10/12

New Brunswick Disease Watch Bulletin

Office of the Chief Medical Officer of Health

Introduction

Welcome to the 14th edition of the *New Brunswick Disease Watch bulletin*. In this volume, we have an article with information on the importance of breastfeeding that includes current statistics and provides resources for the baby-friendly initiative. As well, we introduce the *New Brunswick Immunization Guide*. The new guide is specific to New Brunswick and provides immunization providers with guidance in the administration of safe and effective vaccines.

An update is provided on the New Brunswick pertussis outbreak. We also have an article with an overview of Hepatitis C infection which includes risk factors, epidemiology, testing, treatment and prevention. Another focus of this edition is the 2012-2013 influenza season. Epidemiology is provided on the influenza season to date in NB and Canada and we discuss the components of this year's vaccine.

We continue to welcome feedback and suggestions for topics to alex.doroshenko@gnb.ca.

Breastfeeding - a Public Health Issue, Not a Lifestyle Choice

The critically important role of breastfeeding

There is extensive and compelling evidence that breastfeeding is a highly effective preventive measure at the earliest time to protect the health of infants, children and mothers.

"Breast milk is species-specific, offering a unique bioactive matrix of compounds that cannot be replicated by artificial formulas. It contains the live cellular components, immunoreactive substances and hormones, and other nutritional components needed for optimal growth, health and development in the newborn. Breast milk is both the physiological norm and the ideal nutrition for the human infant" [1].

"Exclusive breastfeeding is the reference or normative model against which all alternative feeding methods must be measured with regard to growth, health, development, and all other short- and long-term outcomes" [2] . Children that are not receiving breast milk have more risk of negative health outcomes as shown in **Table 1** [2].

In addition to decreasing the risk of many common childhood illnesses, breastfeeding plays an important role in preventing obesity and chronic disease such as Type 1 and Type 2 diabetes, both highly prevalent in our population [3]. Breastfeeding is also linked to a decrease in Sudden Infant Death Syndrome

(SIDS) and enhanced performance on neurocognitive testing [4,5,6]. Breastfeeding is an important preventative health measure for the lactating mother, as it is associated with a decrease in the incidence of both breast and ovarian cancers [1].

Health Canada and the Canadian Pediatrics Society recommend **exclusive** *breastfeeding for the* **first six months** *of life and continued breastfeeding with appropriate complementary foods for up to* **two years and beyond** [7,8].

Current provincial breastfeeding environment

While the national breastfeeding initiation rate has increased significantly to 88.4 per cent in 2011 from 84.8 per cent in 2003, based on data from the Canadian Community Health Survey (CCHS), New Brunswick's initiation rate of 69.5 per cent remains one of the lowest in Canada. Only 20.9 per cent of New Brunswick's babies were being exclusively breastfed at six months of age according to 2011 CCHS data, falling short of the Health Canada's recommendation of exclusive breastfeeding for the first 6 months of age [9].

Table 1: Excess Health Risks Associated with Not Breastfeeding

Outcome	Excess Risk *(%) (95% CI**)	Comparison group
Among full-term infants		
Acute ear infections	100	EFF vs. EBF for 3 or 6 months
Eczema	47	EBF<3 months vs. EBF≥3 months
Gastrointestinal infection	178	Never BF vs. ever BF
Hospitalization for lower respiratory tract disease in the first year	257	Never BF vs. EBF≥4 months
Asthma with family history	67	BF<3 months vs. ≥3 months
Asthma, no family history	35	BF<3 months vs. ≥3 months
Childhood obesity	32	Never BF vs. ever BF
Type 2 diabetes mellitus	64	Never BF vs. ever BF
Acute lymphocytic leukemia	23	Never BF vs. >6 months
Acute myelogenous leukemia	18	Never BF vs. >6 months
Sudden infant death syndrome	56	Never BF vs. ever BF
Among preterm infants		
Necrotizing enterocolitis	138	Never BF vs. ever BF

*The excess risk is approximated by using the odds ratios reported in the referenced studies.
**CI= confidence interval
EFF=exclusive formula feeding
EBF=exclusive breastfeeding
BF=breastfeeding

Source: U.S. Department of Health and Human Services. *The Surgeon General's Call to Action to Support Breastfeeding*. Washington, DC: U.S. Department of Health and Human Services, Office of the Surgeon General; 2011.

Baby-Friendly Initiative, a strategy to improve breastfeeding outcomes

To help create an environment that protects, promotes and supports breastfeeding, the New Brunswick Department of Health adopted the **Baby-Friendly Initiative (BFI)** in January 2006. As a result, all hospitals, public health services and community health centres working with mothers, babies and their families were asked to undertake steps towards achieving the Baby-Friendly designation.

The Baby-Friendly Initiative is the evidenced-based standard for breastfeeding policies and practices in hospitals and community health services developed by the United Nations Children's Fund (UNICEF) and the World Health Organization (WHO).

For more information on the Baby-Friendly Initiative:

- http://www.who.int/nutrition/publications/infantfeeding/9789241594950/en/index.html
- http://www.breastfeedingcanada.ca/
- http://www.unicef.org.uk/babyfriendly/

As physicians, you are in a unique position to contribute to the initial and ongoing support of the breastfeeding dyad. You can advocate ensuring that the hospital where you provide services becomes a "Baby-friendly" hospital. You can ensure your office environment fosters breastfeeding promotion, protection and support. And you could explore resources available for breastfeeding management.

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New Brunswick Immunization Program Guide

The Office of the Chief Medical Officer of Health introduced the revised *New Brunswick Immunization Program Guide*. The new guide is specific to New Brunswick and provides immunization providers with guidance in the administration of safe and effective vaccines.

The guide is to be used by all providers of publically funded vaccines. It outlines legislation, policies, standards and guidelines necessary to ensure that the people of New Brunswick are protected from vaccine preventable diseases, including legislation requiring providers of vaccine to give recipients a record of immunization (NB regulation 2009-136 section 14 under the *Public Health Act*); *A medical practitioner, nurse practitioner or nurse who administers a vaccine to a person shall provide to the person a record of the immunization on a form provided by the Minister that includes the following information*: (*a) the name of person and date of birth*; (*b) the Medicare number of the person;(c) the name of disease against which the person has been vaccinated; and(d) the date on which the vaccine was administered.*

The guide is available at http://www2.gnb.ca/content/dam/gnb/Departments/h-s/pdf/en/CDC/HealthProfessionals/NBImmunizationProgramGuide.pdf

Resources for Physicians on Breastfeeding Management

World Health Organization: *Infant and young child feeding* http://www.who.int/nutrition/publications/infantfeeding/9789241597494/en/index.html

University of Manitoba: Breastfeeding online curriculum http://umanitoba.ca/faculties/medicine/units/obstetrics_gynecology/breastfeeding.html

Breast Feeding Inc.: Information http://www.breastfeedinginc.ca/content.php?pagename=information

How to make your practice "Breastfeeding" friendly

- Display breastfeeding supportive signs.
- Allow and encourage breastfeeding in the office and in the waiting room. Provide a comfortable private area for those mothers who prefer privacy.
- Avoid serving as advertisers for infant formula by not distributing free samples, coupons or formula-sponsored promotional materials to mothers. Ensure patient education materials and magazines do not advertise infant formula.
- Inform all pregnant women about the importance of breastfeeding and the risks of not breastfeeding so that they can make an informed decision about infant feeding.
- Encourage exclusive breastfeeding for the first 6 months of life and discourage inappropriate supplementation.
- Ensure breastfeeding is addressed and supported at each visit and commend mothers for choosing and continuing breastfeeding.
- Acquire or maintain a list of community resources for breastfeeding (e.g. Lactation consultant, breastfeeding clinic, support group, breast pump rental locations, etc.).

Influenza Season 2012-2013

International Influenza Activity, to-date

As of September 14, 2012, influenza transmission in all reporting countries in the temperate regions of the northern hemisphere is minimal, that is, at inter-seasonal levels. In the tropical zone, most countries are reporting low or decreasing trends of influenza detections with the exception of Nicaragua in the Americas where mainly influenza B is detected and India and Thailand in Asia where both are reporting influenza A(H1N1) pdm09 and B circulation. Influenza activity decreased in most of the temperate countries of the southern hemisphere. Australia, Chile, Paraguay, New Zealand and South Africa, continue to report declines in influenza indicators. Argentina continues to report very low numbers of detections compared to previous seasons [1].

Since the end of July 2012, there has been increased reports of Influenza A H3N2 variant (H3N2v) in the United States. The H3N2v viruses are hybrids of a swine influenza virus that has been circulating for more than a decade in pigs. The first human cases of H3N2v infection were reported in the USA in July 2011; however there has been an increase in reported cases in recent months. As of September 20, 2012, 317 human cases were seen, including 305 cases reported since July 2012. Clinical signs/symptoms and virulence to date resemble that of seasonal influenza. Sixteen patients have been hospitalized and one death has occurred in an older patient with underlying medical conditions. Most reported cases occurred in people who had direct or indirect contact with swine prior to their illness (e.g. at agricultural fairs). Limited human-to-human transmission of this virus was identified in some cases in 2011 and more recently among three patients in August 2012 who had initial swine exposure. At this time, many cases of H3N2v have occurred in children [2].

As a result of enhanced surveillance activities for H3N2v, 1 infection with an influenza A (H1N1) variant (H1N1v) virus and 3 infections with an influenza A (H1N2) variant (H1N2v) virus have been detected since July 2012 in the USA. Sequencing has revealed that these variant strains (H1N1v, H1N2v) also contain the M gene from the influenza A(H1N1)pdm09 virus. These infections occurred in patients who had exposure to swine. One patient required hospitalization and all 4 recovered from their illness. This marks the first report of an H1N2v virus with the M gene from the (H1N1) pdm09 virus and the second report of an H1N1v virus carrying the M gene from the (H1N1)pdm09 virus (first report was in December 2011) [3,4]. There has been 1 human case of influenza H1N1v reported in Ontario to date.

Influenza Activity in Canada, to-date

As of September 8 2012, overall influenza activity in Canada remains low; however several regions have reported sporadic or localized activity in recent weeks. The proportion of tests that were positive for influenza has been below one per cent since July 1st. For most of June and the beginning of July, national influenza-like-illness (ILI) rates were above expected levels, most likely due to circulation of other respiratory viruses such as rhinovirus. Since mid-July, ILI rates have returned to expected levels. Since the end of May in Canada, only four outbreaks of influenza were reported, all in long-term care facilities [5].

NB Sentinel Practitioner Influenza Network. Call for additional sites

New Brunswick influenza surveillance system allows Public Health to monitor, detect and respond to changes in influenza activity, morbidity, mortality and quickly identify novel strains. A key contributor to influenza surveillance is the NB Sentinel Practitioner Influenza Network (NB SPIN). NB SPIN sites are composed of volunteer physicians and nurses that work in several health settings (e.g. ER, walk-in clinic, nursing home, physician office, community health centre) across the province. Once a week, sites submit information on the number of patients with influenza-like-illness (ILI) and they also obtain laboratory specimens for patients with symptoms consistent with ILI.

Information on NB SPIN is available in the 'Health Professional' section of the Office of the Chief Medical Officer of Health website: http://www2.gnb.ca/content/gnb/en/departments/ocmoh/for_healthprofessionals/cdc.html

Influenza vaccine

Vaccine formulation

The seasonal trivalent vaccine for 2012-2013 contains three components: A/California/7/2009 (H1N1pdm09-like virus), A/Victoria/361/2011(H3N2), and B/Wisconsin/1/2010-like virus (B Yamagata lineage).

Agriflu ® single dose prefilled syringe and FLUVIRAL® (10 dose vials) will be available for use in the Public Health program.

Vaccine eligibility

Eligibility Criteria Influenza Vaccine 2012-2013

- Adults and children with the following chronic health conditions:
  - Cardiac or pulmonary disorders (including bronchopulmonary dysplasia, cystic fibrosis and asthma);
  - Diabetes mellitus and other metabolic diseases;
  - Cancer, immunodeficiency, immunosuppression (due to underlying disease and/or therapy);
  - Renal disease;
  - Anemia or hemoglobinopathy;
  - Conditions that compromise the management of respiratory secretions and are associated with an increased risk of aspiration; and
  - Children and adolescents with conditions treated for long periods with acetylsalicylic acid.
- People of any age who are residents of nursing homes and other chronic care facilities.
- People ≥65 years of age.
- Healthy children six months to 18 years of age.
- All pregnant women.
- People capable of transmitting influenza to those at high risk:
  - Household contacts (adults and children) of individuals at high risk of influenza-related complications (whether or not the individual at high risk has been immunized), as listed in the section above;
  - Household contacts of infants more than six months of age;
  - Household contacts of children six months to 59 months; and
  - Members of a household expecting a newborn during the influenza season.

Dose, schedule

Children who have been previously immunized with seasonal influenza vaccine and adults are to receive one dose of influenza vaccine each year. Children between six months and nine years of age receiving seasonal influenza vaccine for the first time should be given two doses, with a minimum interval of four weeks between doses.

For intramuscular TIVs, the dose is 0.5 ml IM for all age groups.

Also, egg allergy is no longer considered as a contraindication for TIV. Egg-allergic individuals may be vaccinated against influenza using TIV without a prior influenza vaccine skin test, based on an assessment of risk for a severe reaction to guide the method of vaccination.

The 2012-2013 NACI statement recommends avoiding re-vaccination if Guillian Barré Syndrome developed within six weeks of influenza immunization. This is a change from eight weeks in the 2011-2012 statement [6].

Surveillance of influenza A H3N2 variant

To enhance an early detection of H3N2v influenza in New Brunswick, clinicians are requested to do the following:

1. Ask patients who present with symptoms compatible with influenza-like illness (ILI)‡ about exposure or contact with swine, or contact with other individuals who were in contact with swine. Please consider influenza A H3N2v infection in the differential diagnosis in patients with respiratory or febrile illness who have had contact with swine in the week prior to onset of symptoms.
2. If you suspect H3N2v influenza infection, please obtain a nasopharyngeal swab from the patient and:
   - Provide the following information on the lab requisition: swine exposure, travel history, influenza vaccination status, antiviral treatment provided (or failure of treatment), severity of illness, hospitalization status or/and ICU admission.
   - Send the specimen in the appropriate viral transport medium along with the requisition to the local laboratory. Local laboratories will arrange shipment to the GDL.
3. As per usual practice, please consult infectious disease specialists if you have questions about clinical treatment. If indicated, antiviral drugs Oseltamivir and Zanamivir are expected to be effective in treating H3N2v virus.

References:

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Overview on Hepatitis C

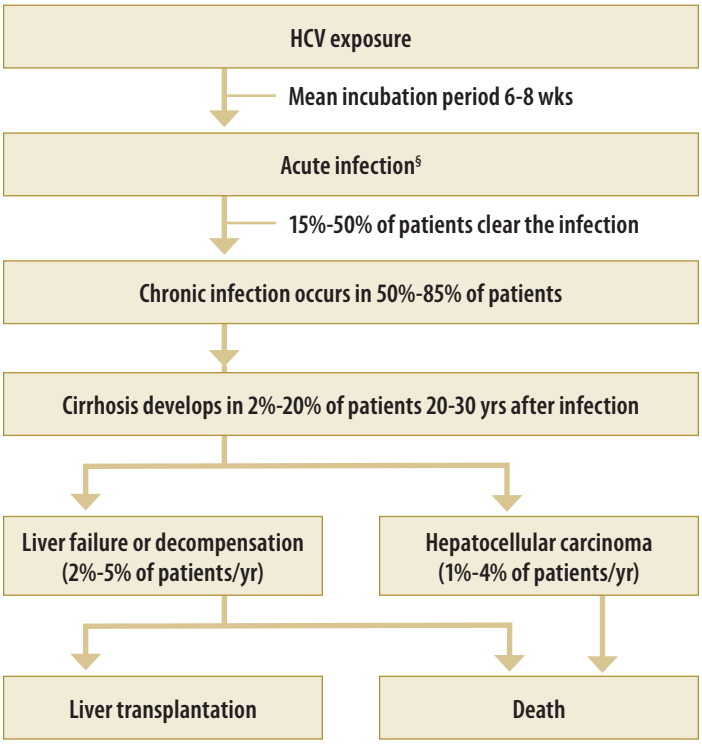
Hepatitis C is one of the major causes of liver failure and liver transplant in the developed world. The hepatitis C virus (HCV), which causes hepatitis C, is transmitted through blood contact with someone infected with hepatitis C. HCV, which was first

‡ ILI is defined as the acute onset of respiratory illness with fever and cough and with one or more of the following: sore throat, arthralgia, myalgia, or prostration which could be due to influenza virus. In children under 5, gastrointestinal symptoms may also be present; in patients under 5 or 65 and older, fever may not be prominent.

characterized in the late 1980s, is an RNA flavivirus with six major genotypes and more than 50 subtypes. Genotype 1 is predominant in Canada, accounting for over 60 per cent of cases, followed by type 2 (11–16 per cent), type 3 (6–14 per cent), and the uncommon types 4, 5 and 6 (< 5 per cent) [1,2].

Although HCV infection has both acute and chronic forms, most of the morbidity associated with infection is due to development of chronic liver disease in a subset of infected people years after initial acquisition of the infection (**Figure 1**).

Figure 1. Natural history of HCV infection



§Note that 60–75 per cent of patients are asymptomatic at this stage.
Source: Wong and Lee, CMAJ 2006 [2]

It is estimated that about 130-170 million people worldwide are living with HCV infection [3]. In Canada, there are no large scale representative studies to determine the actual prevalence of hepatitis C, but statistical modeling techniques estimated that approximately 250,000 individuals are chronically infected (prevalence of 0.8 per cent) and that about 8,000 individuals are newly infected each year in Canada [4,5].

Risk factors of Hepatitis C infection

In Canada, recreational injection drug use (IDU) continues to be the predominant risk factor for HCV acquisition, due to sharing of needles, syringes, and other injection equipment, and is associated with 70-80 per cent of newly acquired HCV cases in Canada [4,6]. In larger Canadian cities, the second largest risk factor is travel to or residence in the HCV-endemic region [2]. Sharing of equipment for inhalation drug use (e.g. crack pipes, straws, etc.) may also be associated with HCV infection [7].

Elevated risk is associated with tattooing or body piercing with contaminated equipment, sharing of personal hygiene items (e.g. razors, toothbrushes) with someone infected with HCV, or occupational blood exposure [7]. Sexual and perinatal (mother-to-child) transmission occurs uncommonly [7].

While there have been cases of HCV transmission via contaminated blood transfusions in the past, the enhanced screening procedures of Canada's blood supply since 1990 has virtually eliminated this risk [4,7].

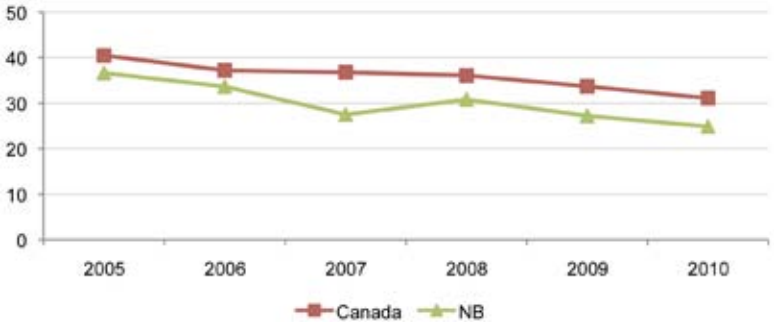
Epidemiology of HCV infection in NB

Overall annual rate of newly reported HCV cases

In Canada, the overall annual rate of newly reported cases of HCV infection (which does not differentiate between acute and chronic infections) is decreasing throughout the past few years. It was estimated to be 36, 33 and 31 / 100,000 population for the 2008, 2009 and 2010 years respectively [5,8,9].

In New Brunswick, the annual rate of newly reported cases was consistently lower than the Canadian one, with the same decreasing pattern across the past few years [10] (**Figure 2**).

Figure 2. Overall annual rates (per 100,000) of newly reported HCV cases in Canada and New Brunswick, 2005-2010



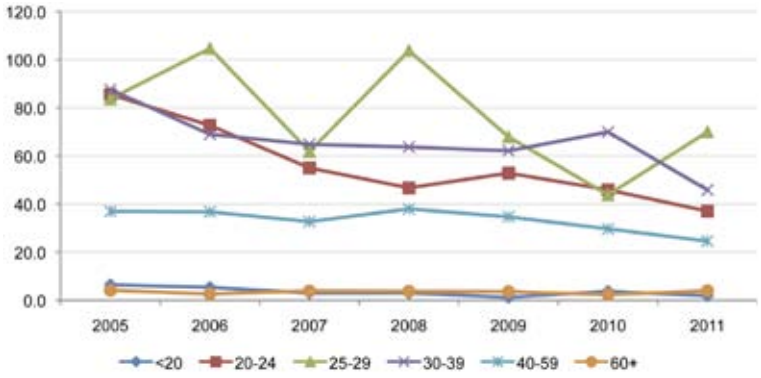
Age-specific rate of newly reported HCV cases

In Canada, throughout 2008 and 2009, the highest age-specific rate of newly reported cases was in the 40-59 years age group, followed by the 30-39 and the 25-29 age groups [5,8,9].

In NB, during the same period of time, the highest age-specific rate of newly reported cases was among individuals 25-29 years old, followed by those in the 30-39 years old age group. From 2005 to 2011, the age-specific annual rate of infection was decreasing among

all age groups with the exception of 25-29 years old age group, among whom the age-specific annual rate increased in 2011 [10] (**Figure 3**).

Figure 3. Age-specific annual rates (per 100,000) of newly reported HCV cases in New Brunswick, 2005-2011



In the USA, 75 per cent of all hepatitis C cases are "baby boomers" (individuals born from 1945 through 1965) [10] whereas in Canada the majority of newly reported cases each year are among Canadians 30 years of age and older and "baby boomers" represents around 50 per cent of cases [5,8,9]. In New Brunswick, they represent about 30 per cent of the newly reported cases [10].

In the light of the high proportion of cases with hepatitis C infection among "baby boomers", in the USA, who may be unaware of their infection, the US Center for Disease Control and Prevention (CDC) proposed an expansion of testing for hepatitis C to include a one-time blood testing for hepatitis C for any individuals born between 1945 and 1965 [11]. Currently the Canadian Consensus Conference on Viral Hepatitis Management recommends the serologic testing of people at increased risk of hepatitis C infection [12].

Testing for hepatitis C

Testing for hepatitis C involves 3 aspects:

- Initial diagnostic test for HCV infection to detect HCV antibodies using second-generation enzyme immunoassay (EIA-2) are done in the regional laboratories in New Brunswick. Positive serology test is usually confirmed by polymerase chain reaction (PCR) tests for HCV RNA. In New Brunswick, the PCR testing is done at both the Dr. Georges-L. Dumont and the Dr. Everett Chalmers Hospital laboratories.
- Assessment of the severity of liver disease which is best assessed by liver biopsy, abdominal ultrasound, viral load and to a lesser extent by liver function tests.
- Evaluation of patients with hepatitis C should include determination of the patients' suitability for treatment [13]. This is usually done through characterization of the virus using HCV genotyping, tests to rule out coexisting infections (e.g. hepatitis B and HIV), tests to rule out other causes of liver disease (e.g. autoimmune hepatitis), tests to rule out contraindications to treatment (e.g. pregnancy, cardiac or thyroid disease, uncontrolled diabetes and retinopathy in patients >50 years or with hypertension or diabetes mellitus) [14].

Treatment of hepatitis C

The goal of therapy is to prevent complications and death from HCV infection. The currently recommended therapy of chronic HCV infection is the combination of a pegylated interferon alfa and ribavirin. The duration of therapy is based on both the genotype and the response to treatment. For genotypes 2 and 3, the duration of treatment is 24 weeks with a response of more than 75 per cent; whereas for genotype 1, it is 48 weeks with much lower response rate [2].

Prevention and counseling

Prevention is an important component of care and should target both HCV-infected people and those at risk but not yet infected. Uninfected people can be counseled to prevent acquiring the virus through avoiding the above mentioned risk factors. Those who are infected can avoid risky practices associated with transmission.

Practice points

1. **Report all newly diagnosed cases of HCV infection to the Regional Medical Officer of Health in writing within seven days, in accordance with *New Brunswick Public Health Act*.**
2. Offer testing to those at high risk of hepatitis C infection.
3. Refer individuals who tested for Hepatitis C to specialists for assessment and treatment.
4. Counseling should include the following [2]:
   - Infected patients should not donate blood, organs, tissues or semen, and they should not share sharp items potentially contaminated with blood (e.g., razors, nail clippers, scissors, toothbrushes);
   - Infected patients should inform their sexual partners and practice safer sex if they are not in a monogamous, long-term relationship. Those in a monogamous, long-term relationship do not need to change their sexual practices, but they should be informed of the very low risk of sexual transmission. Consider testing the patient's partner for HCV infection;

- Counsel and test HCV-infected patients for HIV and hepatitis B infection;
- Offer hepatitis A and B vaccine to hepatitis C positive patients to prevent further damage to the liver;
- Counsel about risk associated with tattooing, body piercing and recreational drug use;
- Patients should limit their alcohol intake to fewer than four drinks per week to delay the progression of fibrosis;
- Patients should avoid other hepatotoxins, including many herbal products such as kava.

5. Consistently follow appropriate infection control practices while performing medical procedures to prevent the transmission of blood-borne infections, including but not limited to hand hygiene, using protective equipment, management of blood spillages and safe injections [15].

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Pertussis update

Epidemiology

New Brunswick has been experiencing an outbreak of pertussis since early January 2012. As of September 18, 2012 there have been 1,294 confirmed cases of pertussis reported to Public Health. The current outbreak represents the largest pertussis outbreak recorded in New Brunswick[+]. Typically in non-outbreak periods, pertussis activity follows a seasonal pattern with increased activity in late December and decreased activity beginning in February. In 2012 the activity thus far has deviated from the typical seasonal trends. There were higher numbers of cases reported than would be normally expected. As early as in January, there were significant increases in activity that continued through to late spring and early summer. To date there have been two peaks in activity, one during week 17 (April 22-28) and another more recently during week 24 (June 10-16) [1].

From January to mid-March, the majority of the cases were from Health Regions 1 and 2 and few cases were reported in other regions. Activity began to increase in the north of New Brunswick starting mid-March, and a month later activity increased in central New Brunswick. In late April 2012 activity started to decrease in Regions 1 and 2 and increase in Regions 4 and 6. Most of the cases reported to date have been from Region 1 (39 per cent), followed by Region 6 (21 per cent), Region 4 (14 per cent), Region 3 (11 per cent), Region 2 (nine per cent), Region 7 (four per cent) and Region 5 (two per cent) (see map for Health Regions, **figure 6**).

For the entire outbreak, the majority of cases (39 per cent) were in the 10 to 14 year-old age group. The highest age-specific incidence rate is also in this age group (1,244 per 100,000) followed by five to nine year-old group (565 per 100,000), and infants under one year old (502 per 100,000). Since May, there was a steady decline in the incidence rate in the 10 to 14-year-old age group. In July, there was an increase in the rate for infants under one year of age. Since July, the highest monthly age-specific incidence rate was in the under one year of age group (**figure 5**).

Overall, there have been 19 hospitalizations, two of which were admitted to an ICU, and zero deaths reported. The highest proportion of hospitalized cases (63 per cent) was in infants under one year old and all ICU admissions were in this age group.

[+] Over the 19 years of passive surveillance data in New Brunswick, starting in 1994

Children between four to 14 years old would be expected to have at least five doses of pertussis containing vaccine if fully immunized according to the New Brunswick schedule. 57 per cent of cases aged 4-9 years old and 68 per cent of cases aged 10-14 years old had proof of five or more doses of pertussis containing vaccine.

Starting week 25 (June 17-23), overall activity has decreased in the province, with the exception of Health Region 4 when it decreased during week 27 (July 1-7). However, activity remains significantly higher than the historical mean for the same time period. The decline in activity may not be a true indication of the outbreak slowing down but more indicative of a short-term decrease typical of the summer months as well as impact from a temporary decrease in the number of settings (e.g. schools) where transmission has been greatly facilitated for the vast majority of cases (e.g. schools are closed for the summer break).

Public Health will continue to monitor the situation closely and perform analysis using data from the New Brunswick Enhanced Pertussis Surveillance System- which relies on physicians' testing and reporting from physicians and laboratories to regional public health.

Figure 4. Number of Pertussis Cases Reported to Public Health by Health Region and Reporting Week, 2012 (up to September 18, 2012)

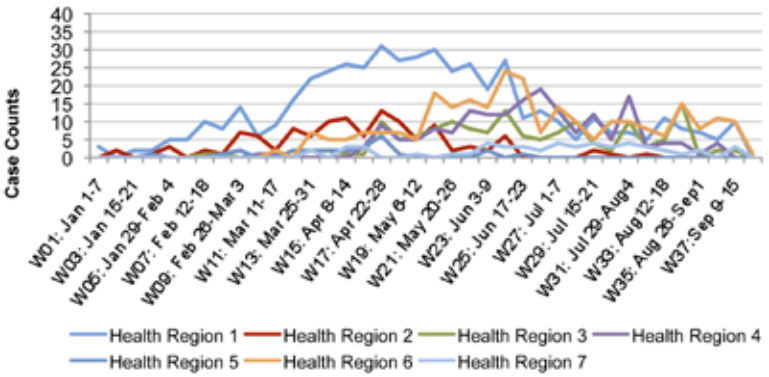
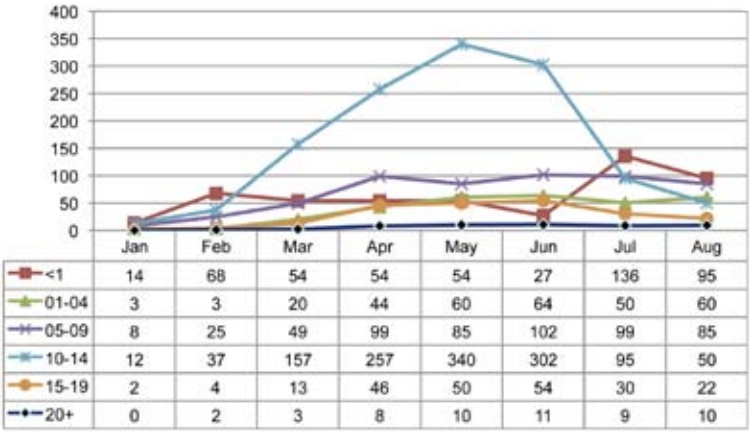


Figure 5. Age-Specific Incidence Rate (per 100,000), by Month, 2012 (up to September 18, 2012)



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
<1	14	68	54	54	54	27	136	95
01-04	3	3	20	44	60	64	50	60
05-09	8	25	49	99	85	102	99	85
10-14	12	37	157	257	340	302	95	50
15-19	2	4	13	46	50	54	30	22
20+	0	2	3	8	10	11	9	10

Table 2.
Number and Percent of Pertussis Cases Reported to Public Health by Health Region, 2012 (up to September 18, 2012)

Health Region 1		Health Region 2		Health Region 3		Health Region 4		Health Region 5		Health Region 6		Health Region 7		NB
#	%	#	%	#	%	#	%	#	%	#	%	#	%	#
499	39%	122	9%	147	11%	181	14%	25	2%	268	21%	52	4%	1294

Table 3. Case Count and Percent by Age Group and Region, 2012 (up to September 18, 2012)

	Health Region 1 (N=499)		Health Region 2 (N=122)		Health Region 3 (N=147)		Health Region 4 (N=181)		Health Region 5 (N=25)		Health ÀRegion 6 (N=268)		Health Region 7 (N=52)		NB (N=1294)	
	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%
<1	13	3%	8	7%	7	5%	~	2%	~	4%	~	1%	~	0%	37	3%
01-04	33	7%	14	11%	15	10%	17	9%	~	8%	15	6%	~	4%	98	8%
05-09	81	16%	17	14%	18	12%	45	25%	10	40%	32	12%	~	8%	207	16%
10-14	197	39%	51	42%	51	35%	72	40%	7	28%	111	41%	19	37%	508	39%
15-19	48	10%	~	3%	17	12%	9	5%	~	12%	21	8%	~	4%	104	8%
20+	127	25%	28	23%	39	27%	34	19%	~	8%	85	32%	25	48%	340	26%

~:Counts less than 5 were omitted from the table.

Public Health Measures

Immunization and prophylaxis

Public Health measures in this outbreak have been focused on immunization and chemoprophylaxis of close contacts of cases. In addition to promoting immunization according to the New Brunswick routine immunization schedule, Tdap vaccine was offered to eligible expecting parents and individuals in close and regular contact with children less than one year of age.

School immunization campaign

Most cases of pertussis in the initial stages of the outbreak were reported in Health Regions 1 and 2 in children 10-14 years of age. 68 per cent of these cases were vaccinated with five doses of pertussis containing vaccine with most receiving vaccination more than 5 years ago. In the spring of 2012 a Tdap school immunization campaign was implemented in Health Regions 1 and 2 to improve immunity and reduce further spread of infection among most affected group and prevent transmission to infants, who at greater risk of pertussis complications . Students in grades 6, 7 and 8 were offered Tdap immunization in school clinics.

The overall uptake of the campaign was 74 per cent in both regions, with the highest uptake in students in grades 6 and 7. Students in grades 7, 8 and 9 (students of the same age as those vaccinated in the spring) in the other Health Regions are being offered Tdap immunization in the fall of 2012.

Communications with public and physicians

The public was informed about the pertussis outbreak through media releases. In those releases the public was encouraged to make sure they were up to date with pertussis containing vaccine immunizations according to the New Brunswick routine immunization schedule. Tele-Care was informed of the outbreak and received specific information to be able to answer all the questions the public might have. A pertussis webpage with information on the disease, immunization and the outbreak was made available on the Government of New Brunswick Website: http://www2.gnb.ca/content/gnb/en/departments/ocmoh/cdc/content/whooping_cough.html

Current information about the outbreak, testing, reporting and treatment is available through the health professional's webpage of the Government of New Brunswick website: http://www2.gnb.ca/content/gnb/en/departments/ocmoh/for_healthprofessionals/cdc.html [3].

Reference:

1. Office of the Chief Medical Officer of Health. Department of Health, New Brunswick. Pertussis enhanced surveillance and RDSS database

Figure 6.
Map of Health Regions in New Brunswick