

New Brunswick Disease Watch Bulletin

Office of the Chief Medical Officer of Health

Introduction:

Welcome to the second edition of the *New Brunswick Disease Watch Bulletin* in 2011. In this volume we review immigrant health in New Brunswick, looking at factors affecting migrants' health status, challenges faced by refugees, communicable diseases and non-communicable conditions prevalent among immigrants and the role public health plays in fostering partnerships to meet health needs of immigrants. There is an update on the New WHO Growth Charts recommended for growth monitoring of all healthy New Brunswick infants, children and youth.

Another focus of this edition is on invasive group A streptococcal disease providing information on epidemiology, reporting and public health management of this infection. An update on the syphilis outbreak in New Brunswick with briefing on national epidemiology and measures implemented to control the outbreak is provided.

We welcome feedback and suggestions for topics. Please forward them to alex.doroshenko@gnb.ca.

Immigrant Health in New Brunswick

Introduction

Every year people come to Canada from a variety of countries. Of late, China, India and the Philippines are the top three countries from which immigrants originate. In 2009, 252,000 permanent residents and 178,000 temporary residents entered Canada, approximately an equal number of males and females[1]. According to Census Canada, one in five Canadians is foreign born and one in six belongs to a visible minority.

Upon arrival in Canada, approximately 25% of immigrants do not speak either English or French, almost 60% range

in age from 25-54 years old. Seventy two percent (72%) of principal applicants (non-refugee) hold a bachelors degree, whereas 70% of refugees have less than 13 years of education.

New Brunswick immigration

Last year a total of 2,125 people immigrated into the province. A total of 60 required medical surveillance with the majority of immigrants under medical



surveillance originating from Korea, China and the Philippines.

New Brunswick and Canada - Permanent residents, 2006-2010*

NB area	2006	2007	2008	2009	2010
Saint John	547	523	560	585	655
Fredericton	486	409	544	493	563
Moncton	262	345	365	479	424
Other New Brunswick	351	366	387	356	483
New Brunswick	1,646	1,643	1,856	1,913	2,125
Canada Total	251,642	236,754	247,247	252,172	280,636

* Data for 2010 are preliminary estimates and are subject to change. For 2006-2009, these are updated numbers and may differ from those in CIC Facts and Figures 2009. Source: Citizenship and Immigration Canada (CIC), RDM, Preliminary 2010 Data.

Factors affecting migrants' health

When landing in Canada the health status of the immigrant population (excluding refugees) is better than the Canadian-born population – this is known as the “healthy immigrant effect”. This effect has been observed using different measures including mortality rates; self reported health; and prevalence of certain chronic diseases[1]. Unfortunately, this “advantage” on arrival declines and the health status of immigrants approximates that of Canadian born residents over time. Interestingly this health effect has not been demonstrated for infectious diseases especially TB and HIV/AIDS.

Many factors may explain the initial better health status: Canada's screening measures for accepting immigrants, self-selection (those with best health, stamina and resources usually migrate), more positive health habits (e.g. diet, physical activity). These factors may change over time due to lack of social support, poor language skills, difficulty in finding meaningful employment and generating adequate income and, for some, racial/ethnic prejudice and discrimination[2]. After a few years, healthy habits may alter, being subjected to local influences and environments, driving many immigrants eventually closer to the Canadian norm, especially as it relates to chronic disease (e.g. atherosclerosis, cancer, obesity). Cultural attitudes and lack of language skills often act as barriers when seeking assistance or trying to obtain health services. For example, cultural beliefs about illness, use of alternative traditional forms of healing, unfamiliarity with the Canadian healthcare system, hesitancy at speaking a new language, suspicion of authority, isolation and a sense of being an outsider can all have a negative impact.

Specific challenges of refugees

In recent years, New Brunswick has done its share in welcoming refugees (involuntary migrants) displaced from war-torn regions of the world or from areas of the globe severely impacted by natural disasters. Many of these refugees have had a difficult migration experience; living in crowded camps for many years, often with unsatisfactory sanitation, poor personal security and uneven access to health care including immunization, sometimes transiting for months or years through various unfamiliar countries prior to their arrival in Canada. Indeed, refugees are often in poorer health than other migrants when they arrive in Canada and may specifically suffer from a variety of health conditions including communicable diseases (e.g. tuberculosis, HIV infection, hepatitis B, skin infestations and intestinal parasites), poor vaccination status, nutritional deficiencies, anemia from diverse etiologies, and post-traumatic physical or psychological disorders.

Since June 2010, immigrants arriving in New Brunswick who have received a permanent resident status from the Citizenship and Immigration Canada will not have a waiting period to qualify for provincial health insurance (Medicare) however for those individuals with permanent resident status pending (including some refugees) an Interim Federal Health Program is available that provides bridging health insurance coverage.

The role of Public Health

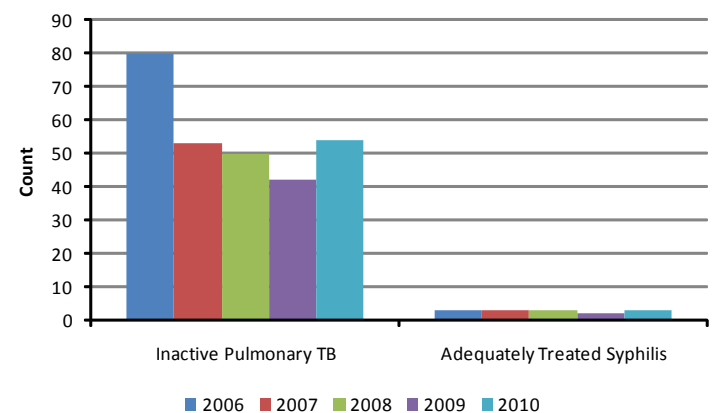
Communicable disease control

The Public Health (PH) service plays a significant role in immigrant health through the medical surveillance program which aims to prevent and control the spread of certain communicable diseases to the general population. The federal Citizenship and Immigration Canada (CIC) program, under the authority of the *Immigration and Refugee Protection Act 2001*[3], ensures that every individual entering the country as a resident undergoes a medical exam to determine the need for ongoing medical surveillance.

There are two medical conditions requiring medical surveillance under the program: inactive pulmonary tuberculosis and adequately treated syphilis. If immigrants have either of these conditions they are required to report to the provincial or territorial Public Health Authority (PHA) within 30 days of their arrival[4]. The PHA receives notification from the CIC and the individual's contact information. The PHA then contacts the applicant and schedules a first appointment OR an immigrant may self-report to PHA with a copy of the letter. Thereafter, clinical follow-up is arranged through community physicians as required.

In New Brunswick the Regional Health Authorities are responsible to oversee the needed medical surveillance through the delivery of regional public health communicable disease programs. Public health also follows up to ensure immigrants are up to date with New Brunswick immunization coverage requirements, especially children.

Figure 1: Number of immigrants under medical surveillance for Inactive Pulmonary Tuberculosis and Adequately Treated Syphilis, in New Brunswick, 2006-2010



Source: CIC Medical Surveillance Database for Inactive Pulmonary TB and Adequately Treated Syphilis in New Brunswick, Office of the Chief Medical Officer of Health, Department of Health, 2006-2010.

Health advocacy

In the past century, the Public Health service concentrated its efforts on preventing the spread of significant infections from immigrants to the local populations using such tools as screening, surveillance and quarantine measures. Later on, the focus broadened to consider the various health challenges of migrants and how best to meet their needs. More recently, the approach is going further, now trying to address the determinants of health as they affect the immigrant community and looking at redressing any health inequalities that especially impact them. Thus, Public Health also has a role in fostering inter-sectoral actions among related community partners and encouraging the initiation of supportive strategies and complementary services to immigrants that can improve these broader determinants, whether through settlement and adaptation programs, language education and interpretation, vocational training and assistance in gaining employment, and the facilitation of initial access to culturally sensitive healthcare practitioners. The Medical Officers of Health in particular can play an important part in forging collaborative links between organizations and agencies involved in immigrant population health; for example, in cities with a significant number of new immigrants, the holding of a multicultural health fair may be very beneficial in providing a space where individuals can connect and share knowledge and experience while also developing and strengthening useful social networks.

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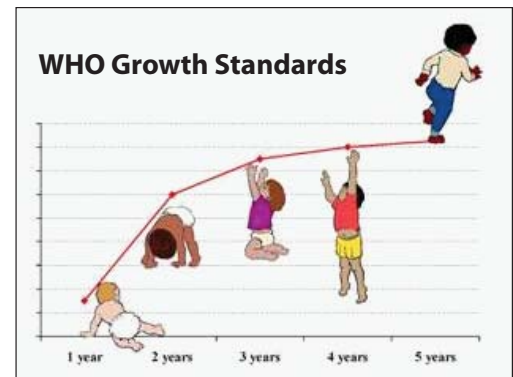
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New WHO Growth Charts provide Gold Standard for Growth Monitoring

Consistent and regular growth monitoring is essential for assessing health and nutritional status of infants and children at both individual and population levels. Growth charts are a useful tool for health care providers and parents to understand patterns of growth and identify potential growth problems. In 2010, the World Health Organization (WHO) released new growth charts for infants and children that reflect optimal growth patterns. These new growth charts include the *2006 WHO Child Growth Standards* (birth-five years) and the *WHO Growth Reference 2007 Charts* for children and youth (5-19 years).

The Canadian Pediatric Society, College of Family Physicians of Canada, Community Health Nurses of Canada and Dietitians of Canada are recommending the adoption of the WHO growth charts in Canada to replace the 2000 CDC growth charts[1]. The New Brunswick Office of the Chief

Medical Officer of Health and the NB Pediatric Section support this recommendation to use the WHO growth charts for growth monitoring of all healthy New Brunswick infants, children and youth.



Source: The WHO Child growth Standards published with permission from WHO Press

The *2006 WHO Child Growth Standards* have been developed for use for full-term infants and children from birth to five years of age. The WHO Growth Standards differ from the 2000 CDC growth charts in that they illustrate how healthy children **should** grow as opposed to how a sample of children in the United States **did** grow. These charts are based on a multi-ethnic population of children who were primarily breastfed and lived in optimal conditions for growth and development. The WHO growth charts are considered to be the gold standard for growth monitoring of healthy Canadian infants and children regardless of ethnicity, socioeconomic status and type of feeding.

The *WHO Growth Reference 2007 Charts* were developed to take into account the increased trend of childhood obesity internationally. These reference charts align more closely with optimal growth and development for children and youth as they have been corrected for the increases in the average weight of children and youth in recent years.

Physicians, nurses, dietitians and other health professionals who do growth monitoring in hospital, community and primary health care settings are encouraged to use the WHO growth charts in their practices. The new WHO growth charts differ from the 2000 CDC growth charts in several ways. Health care providers need to be aware of the differences between the two sets of charts to ensure that measurements are interpreted accurately. For more detailed information on how to use and interpret the charts, bilingual copies of the Health Professionals Guide to Using the New WHO Growth Charts are available through your local Public Health office or online at <http://www.dietitians.ca/Secondary-Pages/Public/WHO-Growth-Charts---Resources-for-Health-Professio.aspx>

Bilingual copies of the following growth charts can be accessed through Public Health offices, Government of NB Central Stores (453-2466), or online at <http://www.dietitians.ca/Secondary-Pages/Public/Who-Growth-Charts.aspx> :

- WHO Growth Charts for Canada – Birth to 24 months (girls)
- WHO Growth Charts for Canada – Birth to 24 months (boys)
- WHO Growth Charts for Canada – 2 to 19 years (girls)
- WHO Growth Charts for Canada – 2 to 19 years (boys)

Growth monitoring is an important part of routine health care for all Canadian infants, children and youth. The WHO Standards and Reference charts provide an excellent set of tools to monitor the growth and development of children and youth from birth to 19 years of age. Consistent practices and reporting of growth monitoring are an important component in promoting and supporting the healthy growth and development of our province's children and youth.

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Disease in Focus

Invasive Group A Streptococcal Disease

The infectious agent of the group A streptococcal (GAS) disease is the *Streptococcus pyogenes*, a gram positive, non-spore forming, non-motile bacteria. The bacterium is often found in the throat and on the skin. Group A streptococci causes a wide range of illnesses from non-invasive disease (e.g. pharyngitis, impetigo, scarlet fever) to severe invasive infections. Invasive group A streptococcal disease (iGAS) requires a laboratory isolation of *Streptococcus pyogenes* from a normally sterile site (i.e. blood, CSF, pleural fluid, peritoneal fluid, pericardial fluid, deep tissue specimen taken during surgery, bone or joint fluid)[1]. There are three broad groups of clinical presentations of iGAS. The first is group A streptococcal **toxic shock syndrome (TSS)**, the condition characterized by shock and multi-organ failure. The second group includes **necrotizing fasciitis (NF)**, the disease associated with extensive necrotic changes of skin and subcutaneous soft tissues. In NF the disease spreads along the layers of fascia[2]. Mortality rates for streptococcal TSS and NF are greater than 35% and 25% respectively[3]. The third group includes conditions not meeting criteria for streptococcal TSS and NF: **bacteremia with or without infectious focus and focal infections such as meningitis, pneumonia, peritonitis, myositis, septic arthritis, osteomyelitis, surgical wound infections and puerperal sepsis**. There are approximately 120 serologically distinct types of GAS. Serotyping of *S. pyogenes* is based on the organism's ability to produce a virulence factor called M protein. The *emm* gene encodes for M protein and an *emm* gene sequence-based typing has been developed and used. *M/emm 1* and *M/emm 3* are particularly associated with invasive infections[2].

Incidence of iGAS infections increased globally in recent years. In Canada, the incidence of invasive group A streptococcal disease was 4.39 per 100,000 population, based on unpublished 2008 data from the Public Health Agency of Canada (PHAC). Rates were the highest in young children and the elderly. The rate among infants younger than one year of age was 6.78 per 100,000, while the rate among children one to four years of age was 4.35 per 100,000 [personal communication, unpublished data, PHAC 2008]. Elevated rates of iGAS have been detected among Aboriginals living in Canadian Arctic. In New Brunswick, during the period from 2008 to 2010, between 18 and 20 annual cases were reported, corresponding to an iGAS

incidence rate of approximately 2.7 per 100,000 in each of the last 3 years[4]. The number of reported cases of iGAS in 2011 (up to the end of March) is 12 suggesting an increase[4], however usually the greater number of cases tends to occur in the winter and early spring[5,6].

Transmission of the GAS (both invasive and non-invasive) infection is primarily by droplet contact of the oral or nasal mucous membranes with infectious respiratory secretions or with exudates from wounds or skin lesions (*droplet transmission*), or by direct or indirect (rarely) contact of non-intact skin with exudates from skin or wounds or infectious respiratory secretions (*contact transmission*). Asymptomatic pharyngeal carriage occurs among all age groups but is most common among children. The port of entry for invasive GAS infections is often the skin or soft tissue and infection may follow minor or unrecognized trauma without an obvious break in the skin. In many cases of iGAS, the port of entry remains unknown[7]. Invasive GAS disease may be acquired nosocomially particularly following surgical procedures with many outbreaks traced to operating room personnel who are anal, vaginal, skin or pharyngeal carriers[8]. **The incubation period** for invasive GAS disease is usually one to three days but may depend on the route of inoculation.

Epidemiological case definitions of iGAS are presented in the table 1[1]. Confirmed cases of iGAS are nationally notifiable in Canada. In New Brunswick, under the 2009 Public Health Act, both confirmed and probable cases of iGAS are reportable to the Regional Medical Officer of Health (RMOH) **verbally within 24 hours and in writing (e.g. by fax) within 7 days of confirmed/suspected diagnosis**. Clinicians should report based on a clinical suspicion of iGAS in the absence of other identifiable etiology and laboratories should report positive isolations of GAS from sterile site(s). Non-invasive GAS infections are not reportable.

Table 1. Epidemiological case definitions and terminology related to iGAS

Confirmed case	Laboratory confirmation of infection with or without clinical evidence of invasive disease. Laboratory confirmation requires the isolation of group A streptococcus (<i>Streptococcus pyogenes</i>) from a normally sterile site.
Probable case	Invasive disease in the absence of another identified etiology and with isolation of group A streptococcus (GAS) from a non-sterile site or positive GAS antigen detection

Management of cases of iGAS involves **clinical diagnosis and treatment of cases and public health management of contacts**. The management of severe invasive group A streptococcal disease involves the following: supportive treatment with the use of fluid and electrolytes; specific therapy with antimicrobials; and the use of measures to minimize or neutralize the effects of toxin production, where indicated. Penicillin remains the treatment of choice. The addition of clindamycin is regarded as a more effective regimen than penicillin alone and intravenous immune globulin may be considered in the treatment of streptococcal TSS or severe toxin-mediated disease in the absence of shock. Early surgical debridement of necrotic tissues is indicated in cases of NF and other specific

treatments may be required depending on the clinical situation[9,10]. Regional Public Health teams, upon receiving notification of an iGAS report, will undertake contact tracing and determine whether antimicrobial prophylaxis is indicated. Individuals in the following categories are considered to be close contacts and potential candidates for chemoprophylaxis[11]:

- Household contacts who have spent at least 4 h per day on average in the previous seven days or 20 h per week with the case;
- Non-household persons who share the same bed with the case or had sexual relations with the case;
- Persons who have had direct mucous membrane contact with the oral or nasal secretions of a case (e.g., mouth-to-mouth resuscitation, open mouth kissing) or unprotected direct contact with an open skin lesion of the case;
- Injection drug users who have shared needles with the case.

There remains uncertainty about the risk of secondary cases of invasive disease occurring among close contacts of an index case and how best to manage that risk[2]. Many jurisdictions do not consider that currently available evidence justifies the routine administration of chemoprophylaxis to close contacts. In 2006 Public Health Agency of Canada published Guidelines for the Prevention and Control of Invasive Group A Streptococcal Disease recommending prophylaxis to close contacts when there is an invasive disease with evidence of clinical severity (i.e. streptococcal TSS, NF, myositis, gangrene, meningitis, pneumonia, other life threatening conditions or cases resulting in death) in a case[11]. **In New Brunswick**, as a general guide, all close contacts of severe invasive GAS are offered antibiotics to clear possible carriage of the bacteria from their throat. Such prophylaxis is preferred to be given within 24 hours, but can be administered for up to 7 days from exposure. Close contacts of all confirmed cases are advised to seek immediate medical attention should they develop any symptoms of iGAS.

Alternative approaches to chemoprophylaxis that were described include[12]

- administering prophylaxis to contacts with open wounds, recent surgery, recent childbirth, current viral infections such as varicella, influenza or immune deficiency diseases;
- administering prophylaxis if household includes one or more close contacts at high risk for severe infection or death because of advanced age (> 65years) or very young age (< one year);
- administering prophylaxis for contacts who are in a high risk for infection (e.g. patients with chronic illnesses, pregnant women and obstetric patients, those with conditions compromising skin integrity (varicella, eczema), patients with burns, penetrating traumas etc.);
- emphasizing the importance of seeking immediate medical attention if contacts develop symptomatic illness consistent with GAS infection (not limited to iGAS) including pharyngitis, scarlet fever, cellulitis, erysipelas, inflamed joints, bursitis, impetigo, abscess, etc.



Necrotizing Fasciitis

Source: ©Ben Barankin, MD, Reproduced with permission from Dermatlas;
<http://www.dermatlas.org>

Therefore, in New Brunswick, there may be circumstances under which different decisions regarding chemoprophylaxis may be made. If chemoprophylaxis is administered to the close contacts, one of the following antibiotics is administered: first-generation cephalosporins (cephalexin, cephadroxil and cephadrine); erythromycin; clarithromycin; clindamycin[11].

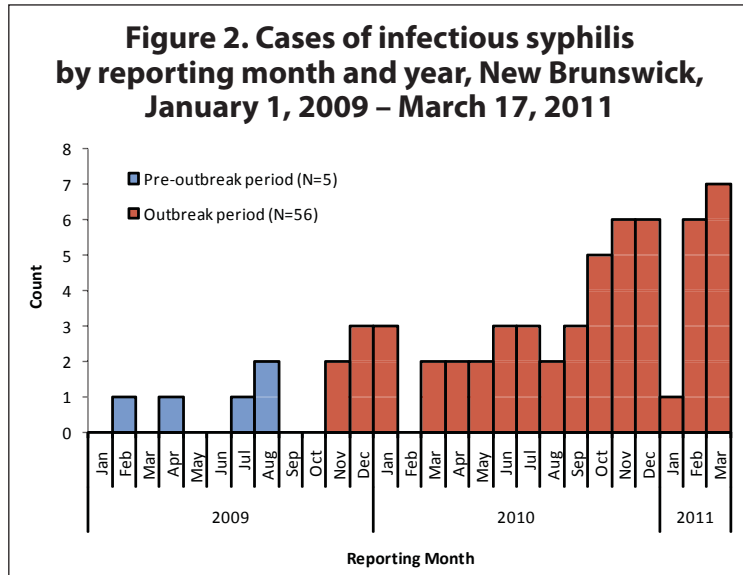
Clinicians are encouraged to discuss all cases of iGAS with Regional Medical Officers of Health. In particular, iGAS cases occurring **in long-term care facilities, child care and hospitals** should be discussed with RMOHs and specialists in infectious diseases and microbiology as different strategies are warranted to manage cases and contacts in those circumstances.

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UPDATE: Syphilis outbreak in New Brunswick

New Brunswick (NB) is continuing to experience an outbreak of infectious syphilis. Fourteen new cases have been reported (as of March 17, 2011) in 2011 and a total of 37 cases[†] were reported across the province in 2010. Prior to 2008, less than five cases were typically reported in NB per year. The outbreak initially began in the Moncton area in late 2009 and 2010, but has more recently shifted to the Fredericton region. Sporadic cases have also been reported in Saint John and northern New Brunswick. An epidemic curve is shown in Figure 2.



The majority of cases continue to be male, most of whom are men who have sex with men (MSM). A small number of female cases have been reported, including two cases in pregnant women. Most cases were aged 20-24 and 40-44 years with a mean age of 33.7 years and median age of 33 years (range: 17 to 60 years). Many individuals reported having multiple sex partners in the last year, including casual and/or anonymous partners. At least five of the cases are co-infected with HIV.

Over the past 10 years, an increase in the rate of infectious syphilis has been observed across Canada. In 1993, the national rate was 0.6 per 100,000 and was similar among males and females. This rate remained relatively constant until 2001, at which point, the incidence of infectious syphilis cases began to rise. In 2010, the national rate was estimated as 5.0 per 100,000 (the same as in NB) with a significantly higher rate observed among males than females[1,2]. Contributing to this overall increase, outbreaks of infectious syphilis have been noted in population subgroups in urban Canadian centers. These outbreaks have largely been observed among MSM[3,4]. However, a shift to heterosexual population groups (and consequently including congenital cases) has also been seen[4]. Other high risk groups for syphilis outbreaks include sex trade workers, patrons of sex

trade workers, and injection drug users[5]. The incidence of infectious syphilis among Aboriginal people has also been disproportionately high in some regions[6].

The Office of the Chief Medical Officer of Health (OCMOH) in NB has responded to the outbreak of infectious syphilis through increased communication with physicians and other health care providers. Two letters have been distributed to clinicians (December 2010 and February 2011) to increase diagnostic alert and to emphasize the importance of syphilis and other STI testing, management, and counseling of patients who present to clinics. Clinicians should continue to refer patients to Public Health to ensure that contact tracing and follow-up with an enhanced surveillance questionnaire is conducted, and to continue to screen all pregnant women for syphilis at the first antenatal visit.

In February, the OCMOH implemented a public awareness campaign that uses social media and marketing strategies to provide important testing information to high risk groups across the province. The public is encouraged to visit www.gnb.ca/whoknew for further details.

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SYPHILIS

Outbreak among men in New Brunswick

Syphilis can kill.
Wear a condom.
Get tested.

Call your family doctor
or visit gnb.ca/WhoKnew

Écllosion chez les hommes au Nouveau-Brunswick

La syphilis peut vous tuer.
Portez un condom.
Faites-vous tester.

Consultez votre médecin de famille
ou visitez gnb.ca/QuiSait

[†] The last edition of Disease Watch reported 38 cases in 2010. One case has since been re-classified as non-infectious; therefore, the total number of cases for 2010 has been revised to 37.