Appendix 2: Summary of evidence-based recommendations of the Canadian Collaboration for Immigrant and Refugee Health* (part 1 of 14)

Category	Recommendation	Basis of recommendation: Balance of benefits and harms	Basis of recommendation: Quality of evidence	Basis of recommendation: Values and preferences	Clinical considerations
Infectious diseases					
Measles, mumps and rubella	Vaccinate all adult immigrants without immunization records using one dose of MMR vaccine. Vaccinate all immigrant children with missing or uncertain vaccination records using age-appropriate vaccination for MMR.	Childhood vaccination programs have dramatically decreased the incidence of and associated mortality from measles, mumps, rubella and congenital rubella (absolute difference of 95.9%–99.9% in reduction of cases and 100% in reduction of deaths). Serious adverse events, including autism (RR 0.92 95% CI 0.68-1.24), are not significantly associated with MMR vaccine. Mumps and rubella are not part of the routine vaccination programs in most source countries of origin for the majority of new immigrants. A large proportion of adult immigrants may be susceptible to rubella (20%–30%) and at risk for having a child with congenital rubella syndrome.	High	The committee attributed more value to preventing the risk of outbreaks and the individual burden due to these diseases and less value to the cost of vaccination.	Two doses of MMR vaccine are 90%–95% effective for preventing measles and ~80% effective for preventing mumps; one dose is 95% effective for preventing rubella. Individuals susceptible to vaccine-preventable diseases must be identified and vaccinated to maintain herd immunity and prevent outbreaks. MMR vaccine is contraindicated for immunocompromised people but can be given to those with mild or moderate HIV infection if CD4 > 200 cells/mm^3.
Diphtheria, pertussis, tetanus (DTap/Tdap) and polio	Vaccinate all adult immigrants without immunization records using a primary series of diphtheria, tetanus and inactivated polio vaccine (3 doses), the first of which should include acellular pertussis vaccine to also protect against pertussis. Vaccinate all immigrant children with missing or uncertain vaccination records using age-appropriate vaccination for diphtheria, pertussis, tetanus and polio.	Childhood vaccination programs have dramatically decreased the incidence of and associated mortality from diphtheria, pertussis, tetanus and polio (absolute difference of 92.9%–99.9% in reduction of cases and 99.2%–100% in reduction of deaths) relative to the prevaccination period, without associated increases in serious adverse events. A large proportion of adult immigrants are susceptible to tetanus (40%–50%) and diphtheria (~60%), and the proportion susceptible increases for both with increasing age. To prevent individual morbidity and mortality and to prevent outbreaks, susceptible individuals must be identified and vaccinated.	High	The committee attributed more value to preventing the risk of outbreaks and the individual burden due to these diseases and less value to the cost of vaccination.	Serologic tests are not readily available for diphtheria, tetanus or polio, so it is more practical to vaccinate without prior serologic testing. Practitioners need to be aware of these immunization gaps, so that they can ensure that vaccinations in newly arrived immigrants and refugee children and adults are updated.

Appendix 2: Summary of evidence-based recommendations of the Canadian Collaboration for Immigrant and Refugee Health* (part 2 of 14)

		Basis of recommendation			
Category	Recommendation	Balance of benefits and harms	Quality of evidence	Values and preferences	Clinical considerations
Varicella	Ensure that immigrants and refugees of all ages are immune to varicella. Vaccinate all immigrant children < 13 yr with varicella vaccine without prior serologic testing. Screen all immigrants and refugees from tropical countries ≥ 13 yr for serum varicella antibodies, and vaccinate those found to be susceptible.	Varicella vaccination programs have substantially decreased ambulatory care visits (NNV 794, 95% CI 688–990) and mortality (NNV 3 031 773) due to varicella in all age groups. The adverse effects of vaccination are minimal and include minor pain and redness at the injection site, rashes and fevers. A large proportion (> 30%) of adolescents and adult immigrants from tropical countries are susceptible to varicella because it occurs at an older age in tropical countries and because most of these countries do not have a varicella vaccination program. As a result, immigrants from tropical countries are at increased risk of developing severe varicella after arrival in Canada, as varicella develops at an older age and there are no systematic catch-up varicella vaccination programs for immigrants.	Moderate	The committee attributed high value to reducing morbidity and mortality from varicella, which has a high burden of disease in adolescent and adult immigrant populations. For children < 13 yr, it is cost-saving to vaccinate all without prior serologic testing. In adults, different varicella vaccination strategies are cost-saving depending on the expected seroprevalence. If serologic testing results in extra costs or presents a barrier to completion of the vaccination series, vaccination without prior serologic testing should be offered.	Among adults, different varicella vaccination strategies are cost-saving, depending on the expected seroprevalence: - Vaccinate all if < 84% - Serotest all if 84%–92% - No intervention if > 95% Pregnant women are at highest risk for complications. Varicella vaccine is contraindicated for immunocompromised patients but can be given to those with mild or moderate HIV if the CD4 is > 200 cells/mm^3.
Hepatitis B: screening	Screen adults and children from countries where the seroprevalence of chronic hepatitis B virus infection is moderate or high (i.e., ≥ 2% HBsAg positive). Refer those found to have chronic infection for evaluation and assessment of the need for treatment, and screen risk groups (see clinical considerations) for hepatocellular carcinoma. Lifelong monitoring is required.	Screening for and then treating advanced chronic hepatitis B virus infection reduces the development of progressive liver failure (NNT 19, 95% CI 15–44). Screening for hepatocellular carcinoma (by ultrasonography and serologic testing for αFP every 6 months) in certain risk groups with chronic hepatitis B virus infection decreases the risk of death from hepatocellular carcinoma (NNS 2058, 95% CI 1462–4412). Prevalence of chronic hepatitis B virus infection is higher among immigrants and refugees than among North Americans (mean 4% v. < 0.5%). Toxicity varies by treatment regimen, but most therapies are well tolerated.	Moderate	The committee attributed more value to preventing progressive liver failure and death from hepatocellular carcinoma and less value to the burden of screening for and treatment of adverse effects.	Countries where the seroprevalence of chronic hepatitis B virus infection is ≥ 2% are in Africa, Asia, Eastern Europe and parts of South America. Treatment of chronic hepatitis B virus infection is complex and rapidly evolving; patients with positive results should be referred to an expert in treating hepatitis B virus infection. Certain people with chronic hepatitis B virus infection are at increased risk of hepatocellular carcinoma (those with cirrhosis, Asian men > 40 yr, Asian women > 50 yr, Africans > 20 yr, and those with a family history of hepatocellular carcinoma) and would benefit from ultrasonography and serologic testing for αFP every 6 months to detect hepatocellular carcinoma at an earlier stage, when it is more amenable to therapeutic intervention.

Appendix 2: Summary of evidence-based recommendations of the Canadian Collaboration for Immigrant and Refugee Health* (part 3 of 14)

		Basis of recommendation			
Category	Recommendation	Balance of benefits and harms	Quality of evidence	Values and preferences	Clinical considerations
Hepatitis B: vaccination	Screen adults and children from countries where the seroprevalence of chronic hepatitis B virus infection is moderate or high (i.e., ≥ 2% HBsAg positive) for prior immunity to hepatitis B virus (anti-HBc, anti-HBs). Vaccinate those found to be susceptible (negative for all three markers [HBsAg, anti-HBc and anti-HBs]).	Universal perinatal and childhood vaccination in countries where chronic hepatitis B virus infection is endemic have dramatically reduced chronic infection with hepatitis B virus (NNV 12, 95% CI 11–12) and decreased mortality from hepatocellular carcinoma (RR 0.725, 95% CI 0.518–1.015) 15 yr after initiation of vaccination programs. In countries with low seroprevalence of chronic hepatitis B virus infection (< 2% HBsAg positive), vaccination of adults decreases development of acute infection. Adverse reactions to vaccination are minor and self-limited.	Moderate	The committee attributed more value to reducing transmission of hepatitis B virus infection, a potentially fatal disease, to close contacts than to the burden of screening and vaccination.	A large proportion (20%–80%) of immigrants from countries that are moderately or highly endemic for chronic hepatitis B virus infection are nonimmune and thus at risk for infection if exposed. Immigrants are more likely to be exposed to hepatitis B virus in their households and during travel to countries that are moderately or highly endemic for hepatitis B virus infection and would therefore benefit from vaccination.

Appendix 2: Summary of evidence-based recommendations of the Canadian Collaboration for Immigrant and Refugee Health* (part 4 of 14)

		Basis of recommendation			
Category	Recommendation	Balance of benefits and harms	Quality of evidence	Values and preferences	Clinical considerations
Tuberculosis	*Children:* Screen children and adolescents < 20 yr from countries with a high incidence of tuberculosis (smear-positive pulmonary tuberculosis > 15 per 100 000 population) as soon as possible after their arrival in Canada with a tuberculin skin test and recommend treatment for latent tuberculosis infection if results are positive, after ruling out active tuberculosis. *Adults:* Screen all refugees between 20 and 50 yr from countries with a high incidence of tuberculosis as soon as possible after their arrival in Canada with a tuberculin skin test. Screen all other adult immigrants who have risk factors that increase the risk of active tuberculosis by means of a tuberculin skin test, and recommend treatment for latent tuberculosis infection if results are positive, after ruling out active tuberculosis.	The decision about whom to screen and offer treatment for latent tuberculosis is based on the balance between the potential benefit of treatment (decreasing the lifetime risk of active tuberculosis, which is influenced by age, presence of underlying medical conditions and immigration category) versus the potential harm of hepatotoxicity (which increases with age) and the poor effectiveness of isoniazid in many settings because of suboptimal uptake of screening and treatment. For several groups, screening for latent tuberculosis should be routinely performed, and those with positive results should be offered treatment. These groups are children from countries with a high incidence of tuberculosis (NNT 20–26, NNH 134–268), adults with risk factors for active tuberculosis (NNT 3–20, NNH variable) and refugees < 50 yr (NNT 15–26, NNH 49).† Screening for latent tuberculosis and offering treatment could also be considered for adult refugees 50–65 yr (NNT 20–51, NNH 9–18) and other adults without underlying medical conditions < 65 yr if adherence to treatment can be assured and hepatotoxicity carefully monitored to minimize harms. A decision to screen is a decision to offer treatment and to ensure adherence to treatment with appropriate counselling and monitoring.	High	The committee attributed more value to screening and treating latent tuberculosis infection to prevent active disease in patients and to prevent transmission of active disease and less value to practitioner burden of screening and counselling.	Countries with a high incidence of tuberculosis include those in sub-Saharan Africa, Asia, and Central and South America, and some in Eastern Europe. If result of tuberculin skin test is positive, perform chest radiography to rule out active disease. Symptoms (fever, weight loss, fatigue and night sweats) and signs (fever, wasting, lymphadenopathy, abnormal chest sounds) of active tuberculosis should be sought. If active tuberculosis is suspected, appropriate investigations should be performed. Special attention should be given to screening infants and young children (< 5 yr) for latent tuberculosis because, if infected, they are at high risk of active disease, which is more difficult to diagnose in this population. Medical conditions that increase the risk for tuberculosis include HIV, organ transplant, recent contact with a patient with active disease, hematologic malignancy, fibronodular scarring visible on chest radiography, chronic glucocorticoid treatment, diabetes and chronic renal failure. Patients must be informed of the risks and benefits of treatment in a culturally and linguistically appropriate manner.

Appendix 2: Summary of evidence-based recommendations of the Canadian Collaboration for Immigrant and Refugee Health* (part 5 of 14)

Category	Recommendation	Basis of recommendation: Balance of benefits and harms	Basis of recommendation: Quality of evidence	Basis of recommendation: Values and preferences	Clinical considerations
HIV	Screen for HIV, with informed consent, all adolescents and adults from countries where HIV is prevalent (> 1%).	The decision to screen men and women for HIV is based on a dramatic reduction in mortality with treatment, e.g., with a combination of three versus two antiretrovirals (NNT 132, 95% CI 91–357) and reduction of high-risk behaviour (NNT 5, 95% CI 4–7). Prevalence of HIV infection is higher among immigrants from countries where HIV is prevalent (> 1%) than among other Canadians (< 0.18%). Harms included adverse drug reactions requiring change in regimen. Data on harms related to anxiety and possible discrimination related to HIV status are unavailable.	Moderate	The committee attributed more value to identifying HIV-positive women and men for appropriate treatment, support and prevention and less value to uncertain risk of couple discord and risk of discrimination and less concern for burden of testing with informed consent.	Countries where HIV is prevalent (> 1%) include those in sub-Saharan Africa and the Caribbean, as well as Thailand; world prevalence map available http://gamapserver.who.int/mapLibrary/Files/Maps/Global_HIVprevalence_2007.png Immigrants and refugees may already be aware of their HIV-positive status but have limited knowledge of effective screening and treatment options. Stigma and discrimination related to HIV are associated with avoidance of or delays in seeking HIV testing, delays in disclosure of seropositive status to partners and practitioners, and postponement or rejection of treatment.
Hepatitis C	Screen for antibody to hepatitis C virus in all immigrants and refugees from regions with an expected prevalence of disease ≥ 3%. If the result is positive, refer to a colleague with expertise in managing patients with hepatitis C virus infection.	The prevalence of chronic hepatitis C virus infection is higher among immigrants than in the general Canadian-born population (~3% v. 0.8%). Immigrants are also at increased risk of death from viral hepatitis and hepatocellular carcinoma, a third of which is likely due to chronic hepatitis C virus infection. Treatment with pegylated interferon and ribavirin (standard of care) achieves a higher sustained virologic response than interferon plus ribavirin (50% v. 38%; RR 0.80, 95% CI 0.74–0.88). Persons with cirrhosis due to chronic hepatitis C virus infection who did not achieve sustained virologic response had higher rates of hepatocellular carcinoma (HR 2.59. 95% CI 1.13–5.97) and liver-related mortality (HR 6.97, 95% CI 1.71–28.42) than those who did achieve sustained virologic response. Harms included multiple adverse effects of treatments, the most common being psychiatric symptoms and severe anemia.	Moderate	The committee attributed more value to the diagnosis and prevention of serious complications from hepatitis C than to the cost and risk of multiple adverse effects of treatments.	Risk factors for hepatitis C among foreign-born people are being a refugee, being from certain high-risk world regions (specifically sub-Saharan Africa [prevalence rates up to 10%]; eastern Europe, especially Uzbekistan and Tajikistan [27%]; Egypt [25%–50%]; Vietnam [up to 10%]; and Pakistan [~5% up to 35%]) and exposure to contaminated blood, usually as nosocomial transmission through unscreened blood products, surgery or receipt of intramuscular injections. Individuals testing positive for hepatitis C virus infection can benefit from vaccination against hepatitis (A and B) and limitations on alcohol consumption.

Appendix 2: Summary of evidence-based recommendations of the Canadian Collaboration for Immigrant and Refugee Health* (part 6 of 14)

		Basis of recommendation			
Category	Recommendation	Balance of benefits and harms	Quality of evidence	Values and preferences	Clinical considerations
Intestinal parasites: *Strongyloides*	Screen refugees newly arriving from Southeast Asia and Africa with serologic tests for *Strongyloides*, and treat, if positive, with ivermectin (first-line therapy) or albendazole (if there are contraindications to ivermectin).	*Strongyloides* is estimated to infect 100 million people worldwide. Among immigrant populations, refugees from Southeast Asia and Africa appear to have the highest risk of infection. Subclinical infections or low-grade disease can persist for decades after immigration and in the presence of immunosuppression may transform into life-threatening disseminated disease. Treatment with ivermectin is of short duration, is highly effective (NNT 2, CI ~1 to 3) and has a favourable adverse-effect profile.	Moderate	The committee attributed more value to the availability of a highly sensitive and specific serologic test and effective treatment options to prevent potentially life-threatening disseminated disease than to the potential limitations of serologic testing in distinguishing current from remote infection in high-risk newly arriving refugees.	Subclinical infections may persist for decades after immigration and, if untreated, can lead to serious morbidity or death. Ivermectin is available free of charge upon completion of a short form from the Special Access Programme of Health Canada (www.hc-sc.gc.ca/dhp-mps/acces/drugs-drogues/). Practitioners should consider testing foreign-born persons for strongyloidiasis if they have lived in areas of the world where these parasites are endemic and (i) they have compatible signs and/or symptoms of infection and/or (ii) they have evidence of peripheral blood eosinophilia. Serologic testing substantially enhances diagnostic sensitivity.
Intestinal parasites: *Schistosoma*	Screen refugees newly arriving from Africa with serologic tests for *Schistosoma* and treat, if positive, with praziquantel.	*Schistosoma* is estimated to infect 200 million people worldwide, of whom approximately 85% live in Africa. Among immigrant populations, refugees from Africa have the highest risk of infection. Subclinical infections or low-grade disease can persist for decades after immigration and may cause future morbidity or death. Serologic testing is the most sensitive diagnostic modality currently available. Treatment with praziquantel is of short duration, is highly effective (NNT 4, 95% CI ~1 to 124) and has a favourable adverse-effect profile.	Moderate	The committee attributed more value to the availability of a highly sensitive and specific serologic test and effective treatment to prevent future morbidity or death than to the limitations of serologic testing in distinguishing current from remote infection in high-risk newly arriving refugees.	Subclinical infections may persist for years after immigration. In Canada, praziquantel for schistosomiasis is available by prescription, as 2 doses (given separately in a single day). Serologic testing substantially enhances diagnostic sensitivity. Serologic testing after treatment for schistosomiasis is not recommended to evaluate treatment success.

Appendix 2: Summary of evidence-based recommendations of the Canadian Collaboration for Immigrant and Refugee Health* (part 7 of 14)

		Basis of recommendation			
Category	Recommendation	Balance of benefits and harms	Quality of evidence	Values and preferences	Clinical considerations
Malaria	Do not conduct routine screening for malaria. Be alert for symptomatic malaria in migrants who have lived or travelled in malaria-endemic regions within the previous 3 months, particularly in the context of fever or migration from sub-Saharan Africa, and perform timely diagnostic inquiry and testing (rapid diagnostic testing and thick and thin malaria smears).	Individuals from malaria-endemic regions, particularly migrants from sub-Saharan Africa, remain vulnerable to acute *Plasmodium falciparum* malaria for the first 3 months after arrival. Clinical trials demonstrating the value of routine screening for asymptomatic malaria are lacking, prevalence data remain poor, the performance characteristics of malaria screening tests in asymptomatic individuals are uncertain, and local transmission of malaria is nonexistent in Canada. Thus, the focus of recommendations is on timely diagnosis and treatment of symptomatic malaria, where medications are effective and harms from adverse effects are minimal.	Low	The committee attributed more value to avoiding burden and cost from routine screening in the absence of clear evidence of prevalence of *P. falciparum* and uncertainty of performance of screening tests in asymptomatic individuals and determined that malaria was best addressed by primary care practitioners remaining alert for signs and symptoms of the disease and performing timely clinical diagnostic inquiry and treatment of symptomatic individuals.	If delays occur in malaria diagnosis and treatment, then severe disease and even death may occur. The symptoms of malaria (malaise, myalgia, headache, fever) may not be readily recognized by primary care practitioners, and there may not be uniform nationwide access to appropriate diagnosis and therapy. Newly arrived individuals may have difficulty negotiating a new health care system and may not receive timely diagnosis and treatment. Migrant children are especially at risk for malaria and its complications. Canada requires improved malaria surveillance, as well as more research related to the utility of screening immigrants and refugees.
Mental health and physical and emotional maltreatment					
Depression	If an integrated treatment program is available, screen adults for depression using a systematic clinical inquiry or validated patient health questionnaire (PHQ-9 or equivalent). Link suspected cases of depression with an integrated treatment program and case management or mental health care.	The NNT to prevent one case of persistent depression was 18 (95% CI 10–91) in studies of 1–12 months' duration. Treatment in enhanced depression-care models accounts for an additional 1%–2% reduction in depressive symptoms relative to usual care. The prevalence of depression is similar among Canadians and among immigrants and refugees (10.7%), but access to care may be limited for migrants. No data on harms were reported, which would include patients' out-of-pocket costs and adverse effects of medication.	Moderate	The committee attributed more value to screening and treating depression to improve quality of life and less value to concerns about impairing rapport in therapeutic relationships, cultural acceptability and potential stigma of diagnostic labels, the cost and inconvenience of additional follow-up assessments, and the possible adverse effects or costs associated with treating patients with an incorrect diagnosis.	Depression commonly co-occurs with PTSD and other anxiety disorders, which complicates the detection and treatment of depression. Conduct a systematic clinical inquiry or validated questionnaire in the patient's language. Link patients with suspected depression to integrated treatment programs and follow up with a stepped-care approach. Use interpreters or culture brokers to identify patients' concerns, to negotiate illness meanings, to monitor progress, to ensure adherence and to address social causes and consequences of depression.

Appendix 2: Summary of evidence-based recommendations of the Canadian Collaboration for Immigrant and Refugee Health* (part 8 of 14)

		Basis of recommendation			
Category	Recommendation	Balance of benefits and harms	Quality of evidence	Values and preferences	Clinical considerations
Post-traumatic stress disorder	Do not conduct routine screening for exposure to traumatic events, because pushing for disclosure of traumatic events in well-functioning individuals may result in more harm than good. Be alert for signs and symptoms of PTSD, especially in the context of unexplained somatic symptoms, sleep disorders or mental health disorders such as depression or panic disorder, and perform clinical assessment as needed to address functional impairment.	Many persons who have been exposed to trauma do fine once they find safety and social supports. Brief screening instruments overestimate the rate of disease because they focus on symptoms and do not measure functional impairment. Detailed inquiry and pushing for disclosure without indications of distress or disorder could be harmful. There are no clinical trials demonstrating the benefits of routine screening for PTSD.	Low	The committee attributed more value to preventing potential harms from routine screening in the absence of clear evidence of benefits and determined that PTSD was best dealt with through primary care practitioners remaining alert for signs and symptoms of this condition and performing clinical assessment to address functional impairment.	The majority of those who experience traumatic events will heal spontaneously after reaching safety. However, ~44% of those who do have PTSD are likely to have depression simultaneously. Empathy, reassurance and advocacy are key clinical elements of the recovery process. Pushing for disclosure of traumatic events by well-functioning individuals could be harmful.
Child maltreatment	Do not conduct routine screening for child maltreatment. Be alert for signs and symptoms of child maltreatment during physical and mental examinations, and assess further when reasonable doubt exists or after patient disclosure.	The committee recommends against routine screening because of poor performance of screening instruments and the potential harms caused by the very high false-positive rates. Sensitivity ranged between 25% and 100%, specificity between 16.5% and 94.3%, and positive predictive value (when available) between 1.7% and 28.2%.	Low	The committee attributed more value to evidence for the negative effects of screening in relation to the high potential for harms.	Harms could result from false positives leading to inappropriate labelling, psychological distress, inappropriate family separation, impaired clinician–patient rapport, potential reduction in use of general medical services and legal ramifications associated with involvement of child protection services. Ethnic minority children, possibly including recently settled immigrants and/or refugees, are disproportionately overscreened (up to 8.75 times more likely) and over-reported (up to 4 times more likely) for child maltreatment; they are also over-represented (up to 1.77 greater odds) among clients of child protection services.

Appendix 2: Summary of evidence-based recommendations of the Canadian Collaboration for Immigrant and Refugee Health* (part 9 of 14)

		Basis of recommendation			
Category	Recommendation	Balance of benefits and harms	Quality of evidence	Values and preferences	Clinical considerations
Child maltreatment (continued)	A home visitation program encompassing the first 2 yr of life should be offered to immigrant and refugee mothers living in high-risk conditions, including teenage motherhood, single parent status, social isolation, low socioeconomic status, or living with mental health or drug abuse problems.	Home visitation programs for high-risk mothers, provided by nurses, reduced days in hospital for children ($p < 0.001$). Harms from surveillance and reporting to child protection services were not clearly demonstrated.	Moderate	The committee attributed more value to supporting high-risk mothers with an offer of a home visitation program to provide practical support for families and the program's potential to improve health outcomes for children than to the potential risks associated with increased reporting to child protection services.	
Intimate partner violence	Do not conduct routine screening for intimate partner violence. Be alert for potential signs and symptoms related to intimate partner violence, and assess further when reasonable doubt exists or after patient disclosure.	Current evidence does not demonstrate clear benefits from screening women for intimate partner violence, and harms have resulted from screening. Compared with the general population, there may be greater risk among immigrant and refugee women for harm directly related to screening (e.g., risk of loss of migration status and sponsorship agreements). Harm may occur indirectly through impaired patient–physician rapport and subsequent reduction in use of medical and mental health services.	Moderate	The committee attributed more value to evidence of harms and lack of evidence of benefits and less value to recommending uncertain interventions, even in the face of significant concerns.	Signs and symptoms of intimate partner violence differ substantially among women. They may be absent in some women or be of a psychological (depression, anxiety, suicidal ideation, alcohol or drug abuse), social (social isolation) and/or physical (injuries, bruises and aches) nature in other women. Patient–physician rapport remains a key element in the detection of intimate partner violence. Recently settled immigrant women appear to have lower odds of intimate partner violence than longer-term immigrants and Canadian-born women. Linguistic barriers, financial dependency, ignorance of laws and health services, fear of loss of custody, and threats to sponsorship agreements because of police involvement or criminal proceedings may constitute substantial barriers to women's disclosure and adherence to interventions.

Appendix 2: Summary of evidence-based recommendations of the Canadian Collaboration for Immigrant and Refugee Health* (part 10 of 14)

Category	Recommendation	Basis of recommendation: Balance of benefits and harms	Basis of recommendation: Quality of evidence	Basis of recommendation: Values and preferences	Clinical considerations
Chronic and noncommunicable diseases					
Type 2 diabetes mellitus	Screen immigrants and refugees > 35 yr from ethnic groups at high risk for type 2 diabetes (South Asian, Latin American and African) with fasting blood glucose.	Detecting impaired fasting blood glucose and treating with diet and exercise can delay the onset of diabetes (NNT 5, 95% CI 4–6). Treating patients with diabetes with intensive blood pressure interventions can decrease mortality (NNT 38, 95% CI 23–203), and tight glucose control can decrease myocardial infarctions (NNT 131, 95% CI 87–298). People of South Asian, Latin American or African ethnicity face a 2-fold to 4-fold higher prevalence of type 2 diabetes with earlier onset compared with white people. Minimal harms are reported for lifestyle interventions and adverse effects of antihyperglycemic agents.	Moderate	The committee attributed more value to delaying the onset of diabetes than to the current uncertainty of impact on mortality for lifestyle interventions. The committee also attributed greater value to the potential to decrease morbidity and mortality with treatment of hypertension and hyperglycemia in high-risk ethnic populations than to concern about harms due to treatments.	Persons with hypertension and hypercholesterolemia are at high risk for complications from diabetes and have the most to gain from treatment of obesity, high cholesterol, hypertension and hyperglycemia. Culturally appropriate diabetes education and lifestyle interventions are effective at preventing or improving disease management, at least in the short term.
Iron-deficiency anemia: women	Screen immigrant and refugee women of reproductive age for iron-deficiency anemia (with hemoglobin).	Treating iron-deficiency anemia provides an average net change in hemoglobin concentration of 15 g/L (NNT 2, 95% CI 2–3) and an increase in function and provides a net change in the productivity ratio (NNT 4, 95% CI 3–8). The prevalence of iron deficiency is higher among immigrant women than among Canadian-born women (> 15% v. < 15%). Harms are minimal and include diarrhea and personal costs of iron supplements.	Moderate	The committee attributed more value to improving health among women of child-bearing age and less value to uncertainty about whether asymptomatic immigrant and refugee women value the treatment outcomes.	Immigrant and refugee women are at higher risk for iron-deficiency anemia primarily because of high parity, some low-iron diets, limited access to iron-rich foods and parasitic infections. Investigate abnormal hemoglobin levels, verify iron stores (ferritin), and investigate other causes of anemia if clinically indicated (blood smear, hemoglobin electrophoresis, G6PD test, chronic infections and other nutritional deficiencies).

Appendix 2: Summary of evidence-based recommendations of the Canadian Collaboration for Immigrant and Refugee Health* (part 11 of 14)

		Basis of recommendation			
Category	Recommendation	Balance of benefits and harms	Quality of evidence	Values and preferences	Clinical considerations
Iron-deficiency anemia: children	Screen immigrant and refugee children 1–4 yr for iron-deficiency anemia (with hemoglobin).	Treating children with iron-deficiency anemia improves cognitive development with standardized mean difference of 0.30, equivalent to a modest effect of 1.5–2 intelligence quotient points (NNT 7, 95% CI 5–14). Immigrant and refugee children have a higher prevalence of iron-deficiency anemia than Canadian-born children (> 20% v. < 20%). Adverse effects from iron treatment are minimal. The NNT for immigrant and refugee children is expected to be similar because many of the studies were conducted in developing countries.	Moderate	The committee attributed more value to ensuring optimal opportunities for immigrant children and potential reduction of disparities in education, literacy and wages between immigrant and Canadian-born populations and less value to the discomfort of testing and treatment risk of diarrhea.	Growing children are at risk for iron deficiency and related morbidity. Iron deficiency in children is often caused by a combination of inadequate diet, low iron stores at birth, and frequent infections, leading to anorexia and poor food intake. Investigate abnormal hemoglobin levels: verify iron stores (ferritin) and investigate other causes of anemia if clinically indicated (blood smear, hemoglobin electrophoresis; G6PD deficiency test, chronic infections and other nutritional deficiencies).
Dental disease	Screen all immigrants for dental pain (asking, "Do you have any problems or pain with your mouth, teeth or dentures?"). Treat dental pain with NSAIDs and refer patients to a dentist. Screen all immigrant children and adults for obvious dental caries and oral disease (examine mouth with penlight and tongue depressor). Refer patients with obvious dental disease to a dentist or oral health specialist.	Screening and treating dental pain led to a substantial decrease in pain and swelling (NNT 34, 95% CI not estimable). Screening and referring patients for treatment of dental disease led to a significant decrease in dental caries (NNT 2.9, 95% CI 2.1–3.4). Given the higher prevalence of dental caries in new immigrants (adolescents: 23% v. 3.5% of Canadian-born), the NNS and NNT for net benefits are expected to be lower, despite potential issues affecting access to care. Harms of pain control are minimal and included adverse events from short-term NSAIDs. Harms of referral included patient-borne costs and discomfort or anxiety.	Moderate	The committee attributed more value to reducing dental pain and less value to the small risk of adverse gastrointestinal effects with NSAID therapy. For referrals, the committee attributed more value to reducing oral health disparities in immigrant communities and less value to burden of screening and potential costs of dental care for patients.	Migrants arriving from countries with limited dental care and where diets are high in sugar are at the greatest risk for disease. Patients are twice as likely to go for dental treatment when examined and referred by a physician. Tooth brushing twice daily with fluoridated toothpaste is effective in reducing dental decay.

Appendix 2: Summary of evidence-based recommendations of the Canadian Collaboration for Immigrant and Refugee Health* (part 12 of 14)

		Basis of recommendation			
Category	Recommendation	Balance of benefits and harms	Quality of evidence	Values and preferences	Clinical considerations
Vision health	Perform age-appropriate screening for visual impairment. If presenting vision < 6/12 (with habitual correction in place), refer patients to optometrist or ophthalmologist for comprehensive ophthalmic evaluation.	Uncorrected refractive error, the most common cause of visual impairment, is amenable to correction with eyeglasses (NNS to find one person with vision worse than 6/15 or 20/50 due to uncorrected refractive error = 19). Prevalence of uncorrected refractive error in immigrant populations is higher than in the general population; however, economic and cultural barriers could reduce rates of referral and the use of corrective eyeglasses. Harms are minimal and can include out-of-pocket costs.	Very low	The committee attributed more value to ensuring visual acuity is adequate for daily functioning and employment and to detecting serious underlying ocular disease. The committee attributed less value to the burden of screening and the cost of eyeglasses.	Even modest visual impairment (visual acuity < 6/12) is associated with substantial morbidity. Special considerations exist for doing vision screening in children < 8 yr old. Referral for assessment is also warranted for other risk factors for blinding eye disease, including diabetes, age > 65 yr, blacks > 40 yr, glaucoma in a first-degree relative and myopia exceeding –6 diopters. Regionally prominent "tropical" eye diseases, such as onchocerciasis (river blindness), active trachoma and xerophthalmia, have not been reported in immigrants or refugees to Canada.
Women's health					
Contraception	Screen immigrant women of reproductive age for unmet contraceptive needs. Provide culturally sensitive, patient-centred contraceptive counselling to decrease unintended pregnancy and promote patient satisfaction.	Contraceptive counselling led to improved patient satisfaction (NNT 3, 95% CI 2–5) and improved continuation rates (NNT 4, 95% CI 3–7). Evidence that in-depth counselling reduces unintended pregnancy rates shows some uncertainty (RR 0.47, 95% CI 0.16–1.34); however, the committee judged that contraceptive continuation rates are an acceptable surrogate for unintended pregnancy rates. There is a high prevalence of unmet need for contraception among immigrant and refugee women (5%-40%). Harms were minimal. No data were available on couple or family discord.	Moderate	The committee attributed more value to supporting informed choice to meet future family needs and the woman's personal needs (empowerment) and less value to concern about causing couple and family discord.	Screening should begin soon after women's arrival in Canada. Women from developing countries are often unaware of emergency contraception. Acceptability of contraception and preferences for various methods varies across world regions (e.g., intrauterine device use is predominant in Asia and Latin America). In some communities, condoms have connotations of infidelity, promiscuity or sexually transmitted infection, or are used only with nonmarital partners. Giving women their method of choice, providing the contraceptive method on site and having a good personal rapport improve contraception-related outcomes.

Appendix 2: Summary of evidence-based recommendations of the Canadian Collaboration for Immigrant and Refugee Health* (part 13 of 14)

		Basis of recommendation			
Category	Recommendation	Balance of benefits and harms	Quality of evidence	Values and preferences	Clinical considerations
Cervical cancer: vaccination against HPV	Vaccinate 9- to 26-yr-old female patients against HPV.	Vaccination against HPV prevented invasive changes related to cervical cancer (NNV 139, 95% CI 117–180) in studies with a duration of 15–48 months. Access to cytology screening is often limited among immigrant women, and prevalence of HPV infection is higher in developing countries. Potential harms include anaphylaxis, which is amendable to treatment and which occurs in fewer than one in 100 000 doses.	Moderate	The committee attributed more value to preventing cervical cancer and less value to current uncertainty of long-term effect on cancer deaths.	HPV infection is strongly associated with cervical cancer. All sexually active women should be screened for cervical abnormalities (with Pap smear) to detect and treat invasive changes. Immigrant girls might miss out on school vaccination programs, depending on their age upon arrival in Canada.
Cervical cytology screening	Screen sexually active women for cervical abnormalities (by Pap test) to detect and treat invasive changes.	Identifying and treating early cervical cancer reduces mortality. The NNS to prevent one death from cervical cancer is 3497 (95% CI 2361–90 909). The rate of cytology screening is lower among immigrant women than among Canadian-born women (40%–60% v. 60%–80%). Harms are minimal and depend on the course of treatment.	Low	The committee attributed more value to preventing cervical cancer and less value to uncertainty of size of effect and burden of screening on health services.	Subgroups of immigrant and refugee women have low rates of cervical cytology screening. Women who have never had cervical screening or have not had cervical screening in the previous five years account for 60%–90% of invasive cervical cancers. Providing information to patients, building rapport and offering access to female practitioners can improve acceptance of Pap testing.
Pregnancy	Develop and study interventions to reduce social isolation, given the risk for maternal morbidity and small-for-gestational-age infants.	Pregnant immigrant and refugee women face an elevated risk of social isolation (15% v. 7.5% for Canadian-born women), which is associated with maternal morbidity and small-for-gestational-age infants. However, in the absence of evidence showing that social interventions work, such interventions could cause harm. Therefore, the committee recommends development and study of interventions for pregnant immigrant and refugee women who are socially isolated.	Very low, with no intervention evidence available.	The committee attributed more value to preventing uncertain harms than to providing uncertain benefits through unstudied social interventions.	Although no recommendation for clinical action is made to address social isolation, pregnant women may benefit from antenatal screening for diabetes, depression, HIV, hepatitis B, hepatitis C, syphilis, iron deficiency, hemoglobinopathies, rubella and varicella susceptibility. Remaining alert for risks of unprotected and unregulated work environments and sexual abuse (specifically in forced migrants) can also be beneficial.

See page 14 for table footnotes.

Appendix 2: Summary of evidence-based recommendations of the Canadian Collaboration for Immigrant and Refugee Health* (part 14 of 14)

FOOTNOTES

Note: αFP = α-fetoprotein; anti-HBc = antibody to hepatitis B core antigen; anti-HBs = antibody to hepatitis B surface antigen; CI = confidence interval; DTap= diphtheria, tetanus, acellular pertussis vaccine (pediatric); G6PD = glucose-6-phosphate dehydrogenase; HBsAg = hepatitis B surface antigen; HPV = human papillomavirus; MMR = measles–mumps–rubella; NNH = number needed to harm; NNS = number needed to screen; NNT = number needed to treat; NNV = number needed to vaccinate; NSAID = nonsteroidal anti-inflammatory drug; Pap = Papanicolau; PHQ = Patient Health Questionnaire; PTSD = post-traumatic stress disorder; RR = relative risk; Tdap = tetanus, diphtheria, acellular pertussis (adult).

*Recommendations for screening were developed when there was a reliable screening tool or if the screening method was considered clinically feasible (e.g., identifying dental pain or unmet contraception needs). Absolute effects (e.g., NNT) represent a comparison of event rates between two treatments that can also be influenced by baseline risk, time frame and outcomes.[1] Clinical considerations highlight relevant medical and implementation issues.

†Estimated NNT and NNH are based on the following assumptions: 7 yr after arrival the annual risk of development of active tuberculosis is 0.1%, RR of infection in the first 6 yr after arrival is higher but decreases (from 5.1 to 1.4); the patient will live to age 80 yr; the efficacy of isoniazid is 90% (in those taking > 80% of doses); and adherence is 70%.

Reference

1. McAlister FA. The "number needed to treat" turns 20 — and continues to be used and misused. *CMAJ* 2008;179:549.

