

New Brunswick Disease Watch Bulletin

Office of the Chief Medical Officer of Health

Introduction:

Welcome to the sixth edition of the *New Brunswick Disease Watch Bulletin*.

In this volume, we look at the reportable bacterial sexually transmitted infections (STIs) in New Brunswick: chlamydia, gonorrhoea and syphilis. It includes provincial epidemiology and Public Health recommendations about testing and management of cases and contacts as well as information on the Safer Sex and Chlamydia 2010 campaign.

We welcome feedback and suggestions for topics. Please forward them to paul.vanbuynder@gnb.ca.

Safer Sex and Chlamydia 2010 campaign

The Office of the Chief Medical Officer of Health (OCMOH) is planning a provincial campaign on safer sex and chlamydia with the goal of encouraging New Brunswick youth 20 to 24 to engage in safer sexual practices. The campaign's objectives are threefold: 1) to increase awareness and knowledge levels about chlamydia; 2) to increase chlamydia testing among New Brunswick youth; and 3) to promote safer sex through increased condom usage.

In early July, eight focus groups were conducted with male and female, anglophone and francophone youth 16 to 24 to discern their knowledge of STIs. The key research findings informed the OCMOH that there is a lack of awareness about and understanding of STIs, including chlamydia, among New Brunswick youth. However, participants did express interest in learning more about the subject.

Existing knowledge about chlamydia is limited, as participants predominantly cited middle school health education curriculum as the source of their information. Although youth recognize chlamydia as a potentially serious health issue, they were largely unaware of its symptoms, long-term consequences, modes of transmission, treatment, and prevention. Furthermore, youth in the target demographic are not using condoms regularly despite stating that they are readily accessible. Four main variables believed to contribute to this behaviour are: a perceived lack of need, discomfort in use, embarrassment in obtaining them, and apathy.

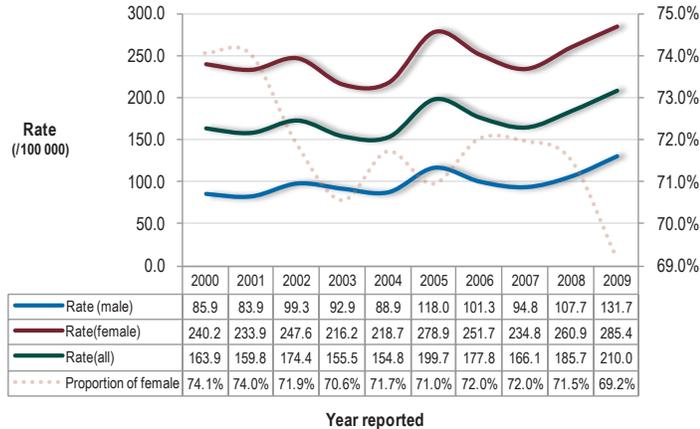
A Moncton-based marketing agency has been awarded a contract to develop a creative concept and strategy for the campaign that will target youth where they live, work, study, and socialize. This provincial campaign is a component of the New Brunswick Sexual Health Strategy and will complement existing regional sexual health services in addition to the clinical services delivered by key community partners, including physicians and nurse practitioners.

Chlamydia

Chlamydial infection, caused by an obligate intracellular bacterium *Chlamydia trachomatis*, is the most common bacterial sexually transmitted disease. A wide variety of genital infections are caused by *C. trachomatis* serovars D to K, including urethritis, epididymitis and prostaticitis in males and urethritis, cervicitis, endometritis and salpingitis in females. These infections may also cause proctitis and proctocolitis (particularly in homosexual men), conjunctivitis and reactive arthritis. The mode of transmission is mostly through vaginal, anal and oral sex with an infected partner, and perinatal transmission from infected mother to a newborn baby is well described. These latter infections lead to conjunctivitis and pneumonia in newborns. Sexually transmitted chlamydial infections are asymptomatic in about 70 per cent of females and 50 per cent of males. Chlamydial infections of the genital tract in adults are treated with a single dose of **Azithromycin** 1g PO or with a course of **Doxycycline** 100 BID PO for seven days (consult Canadian guidelines on STIs for detailed information). If left untreated chlamydial infections may lead to pelvic inflammatory disease (PID), ectopic pregnancy, infertility and chronic pelvic pain in females and epididymo-orchitis in males. Worldwide *C. trachomatis* serovars A-C cause ocular trachoma disease and serovars L1, L2 and L3 – lymphogranuloma venereum (LGV).

The incidence of sexually transmitted chlamydial infections is increasing throughout the developed world, including Canada. In New Brunswick the overall incidence rate of chlamydia has increased by 28.1 per cent during the last 10 years (Figure 1). This increase is higher among males (53.3 per cent) than among females (18.8 per cent). However, females remain over-represented among all chlamydia cases, accounting for more than two cases in three (69.2 per cent) in 2009. This latter proportion decreased by 4.9 per cent during the last 10 years, indicating the growing number of infected males.

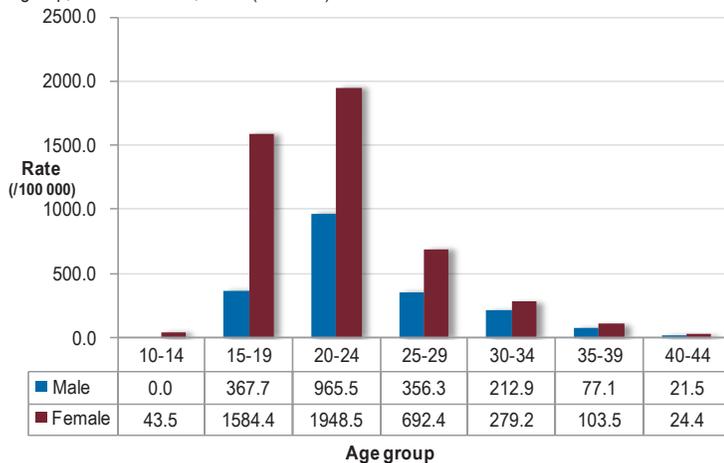
Figure 1.
Incidence rate of Chlamydia infection by gender and proportion of female among cases, New Brunswick, 2000-2009 (N=13 075)



Source : RDSS, NB passive surveillance system, July 2010

Chlamydia particularly affects people 15 to 29. In 2009, the incidence rate in this age group was 30 times greater than that observed in the rest of the population. Youth 20 to 24 are the most affected (Figure 2). In this age group in 2009, almost two per cent of New Brunswick females and one per cent of males reported a chlamydial infection. The highest rates were observed in the Fredericton and Moncton health regions, but the most important recent increase was seen in Saint John and Miramichi, where rates almost doubled during the last four years (data not shown).

Figure 2.
Incidence rate of Chlamydia infection by gender and selected age group, New Brunswick, 2009 (N=1 551)



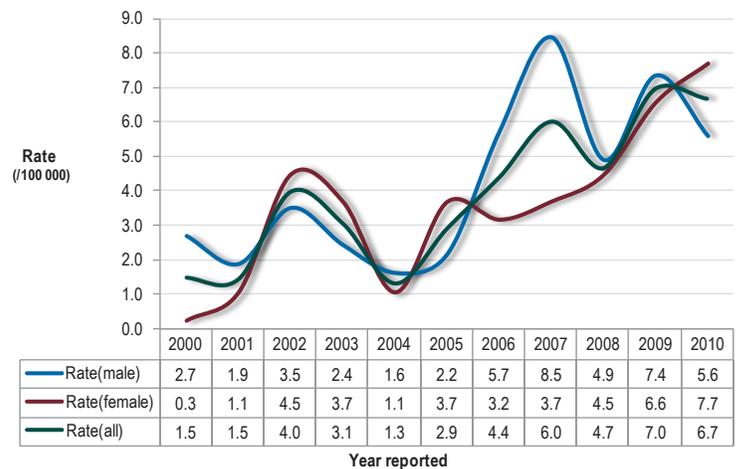
Source : RDSS, NB passive surveillance system, July 2010

Gonorrhoea

Gonorrhoea is a bacterial infection caused by *Neisseria gonorrhoea*, a non-motile, Gram-negative organism that characteristically grows in pairs (diplococci). Infection is transmitted through oral, genital or anal sex with an infected person, and perinatal transmission from infected mother to a newborn baby is described. Acute urethritis is the predominant manifestation of gonorrhoea infection in men and primary site of infection in females is the endocervix. Urethritis, perihepatitis and Bartholinitis are seen in females and epididymitis in males. Conjunctival infections, proctitis, pharyngeal infections and disseminated gonococcal infections are described in both genders. In neonates, gonococcal infection manifests as ophthalmia neonatorum or disseminated infection. Many infected women are asymptomatic, and some men do not have any symptoms. The preferred antibiotic treatment for genital gonococcal infection in adults is a single dose of **Cefixime 400 mg PO** with a single 125 mg IM dose of **Ceftriaxone** or a single 2g PO dose of **Azithromycin** used as alternatives (consult Canadian Guidelines on STIs for detailed information).

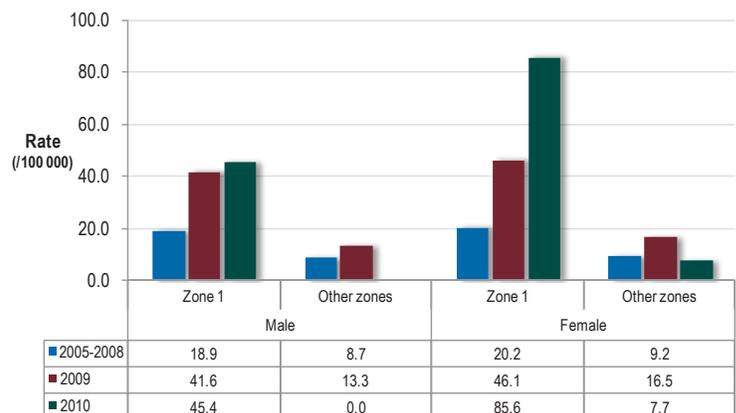
Due to an increase in quinolone resistance, Ciprofloxacin and Ofloxacin are no longer preferred drugs for the treatment of gonococcal infection in Canada. Major sequelae of gonococcal infection include PID, infertility, ectopic pregnancy, and chronic pelvic pain in females and epididymo-orchitis in males. Reiter's syndrome and disseminated gonococcal infection may also occur.

Figure 3.
Incidence rate of Gonorrhoea infection by gender, New Brunswick, 2000-2009 and 2010¹ (N=272)



Source : RDSS, NB passive surveillance system, July 201
¹Rate for 2010 is a projection based on the first 7 months of the year.

Figure 4.
Incidence rate of Gonorrhoea infection by gender and zone, 15 to 34 years old, New Brunswick, 2005-2008, 2009 and 2010¹ (N=156)



Source : RDSS, NB passive surveillance system, July 201
¹Rate for 2010 is a projection based on the first 7 months of the year.

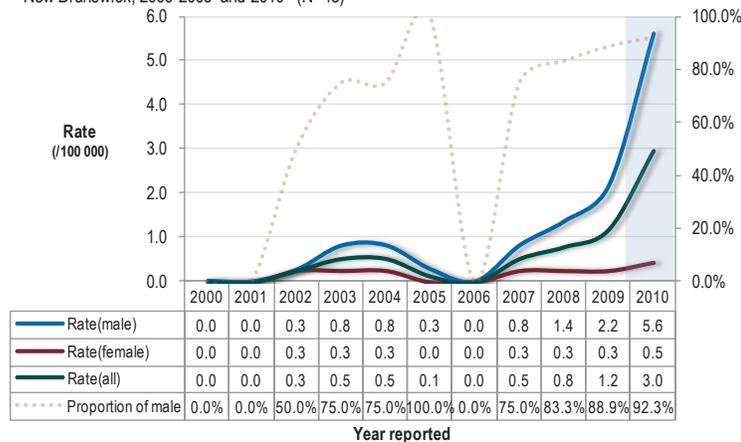
Between 2000 and 2009, a four-fold increase in the incidence rate of gonorrhoea was observed in New Brunswick. (Figure 3). The number of cases remains low compared to chlamydia, ranging from 22 to 52 annually in the last five years. Except for 2007, there were no significant differences between genders.

As with chlamydia, gonorrhoea mostly affects young people: those 15 to 34 represent 82.7 per cent of cases. A projection based on the first seven months of 2010 suggests an increase in cases among females 15 to 34 in zone 1: 12 cases reported in the first seven months of 2010 versus 11 cases in the preceding year of 2009.

Syphilis

Syphilis is a bacterial infection caused by the spirochete *Treponema pallidum*. The primary mode of transmission for syphilis is by vaginal, anal and oral sexual contact with an infected partner. Newborn infants may be infected in utero, but also by contact with an active genital lesion at the time of delivery. Venereal syphilis has several clinical stages: *primary*, manifested as chancre at the site of bacterial invasion and regional lymphadenopathy; *secondary*, associated with rash, fever, headaches, malaise, generalized lymphadenopathy and sometimes signs of meningitis or uveitis; *latent*, which is usually asymptomatic and lasting several years; and *tertiary*, presenting up to 45 years from the initial infection and affecting mainly aorta and coronary arteries, central nervous system as well as producing tissue destruction of various organs. Individuals with primary and secondary stages of syphilis are most infectious to others. Infants and children with congenital syphilis diagnosed before the age of two (early congenital syphilis) may be asymptomatic or present with mucocutaneous lesions, snuffles, hepatosplenomegaly, osteochondritis or neurosyphilis. Late congenital syphilis presents after two years with keratitis, various bony and teeth abnormalities (e.g. Hutchinson's teeth), lymphadenopathy, hepatosplenomegaly, anemia or neurosyphilis. The diagnosis of syphilis includes serological testing initially using non-treponemal tests (i.e., RPR and VDRL), followed by confirmatory treponemal tests (i.e., TP-PA or FTA-ABS). Interpretation of serological tests as well as information about newer tests (e.g., treponemal IgG and IgM EIA) frequently requires consultations with specialists. Preferred treatment of syphilis infection in adults and their sexual contacts is with various regimes of IM Benzathine penicillin G (depending on the stage) and penicillin G for neurosyphilis (consult Canadian Guidelines on STIs for detailed information).

Figure 5. Incidence rate of syphilis infection by gender and proportion of male among cases, New Brunswick, 2000-2009 and 2010¹ (N=43)



Source: RDSS, NB passive surveillance system, July 2010

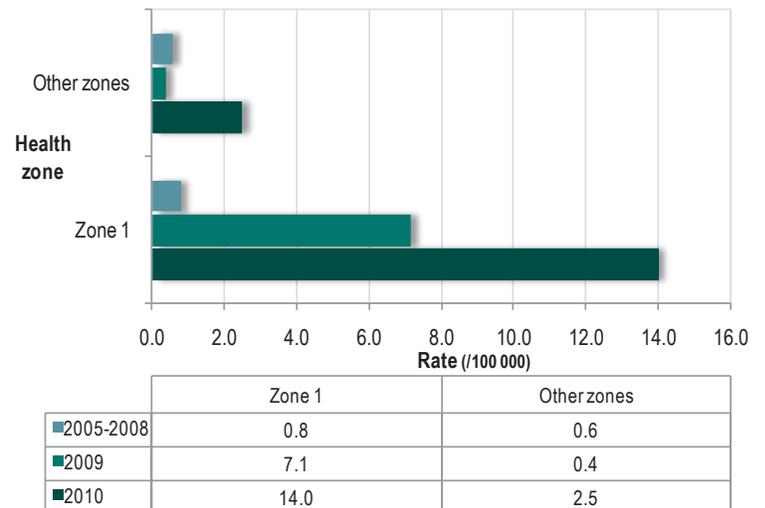
¹Rate for 2010 is a projection based on the first 7 months of the year.

Globally, there were significant changes in syphilis epidemiology recently with large increases in the syphilis numbers seen in urban centres in Europe and North America (mostly among men who have sex with men (MSM)). In New Brunswick, the annual number of cases of syphilis ranged from zero to four (with an average of less than two) from 2000 to 2007. The annual count increased by 50 per cent for the two following years, reaching nine cases in 2009. The first seven months of 2010 are not showing any decrease in this trend. The cumulative number of cases reported up to July 2010 was already higher than the number reported in 2009, with a more than a two-fold increase in the 2010 annualized rate.

Most of this increase is found in Zone 1 which accounts for most cases overall since 2008 (78.9 per cent). Their age distribution ranges from 25 to 59, with most cases (41.2 per cent) in the 30-39 age group. Investigations in this region revealed a high proportion of men having sex with men (MSM). This cluster is still under investigation, but regional prevention and control measures are being developed, and some are already in place to limit transmission in the community.

Figure 6.

Incidence rate of syphilis infection by zone, Male, New Brunswick, 2005-2008, 2009 and 2010¹ (N=29)



Source : RDSS, NB passive surveillance system, July 2010

¹Rate for 2010 is a projection based on the first 7 months of the year.

The table below includes STIs regional epidemiology highlights in New Brunswick, risk factors for STIs, at-risk groups targeted for testing and summary of available tests and specimens sites

STI	NB epidemiology	Risk factors	Target groups for testing	Available tests and specimen sites*
Chlamydia	Higher rates in zones 1,2,3 and 7. Rate in females is double compared to males. Males are forgotten reservoir.	<ul style="list-style-type: none"> Those who have had sex with an infected partner. New sex partner or more than two sex partners in the past year. Those with previously diagnosed STI. Vulnerable populations: intravenous drug users, incarcerated, sex trade worker, street youth. 	Sexually active males and females (including asymptomatic) younger than 25. Pregnant women.	<p>Nuclear acid amplification tests (NAATs): PCR,TMA.</p> <p>Cultures (preferred method for medico-legal purposes); DFA, EIA.</p> <p>Specimen sites: urine, urethral, cervical, vaginal, rectal, pharyngeal swabs.</p>
Gonorrhea	Highest rates in males 20 to 24, and females, 15 to 19. Higher rates in zones 1 and 2.	<ul style="list-style-type: none"> Those who have had sex with an infected partner. Men who have sex with men. Sex trade workers and their sex partners. Individuals younger than 25 with multiple sex partners. Street youth. Those with previously diagnosed STI. Those originating from or who have had sex with someone from a country with a high prevalence. 	Symptomatic or at-risk males and females. Pregnant women.	<p>Nuclear acid amplification tests (NAATs): PCR,TMA.</p> <p>Cultures (allows for antimicrobial sensitivity testing and preferred method for medico-legal purposes).</p> <p>Specimen sites: urine, urethral, cervical, vaginal, rectal, pharyngeal swabs.</p>
Syphilis	Highest rate in Zone 1. Most cases are in MSM.	<ul style="list-style-type: none"> Those who have had sex with an infected partner. Men who have sex with men. Sex trade workers and their sex partners. Street youth and homeless. Injection drug users. Those with multiple sex partners. Those with previously diagnosed STI. Those originating from or having sex with someone from a country with a high prevalence. 	Pregnant women. Immigrants older than 15 (screened as a part of immigration application). At-risk males (i.e., MSM)	<p>Primary and secondary syphilis lesions, placenta: dark-field microscopy, DFA/IFA, PCR.</p> <p>Serology (blood specimen).</p> <p>-non-treponemal tests (RPR, VDRL);</p> <p>-treponemal tests (TP-PA, MHA-TP, FTA-ABS, IgG and IgM EIA, INNO-LIA);</p> <p>CSF: VDRL, FTA-ABS, PCR.</p>

*Availability of tests and tests offered vary by laboratories. Results are dependent on the type of test, specimen site, collection and transport.

PCR – Polymerase chain reaction; TMA – Transcription mediated amplification; DFA – Direct antibody fluorescent assay; IFA - Indirect antibody fluorescent assay; RPR – Rapid plasma reagin test; VDRL – Venereal Disease Research Laboratory test; TP-PA – *T. pallidum* particle agglutination; MHA-TP – microhemagglutination- *T. pallidum*; FTA-ABS – fluorescent treponemal antibody absorbed; EIA – enzyme immunoassay; INNO-LIA – line immunoassay, CSF – cerebrospinal fluid

Management of cases and contacts:

The management of cases and their contacts should be done according to the Canadian Guidelines on Sexually Transmitted Infections. If you do not already have a copy, visit the guidelines' web page to order one:

- <http://www.phac-aspc.gc.ca/std-mts/sti-its/guide-lignesdir-eng.php>
- Public Health will follow up with a clinician regarding case and contact management
- Partner notification:
 - Chlamydia and gonorrhoea: All partners who had sexual contact with the index case within the following trace-back periods should **first be tested** and treated regardless of clinical findings and without waiting for test results.

Syphilis: All sexual contacts within the following trace-back periods need to be located, tested and treated if serology is reactive



Chlamydia Gonorrhoea	60 days prior to symptom onset or date of specimen collection (if asymptomatic). Include additional time up-to-date of treatment. If no partners during the recommended trace-back period, notify last partner. If all partners traced test negative, notify a partner prior to the trace-back period.
Primary syphilis	three months
Secondary syphilis	six months
Early latent syphilis	one year
Late latent / tertiary syphilis	Requires assessment of marital or long-term partners and children, depending on duration of infection
Congenital syphilis	Requires assessment of the mother and her sexual partners

Counselling and prevention on safer sex

To lower the risk of contracting an STI:

- limit the number of sexual partners. The more partners one has, the higher the risk of getting an STI;
- know the sexual partner's history;
- have protected sex: Use condoms for vaginal and anal sex and dental dams for oral sex;
- have regular STI check-ups;
- the only sure way to prevent chlamydia is by not having sex or by delaying sex;
- the use of alcohol and drugs lowers the decision-making abilities needed to say no to sex or to practise safer sex; and
- individuals with STIs and their sexual contacts should abstain from unprotected intercourse until treatment of both partners is complete.

Changes to the New Brunswick immunization schedule for January 2011.

A number of improvements to the New Brunswick immunization schedule will be introduced at the start of 2011. These changes will address both urgent epidemiological issues as well as some of the revised recommendations from the National Advisory Committee on Immunization (NACI). The Office of the Chief Medical Officer of Health intends to change the schedule only once a year, in January whenever possible.

Alterations to adult pertussis vaccine eligibility.

A more detailed review of the epidemiology of pertussis in NB, and the acute risks we face, will be in the next (Christmas) edition of *Disease Watch NB*. Outbreaks of pertussis, with several consequences for the very young, are being reported in a number of North American jurisdictions, including California (6,000 cases and 10 deaths in children younger than three months) and Saskatchewan (five deaths in children younger than three months).

To be fully protected against pertussis, infants need at least three doses of vaccine and probably four or five. Additionally, vaccination with acellular pertussis vaccine likely lasts only one to two decades. Many adults are non-immune. The cycle of recent outbreaks every three to five years has returned, driven by circulation in adolescents and adults.

An adolescent booster dose has been part of school programs for many years, but the eldest recipients of this are now about 20 years old. Most pregnant women are non-immune and are at risk of developing pertussis and passing this on to their newborns, with tragic consequences.

To protect children from infection, we are introducing a free dose of Tdap (tetanus-diphtheria-acellular pertussis) for all postpartum women and for their partner, the latter preferably before birth. We are also recommending other close contacts be vaccinated, but these are not covered under the free program. Detailed information is being distributed to providers.

Free vaccine will also be available to health-care workers in hospitals exposed to young children.

Second dose varicella vaccine and conversion to combined vaccine

Post licensure studies of varicella vaccine have confirmed that one dose of vaccine is only 80 to 85 per cent effective against any disease; and, that protection wanes with time although varicella breakthrough is generally mild and less contagious than varicella in unvaccinated persons. NACI and the United States Advisory Committee on Immunization Practices (ACIP) have recommended introducing a second dose of vaccine to the program. This is despite the theoretical risks of increasing rates of herpes zoster and of moving disease to a higher age group with more severe morbidity.

In New Brunswick, a second dose of varicella vaccine will be introduced Jan. 1.

The recent NACI statement also addressed the issue of excess adverse events associated with the combined MMRV vaccine over the two vaccines given separately. A detailed review by ACIP suggests that there was an increased risk of febrile convulsions when MMRV was used in the 12- to 23-month group; the extent of this was in the order of one case per 2,500 vaccine doses.

In Canada, a different vaccine is used, and NACI have not identified any similar data with this vaccine, so no restrictions have been placed on the use of a combined vaccine. In Quebec, the extensive use of this vaccine in young children has not revealed any safety signals.

Using a combined vaccine at 12 months will enable us to reduce the number of needles from the current four doses. While some data suggest that the most cost effective scenario is to give the second varicella dose at about five years of age, there are programmatic benefits to giving this with the second dose of measles at 18 months.

Accordingly, a two dose combined MMRV vaccine will be introduced on Jan. 1 with doses at 12 months and 18 months. Detailed data on transition arrangements will follow.



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