetic or chronic conditions are common. For example:</p> <ul style="list-style-type: none"> • Sickle cell disease and hemoglobin C are prevalent in Africa south of the Sahara. • Thalassemias are more common in North Africa than in Africa south of the Sahara. • Diabetes is progressing more rapidly in low- and middle-income countries. • More than three-quarters of deaths from cardiovascular disease occur in low- and middle-income countries

<p>A psychosocial assessment will give you a better understanding of the social and mental situation of the person</p>	<ul style="list-style-type: none"> • Several factors (socio-demographic, departure conditions, living conditions in Canada) influence the mental health of newcomers. • It is important to document : <ul style="list-style-type: none"> - How long the patient has been in Canada, his fluency in French and English, his level of education, his employment in his country, whether he is studying or unemployed. - If the patient has encountered difficulties during immigration (stay in other countries or in refugee camps, torture, injuries, etc.). - How well he is adjusting to life in Canada. Does he live alone or with his family? Does he have people here to rely on? - Factors that may increase the risk of chronic disease such as alcohol, tobacco or substance abuse. - If the patient is depressed or anxious. • Some problems can be addressed, but more cautiously including questions about religion (parish affiliation, church, mosque, etc.), financial problems, housing problems, and problems with food (not the same ingredients) or clothing in winter.
<p>Verification of Immunization: for many reasons, many immigrants may be susceptible to vaccine preventable diseases</p>	<ul style="list-style-type: none"> • Ensure that the patient presents you with documentation that he have received vaccinations according to the Canadian Immunization Guide. • Failure to do so will result in the patient being considered inadequately immunized (especially refugees) and will require the series of vaccines deemed essential by the Canadian Immunization Guide.

<p>When conducting the physical exam it is important to consider the health problems the patient may have been exposed to</p>	<ul style="list-style-type: none"> • Measure weight, height, blood pressure and clinical signs that may suggest tropical or chronic disease. • Check for nutritional status, clinical anemia, fever or recent episodes of fever. • Look for lymphadenopathy, hepatomegaly and/or splenomegaly, genital abnormalities, scars or skin lesions • Look for dental, hearing or visual abnormalities. The prevalence of oral disease, deafness, hearing impairment, blindness, and visual impairment is generally higher in the regions of Africa from which these immigrants come.
<p>The complete blood count allows for the detection of several diseases</p>	<ul style="list-style-type: none"> • Nutritional deficiencies such as iron, folic acid and vitamin B12 deficiencies can be detected by a complete blood count. • Eosinophilia may suggest the presence of worms in the body such as roundworms, schistosomiasis, strongyloidiasis, filaria, etc.
<p>Many immigrants and refugees arrive from areas where certain infectious and parasitic diseases are common</p>	<ul style="list-style-type: none"> • It is prudent to screen for these diseases including tuberculosis, hepatitis A, B, C, HIV, vaccine-preventable diseases, and parasites. Parasitosis is common in the sub-Saharan African region. • Screening for malaria should not be routine unless the patient has a fever or reports recent episodes of fever.
<p>Screening for chronic diseases allows for early intervention and improves the prognosis</p>	<ul style="list-style-type: none"> • In low-income countries, the prevalence of diabetes is increasing. • Black skin synthesizes less vitamin D, so with less sunlight than in Africa, immigrants are at greater risk of developing vitamin D deficiency. • Inform the patient about the early detection of prostate cancer (digital examination). • When a chronic disease is identified, it is important to insist on regular follow-ups, possibly with treatment.

<p>Make sure you rule out one or more of the following diseases :</p>	<ul style="list-style-type: none"> • Malaria, tuberculosis, parasitosis, HIV-AIDS, viral hepatitis A, B, C, typhoid fever, measles, heart disease, diabetes, signs of sexual abuse, signs of physical violence, psychological distress, malnutrition and micronutrient deficiencies (iron, folate, iodine), thalassemia, sickle cell anemia.
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For more information, please consult the following:

1. Aubry, P. and Gaüzère, B-A. (2017). Médecine tropicale. Online: <http://medecinetropicale.free.fr/enseignement.html>
2. CCSIR. (2013). Evidence-based Preventative Care Checklist for New Immigrants and Refugees. Checklist: Sub-Saharan Africa. Online: https://www.ccirhken.ca/ccirh/checklist_website/en/sub_saharan_africa.html
3. Government of Canada. (2018). Canadian Immunization Guide. Online: <https://www.canada.ca/en/public-health/services/canadian-immunization-guide.html>
4. The Foundation for Medical Practice Education. (2011). Nouveaux immigrants et réfugiés : dépistage et soins de santé. Module de formation, 19(2). Online: <https://medfam.umontreal.ca/wpcontent/uploads/sites/16/Nouveaux-immigrants-et-r%C3%A9fugi%C3%A9s-2011.pdf>
5. Narasiah, L. and de Margerie, G. (2007). Le dépistage médical chez le nouvel arrivant. Le médecin du Québec, 42(2), 55-61.
6. Ouimet, M. J., Munoz, M., Narasiah, L., Rambure, V. and Correa, J. A. (2008). Pathologies courantes chez les demandeurs d'asile à Montréal : Prévalence et facteurs de risque associés. Canadian Journal of Public Health/Revue Canadienne de Santé Publique, 499-504.
7. Pottie, K., Tugwell, P., Feightner, J., Welch, V., Greenaway, C., Swinkels, H., Rashid, M., Narasiah, L., Kirmayer, L., Ueffing, E. and MacDonald, N. (2011). Appendix 2: Summary of evidence-based recommendations of the Canadian Collaboration for Immigrant and Refugee Health. Online: <http://www.cmaj.ca/content/cmaj/suppl/2010/06/07/cmaj.090313.DC1/imm-summary-2-at.pdf>
8. Redditt, V. J., Graziano, D., Janakiram, P. and Rashid, M. (2015). Health status of newly arrived refugees in Toronto, Ont. Part 2: chronic diseases. Canadian Family Physician, 61(7), e310-e315.
9. Redditt, V. J., Janakiram, P., Graziano, D. and Rashid, M. (2015). Health status of newly arrived refugees in Toronto, Ont. Part 1: infectious diseases. Canadian Family Physician, 61(7), e303-e309.

3. Fact Sheets on Certain Tropical Diseases

Malaria

Despite immigration screening, newcomers from low-income countries are more likely to experience certain health problems that are not necessarily common in Canada. Malaria is one of these health problems and this fact sheet provides information on this disease. For more details, please consult the referenced documents.

What is Malaria?	<ul style="list-style-type: none"> • It is a serious parasitic disease and very common in sub-Saharan Africa. • It is transmitted to humans primarily through the bite of infected female <i>Anopheles</i> mosquitoes. • The parasites destroy the red blood cells of the infected person. • In Canada, the majority of cases are imported from sub-Saharan Africa and India. • Without early diagnosis and appropriate treatment, malaria can quickly become fatal.
Who is most at risk of contracting malaria?	<ul style="list-style-type: none"> • Immigrants, refugees or travellers from malaria-endemic countries within the first 12 months of arrival in Canada. • All immigrants from endemic countries who have had malaria in their lifetime (childhood, adolescence, adulthood). • Immunocompromised persons. • Children under 5 years of age. • Pregnant or breastfeeding women. • An immigrant returning to the country (because he/she forgets to ask for prophylaxis or prophylaxis or is still considered immune to malaria).
How to recognize malaria?	<ul style="list-style-type: none"> • The symptoms of malaria are not specific. • Generally, the patient presents with fever and flu-like symptoms such as headache, diffuse pain, chills, discomfort and digestive problems. • These symptoms appear at least 10 to 15 days after the infected mosquito bite. • Without treatment, the patient can present impaired consciousness, respiratory distress, shock, convulsions, jaundice, renal failure, or severe anemia. • Diagnosis is made by thick blood drop/smear or by the rapid diagnostic test for malaria.
Patient management	<ul style="list-style-type: none"> • The Canadian Malaria Network, in collaboration with the Public Health Agency of Canada and Health Canada's Special Access Program, maintains stocks of injectable artesunate and quinine in major medical centers to ensure timely access to effective malaria treatment.

For more information, please consult the following:

1. Government of Canada. (2009). Canadian Recommendations for the Prevention and Treatment of Malaria Among International Travellers, Chapter 5: Prevention in Special Hosts Online: <https://www.canada.ca/en/public-health/services/reports-publications/canada-communicable-disease-report-ccdr/monthly-issue/2009-35/canadian-recommendations-prevention-treatment-malaria-among-international-travellers/prevention-special-hosts.html>
2. Government of Canada. (2018). Travel Health: About CATMAT? Online: <https://www.canada.ca/en/public-health/services/catmat.html>
3. Government of Canada. (2014). Drugs (generic and trade name) for the treatment and prevention of malaria. Online: <https://www.canada.ca/en/public-health/services/travel-health/drugs-generic-trade-name-treatment-prevention-malaria.html>
4. McCarthy, A. E., Varghese, S., Duggan, A., Campbell, G., Pottie, K. and Kuhn, S. (2011). Appendix 9: Malaria: evidence review for newly arriving immigrants and refugees. In Pottie, K. and coll. (2011). Evidence-based clinical guidelines for immigrants and refugees, CMAJ. Online: <http://www.cmaj.ca/content/cmaj/suppl/2010/06/07/cmaj.090313.DC1/imm-malaria-9-at.pdf>
5. Onyett, H. (2018). Malaria. Caring for Kids New to Canada: Canadian Paediatric Society. Online: <https://kidsnewtocanada.ca/conditions/malaria>
6. World Health Organization. (2018). Malaria. Online: <https://www.who.int/news-room/fact-sheets/detail/malaria>
7. Canadian Paediatric Society. (2018). Symptoms, Signs and Clinical Problems: A tool for differential diagnosis. Caring for Kids New to Canada. Online: <https://kidsnewtocanada.ca/signs-and-symptoms>

Parasitosis

Despite immigration screening, newcomers from low-income countries are more frequently confronted with certain health problems that are not necessarily common here in Canada. Parasitic diseases such as helminthiasis and amoebiasis are among these health problems and this fact sheet provides information on these diseases. For more details, consult the referenced documents.

What is parasitosis?	<ul style="list-style-type: none"> • It is a group of diseases caused by the presence of parasites in the body. • Often these infections are asymptomatic, but without treatment, they can cause serious illness and death.
Who is most at risk of contracting a parasite?	<ul style="list-style-type: none"> • Immigrants, newcomers, and travellers from regions where parasitosis is endemic. • Children are the most exposed. • The contamination occurs by: <ul style="list-style-type: none"> - ingestion of food soiled with feces (ascariasis, trichuriasis, echinococcosis, etc.) - skin contact with water or soil (hookworm, strongyloidiasis, schistosomiasis, etc.) - consumption of food containing larvae (liver flukes, tapeworms, etc.) - bites of insect vectors (malaria, lymphatic filariasis, onchocerciasis, loiasis, etc.).
How to recognize parasitosis?	<ul style="list-style-type: none"> • Helminthiasis: diarrhea, abdominal pain, nausea, general fatigue, weakness, anemia, loss of appetite, cognitive and physical development problems, pruritus. • Amebiasis: abdominal pain, frequently bloody, mucousy stools. It can be complicated by a liver abscess. • Schistosomiasis (or bilharzia): abdominal pain, diarrhea, bloody urine or stools. • Diagnosis: it is made by examining stools, urine, skin biopsy, and parasite serology (strongyloides, schistosomiasis). The diagnosis can also be guided by the blood count (eosinophilia), or by abdominal ultrasound (echinococcosis, amoebiasis).

Patient Management	<ul style="list-style-type: none"> • Antiparasitic drugs directed against the parasite in question.
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For more information, please consult the following:

1. Khan, K., Heidebrecht, C., Sears, J., Chan, A., Rashid, M., Greenaway, C., Stauffer, W., Narasiah, L. and Pottie, K. (2011). Appendix 8: Intestinal parasites – Strongyloides and Schistosoma : evidence review for newly arriving immigrants and refugees. In Pottie, K. and coll. (2011). Evidence-based clinical guidelines for immigrants and refugees, CMAJ. Online: <http://www.cmaj.ca/content/cmaj/suppl/2010/06/07/cmaj.090313.DC1/imm-para-8-at.pdf>
2. Onyett, H. (2018). Gastrointestinal parasitic infections in immigrant and refugee children. Caring for Kids New to Canada: Canadian Paediatric Society. Online: <https://kidsnewtocanada.ca/conditions/gastrointestinal-parasitic-infections>
3. Onyett, H. (2015). Gastrointestinal parasites - an overview. Caring for Kids New to Canada: Canadian Paediatric Society. Online: <https://kidsnewtocanada.ca/conditions/gastrointestinal-parasites-overview>
4. Onyett, H. (2014). Cysticercosis and Taeniasis. Caring for Kids New to Canada: Canadian Paediatric Society. Online: <https://kidsnewtocanada.ca/conditions/cysticercosis-and-taeniasis>
5. World Health Organization. (2018a). Soil-transmitted helminth infections. Online: <https://www.who.int/news-room/fact-sheets/detail/soil-transmitted-helminth-infections>
6. World Health Organization. (2018b). Schistosomiasis (bilharziasis).Online: <https://www.who.int/news-room/fact-sheets/detail/schistosomiasis>
7. World Health Organization. (2018c). Foodborne trematode infections. Online: <https://www.who.int/news-room/fact-sheets/detail/foodborne-trematode-infections>
8. Savini, H. and Simon, F. (2013). Hyperéosinophilie sanguine en zone tropicale. Médecine et Santé Tropicales, 23(2), 132-144. Online: http://www.jle.com/fr/revues/mst/edocs/hypereosinophilie_sanguine_en_zone_tropicale_298026/article.phtml
9. Canadian Paediatric Society. (2018). Symptoms, Signs and Clinical Problems: A tool for differential diagnosis. Caring for Kids New to Canada. Online:

Tuberculosis

Despite immigration screening, newcomers from low-income countries are more likely to have certain health problems that are not necessarily common here in Canada.

Tuberculosis is one of these health problems and this fact sheet provides information on this disease. For more details, please consult the referenced documents.

What is tuberculosis?	<ul style="list-style-type: none"> • A mycobacterial disease that most often affects the lungs. • One of the top 10 causes of death worldwide. • The majority of cases and deaths occur in low-income countries. • In addition to treatment-resistant cases, TB-HIV association is common. • In Canada, foreign-born individuals (Asia, Africa) represent the majority of cases.
Who is at risk?	<ul style="list-style-type: none"> • Immigrants, refugees, or travellers from countries with a high prevalence of TB. • People who have had contact with a person with TB. • People who are immunocompromised (HIV/AIDS infection, cancer, immunosuppressive therapy).
How to recognize tuberculosis?	<ul style="list-style-type: none"> • In the majority of infected people, there are no signs. • For those who are ill, the most common signs are: chronic cough, bloody sputum cough, bloody sputum, chest pain, weakness, weight loss, fever and night sweats. Diagnosis is made by: <ul style="list-style-type: none"> - A microscopic examination of sputum smears. - Mycobacterial culture and phenotypic susceptibility testing. - Nucleic acid amplification tests (NAAT). - Chest X-ray, tuberculin skin test, gamma interferon release tests(TLIG).

Patient Management	<ul style="list-style-type: none"> • Standard 6-month treatment with 4 anti-tuberculosis drugs. • Second-line drugs for multidrug-resistant tuberculosis (isoniazid, rifampicin) and extensively drug-resistant tuberculosis. • Vaccine: BCG to prevent the most severe forms of the disease in children and newborns.
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For more information, please consult the following:

1. Aubry, P., and Gaüzère, B-A. (2018). La tuberculose. Médecine tropicale. Online: http://medecinetropicale.free.fr/cours/tuberculose_sida.pdf
2. Government of Canada. (2015). Tuberculosis in Canada 2013: Pre-Release. Online: <https://www.canada.ca/en/public-health/services/publications/diseases-conditions/tuberculosis-canada-2013-pre-release.html>
3. Onyett, H. (2018). Tuberculosis. Caring for Kids New to Canada: Canadian Paediatric Society. Online: <https://kidsnewtocanada.ca/conditions/tuberculosis>
4. World Health Organization (2018). Tuberculosis. Online: <https://www.who.int/news-room/fact-sheets/detail/tuberculosis>
5. Pai, M., Kunitomo, D., Jamieson, F. and Menzies, D. (2014). Chapter 4: Canadian Tuberculosis Standards 7th Edition: 2014 - Diagnosis of latent Tuberculosis infection. Government of Canada. Online: <https://www.canada.ca/en/public-health/services/infectious-diseases/canadian-tuberculosis-standards-7th-edition/edition-16.html>
6. Pottie, K., Greenaway C., Feightner, J., Welch, V., Swinkels, H., Rashid, M., Narasiah ... Tugwell, P. (2011). Evidence-based clinical guidelines for immigrants and refugees: tuberculosis. CMAJ, 183(12). E824-E925.
7. Canadian Paediatric Society. (2018). Symptoms, Signs and Clinical Problems: A tool for differential diagnosis. Caring for Kids New to Canada. Online: <https://kidsnewtocanada.ca/signs-and-symptoms>

Rickettsial Diseases

Despite immigration screening, newcomers from developing countries are more likely to experience certain health problems that are not necessarily common here in Canada. Rickettsial diseases are one of these health problems and this fact sheet provides information on these conditions. For more details, see the referenced documents.

What are rickettsial diseases?	<ul style="list-style-type: none"> • It is a group of bacterial zoonoses transmitted to humans by arthropods (ticks, lice, fleas, mites). These are potentially fatal infectious diseases that are currently re-emerging due to the increase in international travel.
Who is most at risk?	<ul style="list-style-type: none"> • People are exposed to vectors (ticks, lice, fleas, mites) because of overcrowding, poor hygiene, or poverty. • People who travel to sub-Saharan Africa and the Caribbean. • There are several types of rickettsial diseases including: <ul style="list-style-type: none"> - African tick fever common in sub-Saharan Africa and the Caribbean. It is transmitted to individuals by cattle ticks. - Mediterranean spotted fever occurs in the Mediterranean region and in Africa. It is transmitted by the bite of the brown dog tick.
How do rickettsial diseases manifest themselves?	<ul style="list-style-type: none"> • Rickettsiae multiply at the site of the arthropod bite and cause a local lesion (black spot or blackish eschar at the point of inoculation). Then they spread throughout the body giving rise to various signs: fever, chills, muscle pain, headache, lymphadenopathy, maculo-papular or vesicular skin eruptions. • Complications may occur, including hepatosplenomegaly, neurological damage, meningeal damage, cardiovascular damage, pulmonary damage or renal damage. • The diagnosis is serological.

Patient Management	<ul style="list-style-type: none"> • Treatment is based on antibiotics, particularly tetracyclines.
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For more information, please consult the following:

1. Aubry, P., and Gaüzère, B-A. (2017). Médecine tropicale. Rickettsioses éruptives. Online: http://medecinetropicale.free.fr/cours/rickettsiose_eruptive.pdf
2. Aubry, P., and Gaüzère, B-A. (2016). Maladies transmises à l'homme par les tiques. Online: <http://medecinetropicale.free.fr/cours/maladie-tique.pdf>
3. Government of Canada. (2011). Pathogen Safety Data Sheets: Infectious Substances - Rickettsia prowazekii. Online: <https://www.canada.ca/en/public-health/services/laboratory-biosafety-biosecurity/pathogen-safety-data-sheets-risk-assessment/rickettsia-prowazekii.html>
4. WHO study group on rickettsial diseases. (1982). Rickettsioses : un problème de morbidité persistant. Bulletin of the World Health Organization, 60(5), 693–701. Online: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2536041/>
5. Parola, P. and Barré, N. (2004). Rickettsia africae, agent de la fièvre à tique africaine : un pathogène émerge dans les Antilles et l'île de la Réunion. Bull Soc Pathol Exot, 97(3), 193-198.
6. World Health Organization. (1993). Surveillance mondiale des rickettsioses : Mémoire d'une réunion de l'OMS. Bulletin of the World Health Organization, 71(5), 519–522. Online: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2393483/pdf/bullwho00038-0035.pdf>
7. Canadian Paediatric Society. (2018). Symptoms, Signs and Clinical Problems: A tool for differential diagnosis. Caring for Kids New to Canada. Online: <https://kidsnewtocanada.ca/signs-and-symptoms>

Viral Hepatitis

Despite immigration screening, newcomers from low-income countries are more likely to experience certain health problems that are not necessarily common here in Canada. Viral hepatitis is one of these health problems and this fact sheet provides information on these conditions. For more details, please consult the referenced documents.

What is viral hepatitis?	<ul style="list-style-type: none"> • It is an inflammation of the liver caused by a virus. Viruses of types A, B, C are the most frequent. • The evolution can be towards a spontaneous improvement or become very serious quickly. • Sometimes viral hepatitis can become chronic and evolve into cirrhosis and liver cancer (viral hepatitis B or C).
Who is at risk?	<ul style="list-style-type: none"> • There are several routes of transmission: <ul style="list-style-type: none"> - Digestive (hepatitis A, E) - Blood (hepatitis B, C and D) - Sexual (hepatitis B, C and D) • The risk is greater for : <ul style="list-style-type: none"> - People from countries where the prevalence of these conditions is high. - People from areas where sanitary conditions, water and food safety are poor. - People from areas with poor sanitation, water and food safety (hepatitis A). - People who have been exposed to infected blood and body fluids: use of used needles or syringes, unprotected sex, ritual scarification in countries with high prevalence of hepatitis B, C, or D.

How to recognize viral hepatitis?	<ul style="list-style-type: none"> • Sometimes the infection goes unnoticed. • Symptoms are varied, most often icterus with dark urine, pruritus, fever, loss of appetite, fatigue, pain and fever, headache, nausea, or abdominal pain. • In more severe situations, the patient may present with ascites, portal hypertension portal hypertension, digestive bleeding, or digestive encephalopathy. • The diagnosis is serological and is made from blood samples.
Patient Management	<ul style="list-style-type: none"> • Vaccines against hepatitis A, B • Specialized follow-up • Medication against hepatitis B and C

For more information, please consult the following:

1. Government of Canada. (2018). Page 6: Canadian Immunization Guide: Part 4 — Active Vaccines. Online: <https://www.canada.ca/en/public-health/services/publications/healthy-living/canadian-immunization-guide-part-4-active-vaccines/page-6-hepatitis-a-vaccine.html>
2. Government of Canada. (2017). Page 7: Canadian Immunization Guide: Part 4 — Active Vaccines. Online: <https://www.canada.ca/en/public-health/services/publications/healthy-living/canadian-immunization-guide-part-4-active-vaccines/page-7-hepatitis-b-vaccine.html>
3. Government of Canada. (2016). Treatment of hepatitis C. Online: <https://www.canada.ca/en/public-health/services/diseases/hepatitis-c/treatment-hepatitis-c.html>
4. Government of Canada. (2015). Hepatitis. Online: <https://www.canada.ca/en/health-canada/services/health-concerns/diseases-conditions/hepatitis.html>
5. Government of Canada. (2014). Primary Care Management of Hepatitis B-Quick Reference (HBV-QR) (VHB-AM). Online: <https://www.canada.ca/en/public-health/services/reports-publications/primary-care-management-hepatitis-b-quick-reference.html>
6. Government of Canada. (2013). Section 6-1 Canadian Guidelines on Sexually Transmitted Infections – Specific Populations — Immigrants and Refugees. Online: https://publications.gc.ca/collections/collection_2011/aspc-phac/HP40-1-2010-eng.pdf
7. Greenaway, C., Narasiah, L., Plourde, P., Ueffing, E., Pottie, K., Deschesnes, M., Wong, D. K.H., Kuhn, S. and Heathcote, J. E. (2011). Appendix 5: Hepatitis B: evidence review for newly arriving immigrants and refugees. In Pottie, K. and coll. (2011). Evidence-

- based clinical guidelines for immigrants and refugees, CMAJ. Online: <http://www.cmaj.ca/content/cmaj/suppl/2010/06/07/cmaj.090313.DC1/imm-hepb-5-at.pdf>
8. Greenaway, C., Wong, D. K.H., Assayag, D., Deschesnes, M., Hui, C., Ueffing, E., Pottie, K., Sandoe, A., Rashid, M. and Heathcote, J. E. (2011). Appendix 7: Screening for hepatitis C infection: evidence review for newly arriving immigrants and refugees. In Pottie, K. and coll. (2011). Evidence-based clinical guidelines for immigrants and refugees, CMAJ. Online: <http://www.cmaj.ca/content/cmaj/suppl/2010/06/07/cmaj.090313.DC1/imm-hepc-7-at.pdf>
 9. Canadian Paediatric Society. (2018). Symptoms, Signs and Clinical Problems: A tool for differential diagnosis. Caring for Kids New to Canada. Online: <https://kidsnewtocanada.ca/signs-and-symptoms>

HIV/AIDS Infection

Despite immigration screening, newcomers from low-income countries are more likely to experience certain health problems that may not be common here in Canada. HIV/AIDS infection is one of these health problems and this fact sheet provides information on this disease. For more details, please consult the referenced documents.

What is HIV/AIDS?	<ul style="list-style-type: none"> • It is a viral disease that weakens the body's defense systems against infection and certain types of cancer. • Although the number of new infections and deaths related to this disease is declining, HIV/AIDS remains a major global public health problem.
Who is at risk?	<ul style="list-style-type: none"> • HIV is transmitted through the exchange of bodily fluids (blood, breast milk, semen and vaginal secretions) from infected individuals. • Unprotected sexual intercourse is the main route of contamination. • Transmission can also occur through direct inoculation (contaminated equipment, blood transfusion) or during pregnancy, childbirth or breastfeeding.
How do we recognize this disease?	<ul style="list-style-type: none"> • The disease may go unnoticed at first. • Symptoms usually appear after several years of evolution. • The most common symptoms are: fever, headache, fatigue, night sweats, significant weight loss, swollen lymph nodes, persistent diarrhea, skin infections, persistent dry cough, tuberculosis, cancer or opportunistic diseases. • Diagnosis is made by blood tests.
Patient Management	<ul style="list-style-type: none"> • There is no cure for the disease. • Anti-retroviral drugs can slow down the progression of the disease.

For more information, please consult the following:

1. Aubry, P. and Gaüzère, B-A. (2018). Infection par le VIH/Sida et tropiques. Online: http://medecinetropicale.free.fr/cours/sida_tropical.pdf
2. Bourgeois, A. C., Edmunds, M., Awan, A., Jonah, L., Varsaneux, O. and Siu, W. (2017). HIV in Canada–Surveillance Report, 2016. Can Commun Dis Rep, 43(12), 282-91.
3. Clark, M. et Onyett, H. (2014). HIV/Aids in Children and Youth. Caring for Kids New to Canada: Canadian Paediatric Society. Online: <https://kidsnewtocanada.ca/conditions/hiv>
4. Government of Canada. (2013). Section 6-1 Canadian Guidelines on Sexually Transmitted Infections – Specific Populations — Immigrants and Refugees. Online: https://publications.gc.ca/collections/collection_2011/aspc-phac/HP40-1-2010-eng.pdf
5. World Health Organization. (2018). HIV/Aids. Online: <https://www.who.int/fr/news-room/fact-sheets/detail/hiv-aids>
6. Pottie, K., Vissandjée, B., Grant, J., Logie, C., Ullah, A., Murangira, F. and Welch, V. (2011). Appendix 6: Human immunodeficiency virus: evidence review for newly arriving immigrants and refugees. In Pottie, K. and coll. (2011). Evidence-based clinical guidelines for immigrants and refugees, CMAJ. Online: <http://www.cmaj.ca/content/cmaj/suppl/2010/06/07/cmaj.090313.DC1/imm-hiv-6-at.pdf>
7. Canadian Paediatric Society. (2018). Symptoms, Signs and Clinical Problems: A tool for differential diagnosis. Caring for Kids New to Canada. Online: <https://kidsnewtocanada.ca/signs-and-symptoms>

Dengue

Despite immigration screening, newcomers to Canada from low-income countries are more likely to experience certain health problems. Health care providers should be aware that newcomers may present with specific clinical pictures such as dengue. This fact sheet provides information on this condition. For more details, consult the referenced documents.

What is dengue?	<ul style="list-style-type: none"> • Dengue is a viral disease transmitted by the bites of infected mosquitoes (Aedes). • It is common in tropical and subtropical regions. • The disease is cured in most cases without complications, but it sometimes has a serious evolution that can lead to death.
Who is most at risk of contracting dengue?	<ul style="list-style-type: none"> • Newly arrived immigrants from areas where dengue is present and contracted shortly before departure. • Travelers from areas where dengue is present. • Dengue hemorrhagic fever mainly affects children, the elderly, and those with and those who have already had classic dengue.
How to recognize dengue?	<ul style="list-style-type: none"> • Incubation lasts from 3 to 15 days. • There are several forms: <ul style="list-style-type: none"> - The asymptomatic form. - The classic dengue resembles the flu: fever, headache, retro-orbital and abdominal pain, joint and muscle pain, nausea, vomiting and skin rash. - Severe dengue is rarer. It is a worsening of the classic form with nosebleeds, gum bleeds, abdominal pain, vomiting, difficulty abdominal pain, vomiting, difficulty breathing, and shock. - The diagnosis is biological.
Patient Management	<ul style="list-style-type: none"> • No specific treatment for dengue. • Treatment is symptomatic.

For more information, please consult the following:

1. Committee to Advise on Tropical Medicine and Travel (CATMAT). (2009). Statement on Dengue. Canada Communicable Disease Report (CCDR), 35. 1-12. Online: <http://www.phac-aspc.gc.ca/publicat/ccdr-rmtc/09pdf/acs-dcc-2.pdf>
2. Chen, L. H. and Wilson, M. E. (2010). Dengue and chikungunya infections in travelers. Current opinion in infectious diseases, 23(5), 438-444. Online: https://journals.lww.com/coinfectiousdiseases/Fulltext/2010/10000/Dengue_and_chikungunya_infections_in_travelers.8.aspx
3. MacDonald, N. (2018). Dengue. Caring for Kids New to Canada: Canadian Paediatric Society. Online: <https://kidsnewtocanada.ca/conditions/dengue>
4. World Health Organization. (2018) Dengue and severe dengue. Online: <https://www.who.int/news-room/fact-sheets/detail/dengue-and-severe-dengue>
5. World Health Organization. (2012). Global strategy for dengue prevention and control 2012- 2020. Online: <http://www.who.int/denguecontrol/9789241504034/en/>
6. Canadian Paediatric Society. (2018). Symptoms, Signs and Clinical Problems: A tool for differential diagnosis. Caring for Kids New to Canada. Online: <https://kidsnewtocanada.ca/signs-and-symptoms>

Sickle Cell Disease

Despite immigration screening, newcomers to Canada from low-income countries are more likely to experience certain health problems. Among hemoglobinopathies, hemoglobinosis S (sickle cell anemia) and hemoglobinosis C are common genetic diseases that are a public health concern in some parts of the world. They are often asymptomatic, but serious in the major form, especially for sickle cell disease. Practitioners will be confronted more and more often with these conditions due to population migrations. This fact sheet provides information on this condition. For more details, consult the documents in reference.

What is sickle cell disease?	<ul style="list-style-type: none"> • Sickle cell disease is an inherited genetic disease of autosomal recessive transmission affecting the red blood cells. In sickle cell disease there is a defect in the structure of hemoglobin. Two forms are most common: hemoglobinosis S and hemoglobinosis C. • Hemoglobinosis S gives few signs in heterozygous forms. But homozygous forms are more serious and can lead to: growth delays, arthritis, osteonecrosis, visual disturbances, cardiac disturbances, hearing disturbances, liver disturbances, renal failure, or stroke. • In hemoglobin C, the symptoms are less severe. Moderate anemia, splenomegaly, and biliary lithiasis may be observed.
Who is at risk?	<ul style="list-style-type: none"> • It is the most common genetic disease in the world with the highest prevalence in sub-Saharan Africa. • People with a family history of sickle cell disease are also at risk.
How to recognize sickle cell disease?	<ul style="list-style-type: none"> • The most frequent symptoms are: bone pain, abdominal pain, anemia, jaundice, increased susceptibility to infections: pneumopathies, meningitis, septicemia, osteomyelitis. Sometimes it is discovered at the stage when complications are already present. • Diagnosis: hemoglobin electrophoresis

Patient Management	<ul style="list-style-type: none"> • Analgesics • Blood transfusions • Bone marrow transplants • Antibiotics • Follow-up in a specialized facility • Extended vaccinations
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For more information, please consult the following:

1. Aubry, P. and Gaüzère, B-A. (2018). Hemoglobinoses. Médecine tropicale. Online: <http://medecinetropicale.free.fr/cours/hemoglobinoses.pdf>
2. Dahmani, F., Benkirane, S., Kouzih, J., Woumki, A., Mamad, H. and Masrar, A. (2017). Profil épidémiologique des hémoglobinopathies : étude transversale descriptive autour du cas index. Pan African Medical Journal, 27(1).
3. Hunter, A. and Banerji, A. (2018). Sick Cell Disease. Caring for Kids New to Canada: Canadian Paediatric Society. Online: <https://kidsnewtocanada.ca/conditions/sickle-cell>
4. Langlois, S., Ford, J. C., Chitayat, D., Désilets, V. A., Farrell, S. A., Geraghty, M., ... and Wilson, R. D. (2008). Dépistage des porteurs de thalassémie et d'hémoglobinopathies au Canada. Journal of Obstetrics and Gynaecology Canada, 30(10), 960-971.
5. World Health Organization. (2006a). Fifty Ninth World Health Assembly: Sick cell anaemia: Report by the Secretariat. Online: https://apps.who.int/iris/bitstream/handle/10665/20890/A59_9-en.pdf?sequence=1&isAllowed=y
6. World Health Organization. (2006b). Sick Cell Disease in the African Region: Current situation and the way forward: Report of the Regional Director. Online: <https://apps.who.int/iris/bitstream/handle/10665/92663/AFR-RC56-17.pdf?sequence=1&isAllowed=y>
7. Canadian Paediatric Society. (2018). Symptoms, Signs and Clinical Problems: A tool for differential diagnosis. Caring for Kids New to Canada. Online: <https://kidsnewtocanada.ca/signs-and-symptoms>
8. The Hospital for Sick Children. (2011). Sick Cell Disease: a practical guide for teachers. Online: <https://www.aboutkidshealth.ca/fr/Article?contentid=652&language=English>

Thalassemias

Despite immigration screening, newcomers to Canada from low-income countries face certain health problems more frequently. Thalassemias, for example, are common genetic diseases that are a public health problem in some parts of the world. They are often asymptomatic, but severe in their major forms. Practitioners will be confronted with these conditions more and more often due to population migrations. This fact sheet provides information on this condition. For more details, please consult the referenced documents.

What are thalassemias?	<ul style="list-style-type: none"> • These are inherited genetic diseases affecting the red blood cells. • In thalassemias, there is a defect in the production of hemoglobin, which results in a decrease in the quantity or size of the red blood cells and sometimes chronic anemia. • The transmission is autosomal recessive and there are two forms: alpha thalassemia and beta thalassemia (more common and more severe).
Who is at risk?	<ul style="list-style-type: none"> • Thalassemias are more common in North Africa than in sub-Saharan Africa. • People with a family history of thalassemia are also at risk.
How to recognize thalassemia?	<ul style="list-style-type: none"> • They are asymptomatic in minor forms. • Often discovered incidentally during microcytic anemia. The most frequent symptoms are: anemia, enlargement of the liver and spleen, growth disturbances, death of the child at birth or shortly thereafter. • Diagnosis: hemoglobin electrophoresis
Patient Management	<ul style="list-style-type: none"> • Blood transfusion • Bone marrow transplant • Eliminate iron overload

For more information, please consult the following:

1. Dahmani, F., Benkirane, S., Kouzih, J., Woumki, A., Mamad, H. and Masrar, A. (2017). Profil épidémiologique des hémoglobinopathies : étude transversale descriptive autour du cas index. Pan African Medical Journal, 27(1).
2. Hunter, A. and Banerji, A. (2018). Thalassemia. Caring for Kids New to Canada: Canadian Paediatric Society. Online: <https://kidsnewtocanada.ca/conditions/thalassemia>.
3. Langlois, S., Ford, J. C., Chitayat, D., Désilets, V. A., Farrell, S. A., Geraghty, M. and Wilson, R. D. (2008). Dépistage des porteurs de thalassémie et d'hémoglobinopathies au Canada. Journal of Obstetrics and Gynaecology Canada, 30(10), 960-971.
4. World Health Organization. (2006). Thalassemia and other haemoglobinopathies: Report by the Secretariat. Online: https://apps.who.int/iris/bitstream/handle/10665/21519/B118_5-en.pdf?sequence=1&isAllowed=y
5. Canadian Paediatric Society. (2018). Symptoms, Signs and Clinical Problems: A tool for differential diagnosis. Caring for Kids New to Canada. Online: <https://kidsnewtocanada.ca/signs-and-symptoms>
6. The Hospital for Sick Children. (2010). Thalassemia. Online: <https://www.aboutkidshealth.ca/fr/Article?contentid=840&language=English>

Nutritional Deficiency Disease

Despite immigration screening, newcomers from low-income countries are more likely to experience certain health problems that may not be common here in Canada. Nutritional deficiency diseases are one of these health problems and this fact sheet provides information on these conditions. For more details, consult the referenced documents.

What is a nutritional deficiency disease?	<ul style="list-style-type: none"> • It occurs when the body has not received the sufficient amount of nutrients it needs. • This can lead to the development of more or less serious diseases or under-nutrition/ malnutrition which can be fatal. • The most common deficiencies are: iron, vitamin D, vitamin B12 (cobalamin), folic acid (vitamin B9), vitamin A, iodine and zinc.
Who is at risk?	<ul style="list-style-type: none"> • Nutritional deficiencies are common among refugees, children, and pregnant and lactating women from areas with a high prevalence of these conditions. • They are most often due to inadequate dietary intake (poverty, limited access to food), malabsorption or lack of assimilation by the body. • There are also other non-dietary factors: <ul style="list-style-type: none"> - Malaria, digestive parasitic infections, sickle cell disease, thalassemia, and menstruation contribute to anemia. - Black skin synthesizes less vitamin D; thus with less sunshine than in Africa, immigrants are at greater risk of developing vitamin D deficiency. - Diarrhea, measles or pneumonia promote vitamin D deficiency. - People from regions without iodine fortification programs or far from the sea are at risk of iodine deficiency. - People with chronic diarrhea are also at risk for zinc deficiency.

How to recognize a dietary micronutrient deficiency?	<ul style="list-style-type: none"> • Symptoms vary depending on the nutrient deficiency. The most common signs are: fatigue, weakness, breathing problems, change in appetite, paleness, hair loss, constipation, palpitations, depression, lack of concentration, and neurological signs. • Diagnosis is made from a complete blood count and a nutrient blood test.
Patient Management	<ul style="list-style-type: none"> • Specific diet • Micronutrient supplementation

For more information, please consult the following:

1. Aubry, P. and Gaüzère B-A. (2015). Avitaminoses. Médecine tropicale. Online: <http://medecinetropicale.free.fr/cours/avitaminose.pdf>
2. Aucoin, M., Weaver, R., Thomas, R., Jones, L. (2013). Vitamin D status of refugees arriving in Canada: Findings from the Calgary Refugee Health Program. Can Fam Physician, 59. e188-194.
3. Banerji, A. and Hunter, A. (2018). Malnutrition: An Overview. Caring for Kids New to Canada: Canadian Paediatric Society. Online: <https://kidsnewtocanada.ca/conditions/malnutrition>
4. Banerji, A. and Hunter, A. (2016a). Iron Deficiency and Iron Deficiency Anemia. Caring for Kids New to Canada: Canadian Paediatric Society. Online: <https://kidsnewtocanada.ca/conditions/iron>
5. Banerji, A. and Hunter, A. (2016b). Vitamin D Deficiency. Caring for Kids New to Canada: Canadian Paediatric Society. Online: <https://kidsnewtocanada.ca/conditions/d>
6. Banerji, A. and Hunter, A. (2013a). Folic Acid Deficiency. Caring for Kids New to Canada: Canadian Paediatric Society. Online: <https://kidsnewtocanada.ca/conditions/folic-acid>
7. Banerji, A. and Hunter, A. (2013b). Iodine Deficiency. Caring for Kids New to Canada: Canadian Paediatric Society. Online: <https://kidsnewtocanada.ca/conditions/iodine>
8. Banerji, A. and Hunter, A. (2013c). Vitamin A Deficiency. Caring for Kids New to Canada: Canadian Paediatric Society. Online: <https://kidsnewtocanada.ca/conditions/a>
9. Banerji, A. and Hunter, A. (2013d). Vitamin B12 Deficiency. Caring for Kids New to Canada: Canadian Paediatric Society. Online: <https://kidsnewtocanada.ca/conditions/b12>
10. Banerji, A. and Hunter, A. (2013e). Zinc Deficiency. Caring for Kids New to Canada: Canadian Paediatric Society. Online: <https://kidsnewtocanada.ca/conditions/zinc>
11. Canadian Paediatric Society. (2018). Symptoms, Signs and Clinical Problems: A tool for differential diagnosis. Caring for Kids New to Canada. Online: <https://kidsnewtocanada.ca/signs-and-symptoms>

12. Pottie, K., Chambers, A., Brockest, B., Welch, V. and Zlotkin, S. (2011). Appendix 15: Iron-deficiency anemia: evidence review for newly arriving immigrants and refugees. In Pottie, K. and coll. (2011). Evidence-based clinical guidelines for immigrants and refugees, CMAJ. En ligne : <http://www.cmaj.ca/content/cmaj/suppl/2010/06/07/cmaj.090313.DC1/imm-iron-15-at.pdf>

4. Fact Sheets on Some Signs and Symptoms

Fever in Newcomers

Despite immigration screening, newcomers to Canada from low-income countries are more likely to experience certain health problems. Health care providers should be aware that newcomers may present with specific clinical presentations. Fever, for example, is a common symptom that may mask a serious tropical disease (see list below). This fact sheet provides guidance for the initial assessment and management of fever in a newcomer. For more details, consult the referenced documents.

Questioning	<ul style="list-style-type: none"> • Fever can be a symptom of a benign infection that may resolve spontaneously, but it can also hide a fatal disease such as malaria. • Asking questions allows to document a recent trip (to the country of origin in particular), known conditions of the patient (such as sickle cell disease, hepatitis B or C), vaccination status, duration of fever, its evolution, previous similar symptoms, medications already taken, presence of a pregnancy, associated symptoms (neurological, digestive, respiratory, skin, genito-urinary, ENT, localized pain, lymphadenopathy, bleeding, etc.)
Physical Examination	<ul style="list-style-type: none"> • Look for clinical signs of fever-related illness and guide the diagnosis. • The main clinical signs to look for are: disturbances of consciousness, convulsions, stiff neck, signs of respiratory infection, enlarged or painful liver, jaundice, enlarged spleen, digestive signs (diarrhea, vomiting, abdominal pain), lymphadenopathy, skin signs (often more difficult on black skin, but the patient can indicate them to you), diffuse pain, bleeding, genital or urinary signs.

Additional Examinations	<ul style="list-style-type: none"> • Each patient should have as a baseline a thick blood drop/blood smear and/or rapid diagnostic test for malaria, a complete blood count with sedimentation rate and C-reactive protein assay, liver function test, renal function and lactate assay with urinalysis and culture, and depending on the severity of the clinical condition: blood cultures and lumbar puncture in the presence of neck stiffness • Depending on the suspected diagnosis, specific examinations may be performed: bacterial serologies (typhoid fever, meningococcal meningitis, rickettsiosis, leptospirosis, syphilis), CSF analysis, coproculture, parasitic serologies (amoebiasis, visceral leishmaniasis, Human African Trypanosomiasis), viral serologies (hepatitis A, B, C, HIV, measles, dengue, Ebola, etc.), chest X-ray, abdominal ultrasound, parasitological examination of stools, etc.), chest X-ray, abdominal ultrasound, parasitological examination of stools, etc.
Patient Management	<ul style="list-style-type: none"> • It will be done according to the selected diagnosis (see table 1).

For more information, please consult the following:

1. Committee to Advise on Tropical Medicine and Travel (CATMAT). (2011). Fever In The Returning International Traveller Initial Assessment Guidelines. Canada Communicable Disease Report, 37. 1-14. Online: <https://www.canada.ca/content/dam/phac-aspc/migration/phac-aspc/publicat/ccdr-rmtc/11vol37/acs-3/pdf/returningtravellerfever-fieuvrevoyageurderetour-eng.pdf>
2. Government of Canada. (2018). The health of travellers: About CATMAT. Online: <https://www.canada.ca/en/public-health/services/catmat.html>
3. The Foundation for Medical Practice Education. (2011). Nouveaux immigrants et réfugiés : dépistage et soins de santé. Module de formation, 19(2). Online: <https://medfam.umontreal.ca/wp-content/uploads/sites/16/Nouveaux-immigrants-et-r%C3%A9fugi%C3%A9s-D%C3%A9pistage-et-soins-de-sant%C3%A9-2011.pdf>
4. Rault, J. B. and Martinez, V. (2011). Fièvre au retour d'un pays tropical. Traité de Médecine Akos. Online: http://www.bichat-larib.com/publications.documents/3606_AKOS_fievre_retour_2011.pdf

5. Canadian Paediatric Society. (2018). Symptoms, Signs and Clinical Problems: A tool for differential diagnosis. Caring for Kids New to Canada. Online: <https://kidsnewtocanada.ca/signs-and-symptoms>

Table 1- Diagnostic Guidance for Signs Associated with Fever

Signs Associated with Fever	Diagnostic Orientation	Signs Associated with Fever	Diagnostic Guidance
Isolated fever	<ul style="list-style-type: none"> • Malaria 	Lymphadenopathies	<ul style="list-style-type: none"> • Tuberculosis • HIV infection • Visceral leishmaniasis
Neurological signs	<ul style="list-style-type: none"> • Malaria • Meningitis • Typhoid fever • Human African trypanosomiasis • Arbovirosis 	Urinary signs	<ul style="list-style-type: none"> • Urinary tract infection • Sexually transmitted infections
Diffuse pain	<ul style="list-style-type: none"> • Malaria • Recurrent fever (infectious diseases transmitted by insect bites or mites such as lice, ticks...) • Leptospirosis • Hemorrhagic fever • Viral hepatitis • Arbovirosis 	Cutaneous signs	<ul style="list-style-type: none"> • Parasitosis (Ascaris, anguillula, hookworm, loasis, lymphatic filariasis) • Syphilis • Measles • Typhoid fever • HIV infection • Bacterial meningitis • Rickettsiosis • Dengue • Viral hepatitis (A, B, C, D, E) <ul style="list-style-type: none"> • Arbovirosis • Leptospirosis
Pain in the right hypochondrium	<ul style="list-style-type: none"> • Hepatic amebiasis • Viral hepatitis (A, B, C, D, E) • Schistosomiasis • Visceral leishmaniasis • Malaria 	Jaundice	<ul style="list-style-type: none"> • Viral hepatitis (A, B, C, D, E) • Malaria • Leptospirosis • Rickettsiosis

Splenomegaly	<ul style="list-style-type: none"> • Malaria • Typhoid fever • Visceral leishmaniasis 	Hemorrhagic syndrome	<ul style="list-style-type: none"> • Arbovirosis • Viral hemorrhagic fever • Leptospirosis • Dengue • Viral hepatitis (A, B, C, D, E) • Malaria
Digestive signs (diarrhea, vomiting, abdominal pain)	<ul style="list-style-type: none"> • Malaria • Typhoid fever • Hepatic amebiasis • Leptospirosis • Bacterial diarrhea 	Respiratory signs	<ul style="list-style-type: none"> • Bacterial or viral pneumonia (Tuberculosis, pneumococcus, HIV) • Influenza • Leptospirosis • Malaria

Diarrhea in Newcomers

Despite immigration screening, newcomers from low-income countries are more likely to experience certain health problems that may not be common here in Canada. This fact sheet provides guidance in the assessment and initial management of tropical agent-related diarrhea in newcomers. For more details, consult the referenced documents.

What is diarrhea?	<ul style="list-style-type: none"> • Diarrhea is the emission of three or more loose or liquid stools per day (or more frequent stools than usual for the affected individual). • It is usually a symptom of a gastrointestinal infection (bacterial, viral or parasitic) or may be foodborne. • Severe diarrhea results in fluid loss and can be fatal, especially in young children and people who are malnourished or immunocompromised.
Who is more at risk?	<ul style="list-style-type: none"> • Newcomers, travelers from areas with poor sanitation and hygiene. • Consumption of contaminated food or water.
The main causes	<ul style="list-style-type: none"> • When diarrhea is accompanied by abdominal pain and/or fever, malaria, bacterial infections (<i>E. coli</i>, typhoid fever, shigellosis, campylobacter spp, clostridium difficile (after antibiotic therapy) and viral infections (viral hepatitis, HIV primary infection, enterovirus) should be considered. • When there is no fever, the most frequent causes are of food or parasitic origin (amoebiasis, giardiasis, intestinal helminthiasis, cholera, or fungi). • One should not forget causes that are not associated with a tropical disease (e.g. colitis, irritable bowel syndrome, excess of laxatives, etc.).

Patient Management	<ul style="list-style-type: none"> • Depending on the suspected disease, in the absence of fever, a parasitological examination of the stool may be sufficient. • In case of fever, a thick blood drop/blood smear, a rapid diagnostic test (malaria), a typhoid fever test, and a coproculture may be requested in addition to this examination. • Treatment will be based on the diagnosis.
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For more information, please consult the following:

1. Aubry, P. and Gaüzère B-A. (2016). Diarrhées infectieuses. Online: http://medecinetropicale.free.fr/cours/diarrhees_infectieuses.pdf
2. Committee to Advise on Tropical Medicine and Travel (CATMAT). (2006). Statement on Persistent Diarrhea in the Returned Traveller. Canada Communicable Disease Report, 32. DCC—1. Online: <https://www.canada.ca/content/dam/phac-aspc/migration/phac-aspc/publicat/ccdr-rmtc/06pdf/acs32-01.pdf>
3. Khan, K., Heidebrecht, C., Sears, J., Chan, A., Rashid, M., Greenaway, C., Stauffer, W., Narasiah, L. and Pottie, K. (2011). Appendix 8 : Intestinal parasites – Strongyloides and Schistosoma : evidence review for newly arriving immigrants and refugees. In Pottie, K. and coll. (2011). Evidence-based clinical guidelines for immigrants and refugees, CMAJ. Online: <http://www.cmaj.ca/content/cmaj/suppl/2010/06/07/cmaj.090313.DC1/imm-para-8-at.pdf>
4. Onyett, H. (2018a). Enteric Fever (Typhoid Fever and Paratyphoid Fever). Caring for Kids New to Canada: Canadian Paediatric Society. Online: <https://kidsnewtocanada.ca/conditions/enteric-fever>
5. Onyett, H. (2018b). Gastrointestinal parasitic infections in immigrant and refugee children. Caring for Kids New to Canada: Canadian Paediatric Society. Online: <https://kidsnewtocanada.ca/conditions/gastrointestinal-parasitic-infections>
6. Onyett, H. (2015). Gastrointestinal parasites - an overview. Caring for Kids New to Canada: Canadian Paediatric Society. Online: <https://kidsnewtocanada.ca/conditions/gastrointestinal-parasites-overview>
7. Onyett, H. (2014). Cysticercosis and taeniasis. Caring for Kids New to Canada: Canadian Paediatric Society. Online: <https://kidsnewtocanada.ca/conditions/cysticercosis-and-taeniasis>
8. World Health Organization. (2018a). Soil-transmitted helminth infections. Online: <https://www.who.int/news-room/fact-sheets/detail/soil-transmitted-helminth-infections>
9. World Health Organization. (2018b). Schistosomiasis (bilharziasis). Online: <https://www.who.int/news-room/fact-sheets/detail/schistosomiasis>
10. World Health Organization. (2018c). Foodborne trematode infections. Online: <https://www.who.int/news-room/fact-sheets/detail/foodborne-trematode-infections>

11. Canadian Paediatric Society. (2018). Symptoms, Signs and Clinical Problems: A tool for differential diagnosis. Caring for Kids New to Canada. Online:<https://kidsnewtocanada.ca/signs-and-symptoms>

Abdominal Pain in Newcomers

Despite immigration screening, newcomers to Canada from low-income countries are more likely to experience certain health problems that are not necessarily common here in Canada. This fact sheet provides guidance in the assessment and initial management of tropical agent-related abdominal pain in newcomers. For more details, consult the referenced documents.

What is Abdominal Pain?	<ul style="list-style-type: none"> • It is a painful sensation felt in the abdominal area. • Abdominal pains are very common and in many cases are not serious but can be a sign of a digestive infection, a chronic disease or require chronic disease or require urgent surgical intervention. • It can be accompanied by different symptoms (nausea, vomiting, fever, diarrhea, abdominal bloating, difficulty in urinating).
Who is More at Risk?	<ul style="list-style-type: none"> • Newcomers, travellers from areas with poor sanitation and hygiene. • Consumption of contaminated food or water.

The Main Causes	<ul style="list-style-type: none"> • There are many causes of abdominal pain, but they are most often related to the digestive organs (stomach, liver, intestines). The origin can also be gynecological, urinary, cardiac or pulmonary. • Apart from cosmopolitan causes (e.g. constipation, bloating, gastroesophageal reflux, gastric and duodenal ulcers, etc.), pain in newcomers can be an indication of malaria (in children), hemoglobinopathy, the beginning of a pregnancy or an infection of the digestive tract. The most frequent infections are parasitic infections (amoebiasis, giardiasis, intestinal helminthiasis, fungi), bacterial infections (E. coli, typhoid fever, shigellosis, campylobacter spp, clostridium difficile) and viral infections (viral hepatitis, HIV primary infection, enterovirus). • We can also think of psychological causes in newcomers.
Patient Management:	<ul style="list-style-type: none"> • The questioning and physical examination specify certain characteristics of the pain (location, intensity, mode of onset, vomiting, diarrhea, presence of fever, etc.) and help to orient the diagnosis. • If necessary, laboratory tests (stool, blood, liver and pancreatic enzymes, pregnancy test, urine test), medical imaging, and endoscopy will be done to refine the diagnosis and start medical or surgical treatment.

For more information, please consult the following:

1. Aubry, P. and Gaüzère, B-A. (2016). Diarrhées infectieuses. Online: http://medecinetropicale.free.fr/cours/diarrhees_infectieuses.pdf
2. Committee to Advise on Tropical Medicine and Travel (CATMAT). (2006). Statement on Persistent Diarrhea in the Returned Traveller. Canada Communicable Disease Report, 32. DCC—1. Online: <https://www.canada.ca/content/dam/phac-aspc/migration/phac-aspc/publicat/ccdr-rmtc/06pdf/acs32-01.pdf>
3. Khan, K., Heidebrecht, C., Sears, J., Chan, A., Rashid, M., Greenaway, C., Stauffer, W., Narasiah, L. and Pottie, K. (2011). Appendix 8 : Intestinal parasites – Strongyloides and Schistosoma : evidence review for newly arriving immigrants and refugees. In Pottie, K. and coll. (2011). Evidence-based clinical guidelines for immigrants and refugees, CMAJ. Online: <http://www.cmaj.ca/content/cmaj/suppl/2010/06/07/cmaj.090313.DC1/imm-para-8-at.pdf>
4. Onyett, H. (2018a). Enteric Fever (Typhoid Fever and Paratyphoid Fever). Caring for Kids New to Canada: Canadian Paediatric Society. Online: <https://kidsnewtocanada.ca/conditions/enteric-fever>
5. Onyett, H. (2018b). Gastrointestinal parasitic infections in immigrant and refugee children. Caring for Kids New to Canada: Canadian Paediatric Society. Online: <https://kidsnewtocanada.ca/conditions/gastrointestinal-parasitic-infections>
6. Onyett, H. (2015). Gastrointestinal parasites - an overview. Caring for Kids New to Canada: Canadian Paediatric Society. Online: <https://kidsnewtocanada.ca/conditions/gastrointestinal-parasites-overview>
7. Onyett, H. (2014). Cysticercosis and taeniasis. Caring for Kids New to Canada: Canadian Paediatric Society. Online: <https://kidsnewtocanada.ca/conditions/cysticercosis-and-taeniasis>
8. World Health Organization. (2018a). Soil-transmitted helminth infections. Online: <https://www.who.int/news-room/fact-sheets/detail/soil-transmitted-helminth-infections>
9. World Health Organization. (2018c). Foodborne trematode infections. Online: <https://www.who.int/news-room/fact-sheets/detail/foodborne-trematode-infections>
10. World Health Organization. (2018b). Schistosomiasis (bilharziasis). Online: <https://www.who.int/news-room/fact-sheets/detail/schistosomiasis>
11. Canadian Paediatric Society. (2018). Symptoms, Signs and Clinical Problems: A tool for differential diagnosis. Caring for Kids New to Canada. Online: <https://kidsnewtocanada.ca/signs-and-symptoms>

Pruritus in Newcomers

Despite immigration screening, newcomers to Canada from low-income countries are more likely to experience certain health problems. Health care providers should be aware that newcomers may present with specific clinical presentations such as pruritus related to a tropical disease. This fact sheet provides guidance in the assessment and initial management of tropical-related pruritus in newcomers. For more details, consult the referenced documents.

What is Pruritus?	<ul style="list-style-type: none"> • It is a sensation leading to an irresistible urge to scratch.
Who is More at Risk?	<ul style="list-style-type: none"> • People coming from endemic areas of certain parasites (Bilharzia, Filariasis, Onchocerciasis). • People who have lived in difficult living conditions, especially in places with a high concentration of people. • People who have contracted sexually transmitted diseases.
The Main Causes	<ul style="list-style-type: none"> • Apart from cosmopolitan diseases or systemic pathologies, there are several groups of causes: <ul style="list-style-type: none"> - Parasitic infections: the most common are scabies, lice, cutaneous leishmaniasis, filariasis (loasis, onchocerciasis), schistosomiasis, human African trypanosomiasis, larva migrans, anguillulosis, hookworm, myiasis, and mycoses. - Bacterial infections: syphilis and pyoderma. - Viral infections: the most frequent are viral hepatitis viruses, HIV, dengue and chikungunya viruses. - Non-infectious causes: heat rash, irritative or allergic dermatitis due to insect bites or contact with stinging plants. - We can also think of psychological causes for the newcomer

Patient Management	<ul style="list-style-type: none"> • Additional examinations (blood count, chest X-ray, parasitological examinations of stools, urine, blood, skin, serologies) are often useful to make the diagnosis and to start the adapted treatment. • In all cases, however, the examinations should be ordered taking into account the cosmopolitan causes and/or the suspected tropical cause.
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For more information, please consult the following:

1. Aubry, P. (2009). Diagnostic d'un prurit chez le voyageur. Médecine tropicale. Online: <http://medecinetropicale.free.fr/cours/prurit.pdf>
2. Aubry, P. and Gaüzère B-A. (2015). Panorama des principales affections dermatologiques en milieu tropical. En ligne : <http://medecinetropicale.free.fr/cours/dermatose.pdf>
3. Caumes, E. and Monsel, G. (2010). Dermatoses au retour de voyages : étiologies en fonction de la présentation clinique. Rev Med Suisse, 6, 960-964.
4. Hochedez, P. and Caumes, E. (2008). Pathologies dermatologiques au retour de voyage. La Lettre de l'infectiologue, 23(3), 87-99.
5. O'Brien, B. M. (2009). A practical approach to common skin problems in returning travellers. Travel medicine and infectious disease, 7(3), 125-146.
6. Canadian Paediatric Society. (2018). Symptoms, Signs and Clinical Problems: A tool for differential diagnosis. Caring for Kids New to Canada. Online: <https://kidsnewtocanada.ca/signs-and-symptoms>

Eosinophilia in Newcomers

Despite immigration screening, newcomers to Canada from low-income countries are more likely to experience certain health problems. Health care providers should be aware that newcomers may present with specific clinical presentations such as increased eosinophil counts related to parasitic disease. This fact sheet provides guidance in the assessment and initial management of parasitic eosinophilia in newcomers. For more details, consult the referenced documents.

What is eosinophilia?	<ul style="list-style-type: none"> • It is the increase in the number of white blood cells (in this case eosinophils) in the blood. • It occurs in a variety of conditions, the most common being allergies and parasitosis.
Who is more at risk?	<ul style="list-style-type: none"> • People who have traveled to or from an area with a high prevalence of parasites. • People infected with worms passing through their tissues or bloodstream.
How to recognize a parasitic eosinophilia?	<ul style="list-style-type: none"> • Parasitic eosinophilia can be recognized based on: <ul style="list-style-type: none"> - The high number of eosinophilic polynucleic at more than 500 per cubic millimeter of blood found on several successive blood counts. - The presence of signs suggestive of an ongoing parasitosis (dermatosis, pruritus, hepatosplenomegaly and lymphadenopathy). - The presence of eggs or larvae in the stool, urine, blood and skin. Often the parasite is not found. - Detection can be done indirectly by parasite serology, anatomico-pathological examination.

The main causes	<ul style="list-style-type: none"> • The following parasitoses are common when eosinophilia is very high: toxocariasis or visceral larva migrans syndrome, hepatic distomatosis, hookworm disease, anguillulose, ascariasis, cutaneous myiasis, scabies, bilharziasis, filariasis. • In other parasitoses (taeniasis, allergic bronchopulmonary aspergillosis, oxyuriasis, trichocephalosis, hydatid cysts, protozooses, pneumocystis, distomatosis, dracunculiasis), eosinophilia is more moderate.
Patient Management:	<ul style="list-style-type: none"> • It is done with antiparasitic drugs directed against the suspected parasite.

For more information, please consult the following:

1. Anane, S. (2006). Les étiologies parasitaires d'une hyperéosinophilie sanguine. In Annales de Biologie Clinique, 64(3), 219-229.
2. Aubry, P. and Gaüzère, B-A. (2017). Diagnostic et conduite à tenir devant une hyperéosinophilie sanguine d'origine parasitaire. Online: http://medecinetropicale.free.fr/cours/hypereosinophilie_tropicale.pdf
3. Bigaignon-Receveur, M.C., Becquart J.P. and Adom, H. (1992). Le poumon éosinophile tropical. Médecine d'Afrique Noire, 39(8/9), 564-568.
4. Kahn, J. E., Girszyn, N. and Blétry, O. (2006). Orientation diagnostique devant une hyperéosinophilie. Hématologie, 12(3), 201-209.
5. Paugam, A., Rabetokotany, F.R., Lesle, F., Challier, S., Dahane, N. and Yera, H. (2013). Hyperéosinophilie parasitaire. Utilisation pratique des tests diagnostiques. Immuno-analyse & Biologie Spécialisée, 28(4), 245-250.
6. Savini, H. et Simon, F. (2013). Hyperéosinophilie sanguine en zone tropicale. Médecine et Santé Tropicales, 23(2), 132-144.
7. Canadian Paediatric Society. (2018). Symptoms, Signs and Clinical Problems: A tool for differential diagnosis. Caring for Kids New to Canada. Online: <https://kidsnewtocanada.ca/signs-and-symptoms>

Dermatoses in Newcomers

Despite immigration screening, newcomers from low-income countries are more likely to experience certain health problems that may not be common here in Canada. One of these health problems is dermatitis related to a tropical disease. This fact sheet provides guidance in the assessment and initial management of tropical-related dermatoses in newcomers. For more details, consult the referenced documents.

What is a dermatosis of tropical origin?	<ul style="list-style-type: none"> • It is a set of mucocutaneous affections related to a tropical infectious agent which can be parasitic, fungal, bacterial, viral or with an arthropod or a plant.
Who is more at risk?	<ul style="list-style-type: none"> • People coming from endemic areas of certain parasites (bilharzia, filariasis, onchocerciasis). • Travelers returning from a tropical country.
The main causes	<ul style="list-style-type: none"> • There are four main causes of tropical dermatoses: <ul style="list-style-type: none"> - Parasitic infections: scabies, cutaneous leishmaniasis, bilharziasis, cutaneous larva migrans (hookworm) bilharziasis, cutaneous larva migrans (hookworm), filariasis (Onchocerciasis Loase), amoebiasis, cutaneous myiasis (by fly larvae), mycosis, tungus (Tunga penetrans, under the skin), human African trypanosomiasis or sleeping sickness. - Bacterial skin infections: staphylococcus, gonorrhea, syphilis, rickettsial disease, leprosy, tuberculosis, and Buruli ulcer. - Viral infections: measles, dengue, Chikungunya, HIV, and viral hepatitis B. - Non-infectious dermatoses are allergic reactions to contact with certain plants and/or insects or simply caused by insect bites.

Patient Management	<ul style="list-style-type: none"> • Complementary examinations (blood count, chest X-ray, parasitological examinations of stools, urine, blood, skin, serologies) are often useful to make the diagnosis and start the adapted treatment.
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For more information, please consult the following:

1. Aubry, P. and Gaüzère, B-A. (2018). Leishmanioses. Online: <http://medecinetropicale.free.fr/cours/leishmanioses.pdf>
2. Aubry, P. and Gaüzère B-A. (2016). Maladies transmises à l'homme par les tiques. En ligne : <http://medecinetropicale.free.fr/cours/maladie-tique.pdf>
3. Aubry, P. and Gaüzère, B-A. (2015). Panorama des principales affections dermatologiques en milieu tropical. Online: <http://medecinetropicale.free.fr/cours/dermatose.pdf>
4. Caumes, E. and Monsel, G. (2010). Dermatoses au retour de voyages : étiologies en fonction de la présentation clinique. Rev Med Suisse, 6, 960-964.
5. Hochedez, P. et Caumes, E. (2008). Pathologies dermatologiques au retour de voyage. La Lettre de l'infectiologue, 23(3), 87-99.
6. O'Brien, B. M. (2009). A practical approach to common skin problems in returning travellers. Travel medicine and infectious disease, 7(3), 125-146.
7. Canadian Paediatric Society. (2018). Symptoms, Signs and Clinical Problems: A tool for differential diagnosis. Caring for Kids New to Canada. Online: <https://kidsnewtocanada.ca/signs-and-symptoms>

Coughing in Newcomers

Despite immigration screening, newcomers from low-income countries are more likely to experience certain health problems that may not be common here in Canada. One of these health problems is cough related to a tropical disease. This fact sheet provides guidance in the assessment and initial management of cough in newcomers. For more details, consult the referenced documents.

What is a cough?	<ul style="list-style-type: none"> • Coughing is a reflex action (sometimes voluntary), most often triggered by irritation of the airways. • It causes a sudden and violent expulsion of the contents of the bronchi. • It is a defense mechanism that allows the bronchial tubes to be cleared of mucus, air, secretions, foreign bodies, etc. • It is important to determine if it is chronic (more than 3 months) or acute.
Who is more at risk?	<ul style="list-style-type: none"> • Coughing is a non-specific symptom that is encountered in the majority of respiratory diseases. • However, an unhealthy environment (home, workplace) (humidity, mold on the walls of the home) exposes people to respiratory diseases.

The main causes	<ul style="list-style-type: none"> • There are many causes for coughing: <ul style="list-style-type: none"> - The cough can be productive (infections), dry (irritation) or accompanied by discharge of blood (tuberculosis). - The cough may be acute (less than 3 weeks) suggesting an infectious cause or be chronic (more than 3 weeks) suggesting a chronic disease. - For newcomers, think of tuberculosis, whooping cough, measles, common lung infections, pulmonary parasitosis, influenza, tobacco, cold, humidity, and asthma. - Think also of psychological causes (anxiety...). - Lower respiratory infections are often responsible for acute cough, recurrent cough asthma and chronic cough tuberculosis.
Patient Management	<ul style="list-style-type: none"> • The characteristics of the cough (onset, duration, timing, frequency, presence or absence of sputum, triggers, presence of fever, vomiting) guide the diagnosis. • Tests such as chest X-ray, sputum examination, and blood count are sometimes necessary to establish the diagnosis and ensure appropriate management.

For more information, please consult the following:

1. Barras, G., Michel, Y., Wagner, N. et Loutan, L. (2012). Pathologies pulmonaires au retour de voyage. *Revue Médicale Suisse*, 8, 1000-1005.
2. Basset, D. (2006). Diagnostic des parasitoses pulmonaires. *Revue Francophone des Laboratoires*, 385, 39-45.
3. Bigaignon-Receveur, M.C., Becquart J.P. et Adom, H. (1992). Le poumon éosinophile tropical. *Médecine d'Afrique Noire*, 39(8/9), 564-568.
4. Charoenratanakul, S. (1997). Tropical infection and the lung. *Monaldi archives for chest disease*, 52(4), 376-379.
5. Greenaway, C., Munroz, M., Barmett, E. D., Sandoe, A., Ueffing, E., Pottie, K., Kuhn, S. and Keystone, J. (2011). Appendix 3 : Measles, Mumps, Rubella (MMR), Diphtheria, Tetanus, Pertussis (DTaP/Tdap) & Polio Immunization: Evidence review for newly arriving immigrants and refugees). In Pottie, K. and coll. (2011). Evidence-based clinical guidelines for immigrants and refugees, CMAJ. Online: <http://www.cmaj.ca/content/cmaj/suppl/2010/06/07/cmaj.090313.DC1/imm-mmr-3-at.pdf>

6. Matteelli, A., Beltrame, A., Saleri, N., Bisoffi, Z., Allegri, R., Volonterio, A. and Donisi, A. (2005). Respiratory Syndrome and Respiratory Tract Infections in Foreign-Born and National Travelers Hospitalized with Fever in Italy. *Journal of Travel Medicine*, 12(4), 190-196.
7. Okome-Nkoumou, M. and Kombila, M. (2000). Pulmonary amebiasis and tuberculosis association. Two case reports in Libreville, Gabon. *Bulletin of the Society of Foreign Pathology*, 93(4), 289-290.
8. Canadian Paediatric Society. (2018). Symptoms, Signs and Clinical Problems: A tool for differential diagnosis. Caring for Kids New to Canada. Online: <https://kidsnewtocanada.ca/signs-and-symptoms>

Mental Health in Newcomers

Immigration is a very stressful process. Immigrants are more at risk of mental health issues due to specific circumstances (biological, psychological, social, economic, cultural, political) that they experience in the host country or before arriving in Canada. This fact sheet provides some information on the social factors that can influence their mental health. For more details, consult the reference documents.

What is mental health?	<ul style="list-style-type: none"> • "Mental health is a state of mental well-being that enables people to cope with the stresses of life, realize their abilities, learn well and work well, and contribute to their community" (WHO, 2018). • "It is an integral component of health and well-being that underpins our individual and collective abilities to make decisions, build relationships and shape the world we live in." (WHO, 2018).
Who is more at risk?	<ul style="list-style-type: none"> • Among immigrants, the most at risk are refugees, especially those who have suffered torture, rape, psychological violence or who are still in an ambiguous migratory status. • Then there are other categories of immigrants, notably those who are unemployed, those who have experienced racism or discrimination, those with a high level of education, the elderly, those who do not speak English or French, school-age children, adolescents, women, people who are single or not living with family, those with a weak social network, poor access to social services, or those suffering from a chronic illness and/or a disability are potentially more exposed to mental health problems than other immigrants. • The more these factors are combined, the greater the risk.

What are the risk factors?

- Multiple biological, psychological and social factors determine mental health.
- For some, the conditions at the time of departure (pre-migration factors) may have an influence on mental health. For example:
 - For refugees, the departure was often forced and some will have experienced dramatic situations in the country of origin and may present a post-traumatic stress syndrome (traumatic flashbacks, avoidance, emotional numbness, hypervigilance);
 - Separation from family (spouse, children living elsewhere) and the worries this situation causes;
 - Poor language skills;
 - High level of education;
 - Overly optimistic expectations of immigration;
 - Certain age categories at the time of migration (school age teenagers, the elderly);
 - Being a woman or single.
- Once at destination another group of factors (migration factors) can influence mental health. For example :
 - difficulties in accessing paid employment;
 - financial difficulties;
 - non-recognition of diplomas;
 - experience of racism or discrimination;
 - new living environment with new rules;
 - lack of social support;
 - ambiguity of status;
 - language barriers;
 - difficult working conditions;
 - disabling illness;
 - lack of knowledge of the socio-economic environment and the healthcare system;
 - poor access to settlement and career counselling agencies.

Patient Management	<ul style="list-style-type: none"> • Carefully examine the client's situation (before and after migration) and according to the immigration trajectory, identify those at risk for mental health problems. • Look for signs of post-traumatic stress, depression, social isolation and refer to the appropriate service if necessary.
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For more information, please consult the following:

1. Baxter, C. and Mahoney, W. (2018). Developmental disability Across Cultures. Caring for Kids New to Canada: Canadian Paediatric Society. Online: <https://kidsnewtocanada.ca/mental-health/developmental-disability>
2. Beiser, M. and Korczak, D. (2018). Post-traumatic Stress Disorder. Caring for Kids New to Canada: Canadian Paediatric Society. Online: <https://kidsnewtocanada.ca/mental-health/ptsd>
3. Dongier, P., Kiolet M., and Ledoux, I. (2007) La santé mentale des immigrants. Le Médecin du Québec, 42(3), 33-39.
4. Kirmayer, L., Narasiah, L., Ryder, A., Burgos, G., Zelkowitz, P., Pottie, K. and Kutcher, S. (2011). Appendix 10: Depression: evidence review for newly arriving immigrants and refugees. In Pottie, K. and coll. (2011). Evidence-based clinical guidelines for immigrants and refugees, CMAJ. Online: <http://www.cmaj.ca/content/cmaj/suppl/2010/06/07/cmaj.090313.DC1/imm-depress-10-at.pdf>
5. Laliberté, D. (2007). Crises humanitaires, santé des réfugiés et des déplacés : un cadre analytique. Revue européenne des migrations internationales, 23(3), 85-96.
6. World Health Organization. (2018). Mental health: strengthening our response. <https://www.who.int/news-room/fact-sheets/detail/mental-health-strengthening-our-response>
7. Rousseau, C., Pottie, K., Thombs, B. D., Munoz, M. and Jurcik, T. (2011). Appendix 11: Post traumatic stress disorder: evidence review for newly arriving immigrants and refugees. In Pottie, K. and coll. (2011). Evidence-based clinical guidelines for immigrants and refugees, CMAJ. Online: <http://www.cmaj.ca/content/cmaj/suppl/2010/06/07/cmaj.090313.DC1/imm-ptsd-11-at.pdf>
8. Stadelman, K. (2018). Mental Health Promotion. Caring for Kids New to Canada: Canadian Paediatric Society. Online: <https://kidsnewtocanada.ca/mental-health/mental-health-promotion>
9. Vo, D. and Pottie, K. (2018). Immigrant Adolescent Health Part 2: Guidance for clinicians, Caring for Kids New to Canada: Canadian Paediatric Society. Online: <https://kidsnewtocanada.ca/health-promotion/adolescent-health-guidance-for-clinicians>.
10. Wood, M. (1988). Revues de la littérature sur la santé mentale des migrants. Santé Culture Health, 5(1), 37-74.

5. Ontario Health Care Fact Sheets

Ontario Health Insurance Plan (OHIP)

Despite immigration screening, newcomers from developing countries are more likely to have certain health problems that may not be common here in Canada. In general, permanent residents and refugees can register for OHIP and obtain a health card. However, even with a health card, newcomers may not be aware of the range of services to which they are entitled. This fact sheet provides information about OHIP. For more details, please consult the referenced documents.

Goal	<ul style="list-style-type: none"> • This is the Ontario Health Insurance Plan. • You must register for the health card.
Conditions	<ul style="list-style-type: none"> • Permanent residents, refugees, temporary residents with a valid work permit and full-time work in Ontario for at least six months are eligible if they reside in Ontario. However, a 3-month waiting period is required except for babies born in Ontario, adopted children, refugees, and protected persons.
Services covered by Health Insurance	<ul style="list-style-type: none"> • Visits to the doctor • Hospital visits or stays • Abortion services • Eligible oral and maxillofacial surgical procedures performed in a hospital • Eligible optometry services (eye health care) • Podiatry services (foot care) • Ambulance services (by calling 911) • Transportation costs for health services for people living in Northern Ontario.
Services not covered	<ul style="list-style-type: none"> • Prescription drugs provided in a non-hospital setting (e.g. antibiotics prescribed by a family physician) • Dental care provided in a dental office • Eyeglasses and contact lenses • Laser eye surgery • Cosmetic surgery • Circumcision

For more information, please consult the following:

1. Ontario. (2018). What OHIP covers. Online: <https://www.ontario.ca/page/what-ohip-covers>
2. Ontario. (2018). Apply for OHIP and get a health card. Online: <https://www.ontario.ca/page/apply-ohip-and-get-health-card>
3. Ontario. (2017). OHIP coverage across Canada. Online: <https://www.ontario.ca/page/ohip-coverage-across-canada>
4. Settlement.org. (2018). How Do I Apply for a Health Card (OHIP). Online: <https://settlement.org/ontario/health/ohip-and-health-insurance/health-ohip-card/how-do-i-apply-for-a-health-card-ohip/>

Interim Federal Health Program (IFH)

Despite immigration screening, newcomers from low-income countries are more likely to experience certain health problems that may not be common here in Canada. Some people may not be eligible for provincial or territorial health insurance plans. To fill this gap, the Interim Federal Health Program (IFH) provides some limited coverage. This fact sheet provides information on this program. For more details, consult the referenced documents.

Goal	<ul style="list-style-type: none"> • Provides limited and temporary health care coverage to a class of individuals. • Duration: 12 months renewable.
Conditions	<ul style="list-style-type: none"> • Protected persons, refugees, refugee claimants, etc. who are not eligible for provincial or territorial health insurance are eligible. • A refugee claimant document or Interim Federal Health Certificate of Eligibility (IFHAC) must be presented to the provider. • The IFH provider must be registered with Medavie Blue Cross for reimbursement.
Services covered	<ul style="list-style-type: none"> • Hospital services, physician services, registered nurse services and other health care professionals. • Prenatal and obstetrical care; laboratory, diagnostic and ambulance services (by calling 911). • Urgent dental and vision care. • Home care and long-term care. • Services of clinical psychologists, occupational therapists, speech therapists and physiotherapists. • Medical devices, supplies and equipment. • Prescription drugs, contraception, and immigration regulatory medical examination.
Services not covered	<ul style="list-style-type: none"> • IFH does not cover the cost of healthcare services or products for which a person may be reimbursed (even in part) under a public or private health insurance plan

For more information, please consult the following:

1. Medavie Blue Cross. (2018). Interim Federal Health Program: IFHP Providers. Online: <https://ifhp.medaviebc.ca/en/>
2. Medavie Blue Cross. (2017). IFHP Benefits Grid – Supplemental Coverage. Online: <https://ifhp.medaviebc.ca/en/benefit-grids>
3. Government of Canada. (2018a). Interim Federal Health Program: Who is eligible. Online: <https://www.canada.ca/en/immigration-refugees-citizenship/services/refugees/help-within-canada/health-care/interim-federal-health-program/eligibility.html>
4. Government of Canada. (2018b). Interim Federal Health Program – What is covered. En ligne : <https://www.canada.ca/en/immigration-refugees-citizenship/services/refugees/help-within-canada/health-care/interim-federal-health-program/coverage-summary.html>
5. Government of Canada. (2017). Interim Federal Health Program – About the program. <https://www.canada.ca/en/immigration-refugees-citizenship/services/refugees/help-within-canada/health-care/interim-federal-health-program.html>

The Ontario Temporary Health Program (OTHP)

Despite immigration screening, newcomers from low-income countries are more likely to experience certain health problems that may not be common here in Canada. Some individuals may not be eligible for the Interim Federal Health (IFH) program. To fill this gap, the Ontario Temporary Health Program (OTHP) provides some temporary coverage. This fact sheet provides information on this program. For more details, consult the referenced documents.

Goal	<ul style="list-style-type: none"> • Complement the services provided by the IFH program and ensure that all refugee claimants in Ontario who are not eligible for the IFH program have access to the health care they need.
Conditions	<ul style="list-style-type: none"> • There is a 3-month waiting period except for children and adolescents under 18 years of age, pregnant women and those in need of urgent medical care who can access the program immediately with no waiting period. • The health care provider must obtain written consent from the patient (consent form or contact Medavie Blue Cross to determine if the patient is eligible). • The patient must present a Refugee Protection Claimant Document (RPCD) or an Interim Federal Health Certificate of Eligibility (IFHP Certificate) to the health care provider.
Services offered by Ontario Interim Health Insurance Program	<ul style="list-style-type: none"> • Most hospital-based services as well as laboratory services and diagnostic tests. • Most drugs that are covered by the Ontario Drug Benefit Program.
Services not covered	<ul style="list-style-type: none"> • If the patient is on another plan or program, the provider will not be able to claim OTHP reimbursement.

For more information, please consult the following:

1. Medavie Blue Cross. (2014). Ontario Temporary Health Program. Online: <https://pub.medavie.bluecross.ca/pub/0001/PublicDocuments/OTHP-007-Brochure-FINAL-July30%20English.pdf>
2. Ontario: Ministry of Health and Long Term Care. (2013). Ontario Temporary Health Program for Refugee Claimants. Online: <https://www.health.gov.on.ca/en/pro/programs/othp/default.aspx>
3. Ontario: Newsroom. (2013). Ontario Temporary Health Program. Online: <https://news.ontario.ca/en/backgrounder/27848/ontario-temporary-health-program>

University Health Insurance Plan (UHIP)

Despite immigration screening, newcomers from low-income countries are more likely to experience certain health problems that may not be common here in Canada. Foreign/international students are not covered by the Ontario Health Insurance Plan. They must register for UHIP through the university or college and purchase additional insurance if necessary. This fact sheet provides some information about UHIP. For more details, see the documents referenced.

Goal	<ul style="list-style-type: none"> • The Ontario Health Insurance Plan does not cover international students. They are required to have a University Health Insurance Plan (UHIP).
Conditions	<ul style="list-style-type: none"> • International students studying in Ontario. • International employees who work in Ontario and are not eligible for coverage under the Ontario Health Care Insurance Plan. • Family members of employees and international students who are not eligible for Ontario health care coverage. • Canadian employees and other persons who meet the waiting period under the Ontario Health Care Insurance Plan. • Short-term visitors to a participating university. • Registration for UHIP is done prior to leaving the country of origin or upon arrival in Canada.

Services covered	<ul style="list-style-type: none"> • Hospital services in Ontario • Physician services (e.g. family physician, general practitioner, specialist) • Allied health specialist services • Diagnostic, laboratory and x-ray services • Ambulance services • Optical care (for those under 20 and 65 or older) • Prescription drugs dispensed during a hospital stay • Oral surgery (when performed in hospital) • Emergency services received outside Ontario or Canada • Repatriation (terminal illness, death)
Services not covered	<ul style="list-style-type: none"> • The services end on the date when the official authorizations expire or according to other clauses of the contract.

For more information, please consult the following:

1. Settlement.org. (2015). What kind of health insurance do international students get?
Online: <https://settlement.org/ontario/education/colleges-universities-and-institutes/information-for-foreign-students/what-kind-of-health-insurance-do-international-students-get/>
2. Canadian Federation of Students-Ontario. (2017). Extending OHIP to all Students.
Online: <https://cfsontario.ca/wp-content/uploads/2017/07/Factsheet-OHIP.pdf>
3. University Health Insurance Plan. (2014). Everything you need to know about UHIP.
Online: <http://uhip.ca/fr/>