ᑲᑎᒪᔨᑦ ᓄᓇᕗᑦ ᐱᖃᓐᓇᓕᒫᓐᓇᓕᕆᓂᖅ
Building Nunavut Together
Nunavuliuqatigiingniq
Bâtir le Nunavut ensemble

Department of Health, Government of Nunavut

Reportable Communicable Diseases in Nunavut, 2007 to 2014

Office of the Chief Medical Officer of Health
Technical Report
January 2016

ACKNOWLEDGEMENTS

The Office of the Chief Medical Officer of Health (OCMOH) relies on front line health care providers and Regional Communicable Disease Coordinators (RCDCs) for reporting on disease and alerting the office to possible clusters or outbreaks of disease. Without these efforts, disease surveillance would not be possible. Much of the data contained in this report was acquired thanks to collaborations with the Qikiqtani General Hospital (QGH) laboratory and laboratories in southern jurisdictions; efforts by the staff of these organizations are greatly appreciated.

Finally, we would like to thank everyone at the International Circumpolar Surveillance (ICS) program's Invasive Bacterial Disease Working Group (IBDWG) and the Centre for Immunization & Respiratory Infectious Diseases (CIRID) branch of The Public Health Agency of Canada (PHAC), particularly for their assistance preparing and collating Invasive Bacterial Infection data for Nunavut. The collaboration and continual effort put in by all colleagues at PHAC to keep Nunavut's datasets updated have enabled us to create this report.

EXECUTIVE SUMMARY

The purpose of this report is to present an overview of all reportable communicable diseases identified by health care providers in Nunavut between 2007 and 2014. This is the first such document to be produced by the Department of Health in Nunavut containing data from this time period, and annual updates are planned. The information in the report will assist in setting priorities for program planning and development for the Department of Health.

Report Highlights

While a range of communicable diseases are reportable to the Chief Medical Officer of Health, this report identified that certain infections in particular are of most concern to the health of Nunavummiut - sexually transmitted infections and tuberculosis.

Sexually transmitted infections (STIs): STIs are transferred through sexual contact and have an immediate and long-term impact on health. They can be prevented through counselling and other forms of education to support safe(r) sex. The most commonly reported STIs in Nunavut from 2007 to 2014 were chlamydia and gonorrhea with rates far higher than those seen in the rest of Canada. The crude rates of both these STIs were highest among females from 15 to 19 years of age and highest among males from 20 to 29 years of age. In addition, since 2012 there has been an outbreak of syphilis in Qikiqtaaluk Region which shows no signs of abating as of 2014.

Tuberculosis: The report indicates that tuberculosis continues to be a concern in Nunavut, with annual age-standardized rates of acute disease ranging from approximately 119 to 328 cases per 100,000. In 2013, the age-standardized rate of tuberculosis in Nunavut was nearly 40 times higher than the pooled rates of the rest of Canada. Between 2007 and 2014, 90.5% of cases occurred in Qikiqtaaluk Region and 9.4% in Kivalliq Region while no cases were reported in Kitikmeot Region (0.1% had no region specified). More cases were reported among men (62%) than women (38%). Over-crowding and malnutrition foster the spread of tuberculosis around the world and likely also have an impact on the number of cases in Nunavut.

Other reportable diseases: Blood-borne infections are diseases caused by pathogens that may be transmissible through exposure to infected blood. There have been no cases of HIV/AIDS reported in Nunavut since 2007. There has been an average of three hepatitis B cases and four hepatitis C cases reported per year. Since 2007, there has been an average of 235 methicillin-resistant *Staphylococcus aureus* (MRSA) infections reported each year.

Salmonellosis cases comprised 43% of all enteric, food and waterborne infections reported in Nunavut. There were no cases of measles, mumps or rubella reported from 2007 to 2014 and no cases of pertussis in 2013 and 2014. There were ten cases of brucellosis between 2007 and 2014. Surveillance of invasive bacterial disease indicates that rates in Nunavut are similar to those in other Canadian Northern regions. Finally, between 2007 and 2014 there were an average of 165 influenza cases per year and 123 cases of respiratory syncytial *v*irus (RSV) cases annually.

TABLE OF CONTENTS

BACKGROUND

Reportable communicable diseases are listed in the Communicable Disease Regulations of Nunavut's *Public Health Act* as diseases that health care providers are required to report to the Chief Medical Officer of Health (CMOH). Diseases have been designated as reportable based on their public health importance in the territory and whether they are on the national PHAC notifiable[1] disease list.

A disease's public health importance is assessed in relation to: existence of national/international regulatory and prevention programs, incidence in Canada and Nunavut, severity of the illness, potential to spread to the general population, potential for outbreaks, socioeconomic burden, preventability, risk perception, necessity for public health response and possible increase in incidence or change in pattern in recent years (Nunavut Department of Health, 2015). The current list of reportable diseases has been in use since 1999 and was inherited from the Northwest Territories (Appendix A).

The reporting of notifiable diseases to the CMOH is initiated when a health care provider identifies a case based on clinical criteria or the results of diagnostic testing. The majority of cases in this report have been confirmed by laboratory testing. Depending on the disease, these tests are conducted at QGH in Iqaluit or at laboratories in southern Canada that provide diagnostic services for the Government of Nunavut.

When a laboratory test for someone receiving care in Nunavut is positive for a reportable disease, the result is reported to the CMOH. In addition, if an individual is receiving care out of territory but within Canada for a reportable disease, laboratory results are communicated to the CMOH for inclusion in Nunavut statistics. Cases are recorded based on community of residence regardless of where health care services were provided. With few exceptions, the notifiable disease list in Nunavut is the same as lists used in other provinces and territories. However, it is possible that certain diseases, such as respiratory syncytial virus (RSV), are underreported if they are not notifiable in the jurisdiction where they were diagnosed.

Upon receipt of a reportable disease report, staff working with the OCMOH provides public health related case management support for health care providers. The report is subsequently entered into the Nunavut Communicable Disease Database. Data extracted from laboratory and case reports include demographic and clinical indicators necessary for analysis. The data are used in ongoing surveillance activities as well as for program planning and evaluation throughout the Department of Health. If cases of the same disease exceed expected values, and are clustered in a particular location and time, an outbreak investigation will be triggered.

Finally, de-identified data is shared with PHAC each year to support ongoing national surveillance of communicable diseases.

[1] "Notifiable" is synonymous with reportable in this context.

SOURCES, METHODS AND LIMITATIONS

Sources of Data

Cases in Nunavut

Case counts for Nunavut were obtained from the *Nunavut Communicable Disease Database* (Epi Info /Microsoft Access), except for tuberculosis, influenza, respiratory syncytial virus (RSV) and invasive bacterial disease (IBD) cases, which came from individual line lists within the Department of Health, Government of Nunavut.

Canadian cases and rates

Counts of cases for reportable diseases were accessed via the Public Health Agency of Canada's (PHAC) *Notifiable Disease Online* website, which presented cases, crude incidence rates and any data exclusions by age group and year. At the time of writing, there were no 2014 case data available for Canada.
http://dsol-smed.phac-aspc.gc.ca/dsol-smed/ndis/index-eng.php

Nunavut and Canadian populations

Population estimates for each year were obtained from Statistics Canada CANSIM table 051-0001, "Estimates of population, by age group and sex for July 1, Canada, provinces and territories, annual (persons unless otherwise noted)".

At the time of writing, the only available population estimates with a regional breakdown were from 2014; these were used for crude regional rate calculations. For age-standardized incidence rates, the most recent population estimates were from Statistics Canada. These estimates included an updated population figure for Nunavut in 2014.

International Circumpolar Surveillance (ICS) data on invasive bacterial diseases (IBDs)

Aggregate data for those diseases captured by the ICS were provided by PHAC on behalf of the Invasive Bacterial Disease Working Group (IBDWG) members.

Methods

Data preparation

Data were extracted from Microsoft Access and descriptive analysis conducted in Excel. Data verification consisted of removing duplicate cases, correcting missing or erroneous data fields wherever possible, and standardizing disease names across data.

Rates

Crude incidence rates per calendar year were calculated by dividing the number of cases by the population during that year and expressing per 100,000. Rates are provided per 100,000 to allow better comparison between diseases within this report. Age-standardized incidence rates were calculated using the 2011 Canadian census population as a standard. Age-standardized rates allow a comparison between Nunavut and the rest of Canada excluding Nunavut by adjusting for any differences in age structure between the two populations which might bias interpretation. Error bars on age-standardized graphs indicate standard error, which is a measure of statistical accuracy

Limitations

Small numbers of cases

In the interest of privacy and patient confidentiality, diseases with small numbers of cases were not presented by age group, sex or region. Rates with numerators less than 20 have been identified throughout the report and are presented in Appendix B. Such rates are not reliable sources for decision-making.

In addition, because low numbers prevent the ability to conduct rigorous age-standardization, this procedure was completed only for the handful of diseases with sufficient case counts per year.

Data sources: reporting process

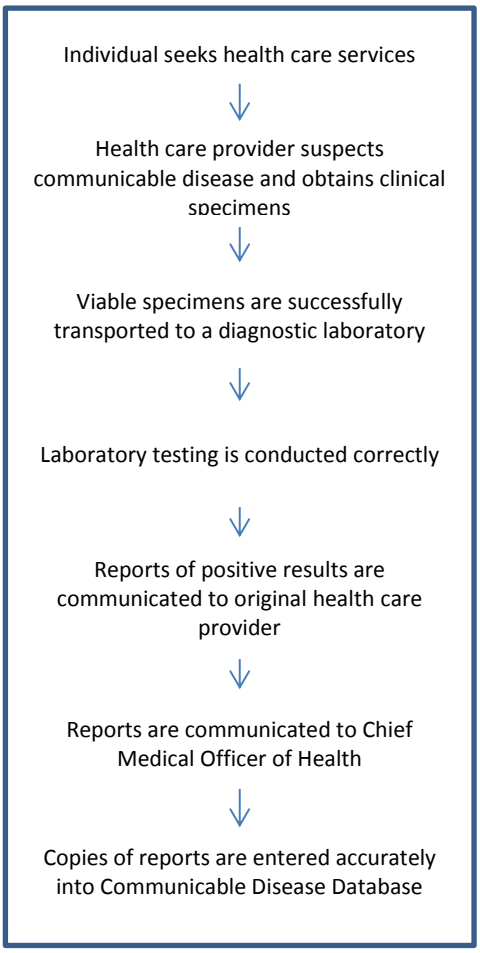
It must be acknowledged that the case counts and rates in the report represent only the cases of disease which were reported to the CMOH (see sidebar).The true burden of a disease may be underestimated in the population due to logistical challenges of laboratory testing as well as differing patterns of accessing health care across the territory according to age, sex, and geographic remoteness. In general, the very young and elderly access health care more frequently than other age groups while women access services more often than men.

Caution should be used to interpret variation between years, as apparent spikes in disease may not be meaningful. Fluctuations in in the number of cases being reported in a year may be attributable to changes in testing policy and procedures rather than to actual increases in disease burden.

Surveillance bias must also be considered, which occurs when more cases are found in a population that is under closer scrutiny than other populations.

Data accuracy

While great care is taken and specific processes put in place to prevent error, all surveillance data may contain data entry errors or missing fields. Slight differences in numbers of cases may exist in future reports as such errors are identified.



Sidebar: Communicable disease reporting process in Nunavut

SUMMARY OF REPORTABLE COMMUNICABLE DISEASES

Table 1: Summary of communicable diseases reported in Nunavut from 2007 to 2014, ranked by frequency.

Disease/Infection	2007	2008	2009	2010	2011	2012	2013	2014	Total	Annual Avg.
Chlamydia	1229	1315	1216	1395	1307	1355	1470	1285	**10572**	**1322**
Gonorrhea	152	356	512	648	593	445	464	326	**3496**	**437**
Methicillin-resistant *S. aureus*	201	404	200	158	184	249	235	251	**1882**	**235**
Influenza	63	89	665	1	207	80	85	128	**1318**	**165**
Respiratory syncytial virus	93	94	191	132	185	136	32	119	**982**	**123**
Tuberculosis	31	59	55	100	74	80	51	84	**534**	**67**
Syphilis	0	1	2	0	4	31	59	94	**191**	**24**
Salmonellosis	6	9	8	21	34	12	15	11	**116**	**15**
Giardiasis	9	6	9	9	11	9	4	4	**61**	**8**
Invasive *Haemophilus influenzae* disease	9	3	7	7	9	4	5	15	**59**	**7**
Invasive Pneumococcal disease	9	5	6	5	7	5	9	10	**56**	**7**
Hepatitis C	3	3	5	8	11	5	2	6	**43**	**5**
Hepatitis B	3	3	6	1	17	2	4	5	**41**	**5**
Pertussis	0	6	25	2	2	1	0	0	**36**	**5**
Campylobacteriosis	1	1	3	6	6	5	7	3	**32**	**4**
Invasive Group A Streptococcal disease	2	5	1	5	2	4	2	4	**25**	**3**
Trichinosis	2	0	5	10	3	1	2	0	**23**	**3**
Cryptosporidiosis	0	1	7	8	0	0	0	1	**17**	**2**
Human T-cell lymphotropic virus	3	4	2	0	3	2	1	0	**15**	**2**
Brucellosis	0	0	2	1	2	1	4	0	**10**	**1**
Verotoxigenic *E.coli*	1	0	1	1	0	0	0	4	**7**	**<1**
Invasive Meningococcal disease	0	0	0	0	1	1	0	3	**5**	**<1**
Neonatal Group B Streptococcal disease	0	0	0	1	2	0	1	0	**4**	**<1**
Yersiniosis	0	2	1	0	0	1	0	0	**4**	**<1**
Amoebiasis	0	0	0	0	0	1	0	2	**3**	**<1**
Vancomycin-resistant Enterococci	0	0	0	0	0	0	1	2	**3**	**<1**
Botulism	0	1	0	0	1	0	0	0	**2**	**<1**
Hepatitis A	2	0	0	0	0	0	0	0	**2**	**<1**
Chancroid	0	0	0	0	0	1	0	0	**1**	**<1**
Legionellosis	1	0	0	0	0	0	0	0	**1**	**<1**
Malaria	0	0	0	0	0	1	0	0	**1**	**<1**
Annual Total	**1820**	**2367**	**2929**	**2519**	**2665**	**2432**	**2453**	**2357**		

SEXUALLY TRANSMITTED INFECTIONS (STIs)

This section includes:

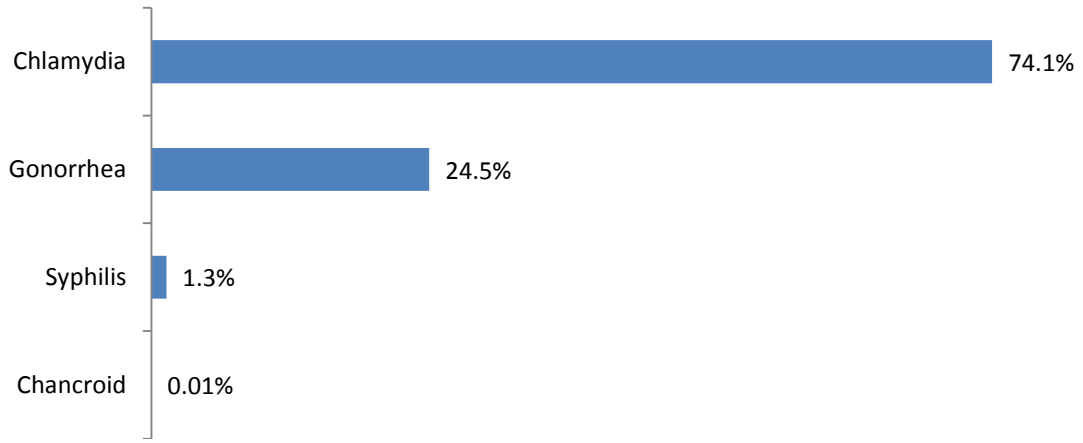
- Chlamydia
- Gonorrhea
- Syphilis
- Chancroid

Note that HIV/AIDS and Hepatitis B can be transmitted through sexual contact but are included in the section on blood-borne infections.

Section summary:

- Chlamydia and gonorrhea together accounted for about 98% of all STIs reported.
- Since 2010, the incidence of chlamydia and gonorrhea has been highest in the Kivalliq region, while the incidence of syphilis was highest in the Qikiqtaaluk region.
- Crude incidence rates of chlamydia, gonorrhea and syphilis were highest among females between the ages of 15 and 24 years of age, and among males between the ages of 20 and 29 years of age.
- Syphilis had a low incidence between 2007 and 2011 (7 cases total) until the outbreak in 2012. In 2014 there were 94 cases reported.
- There was only one case of chancroid reported between 2007 and 2014.

Figure 1: Breakdown of reported STIs in Nunavut, as percentage of all reported, 2007 to 2014



CHLAMYDIA

Summary:

- Chlamydia is an STI caused by the bacteria *Chlamydia trachomatis.*
- Rates of chlamydia infection were stable between 2007 and 2014, showing no major trends.
- Chlamydia is the most frequently reported communicable disease in Nunavut, accounting for 54% of all reported diseases between 2007 and 2014, and 74% of all the STIs reported during that time period.
- In 2013, the age-standardized rate of chlamydia in Nunavut was more than 11 times higher than the rate for the rest of Canada.
- Crude incidence rates per 100,000 population of chlamydia are, on average, higher in Kitikmeot and Kivalliq compared to Qikiqtaaluk.
- Most cases (65%) between 2007 and 2014 were female.
- The average crude rate for females aged 15-19 years of age was over three times higher than for males in this age group during this time period.

Figure 2: Age-standardized incidence rates of chlamydia in Nunavut and the rest of Canada, 2007 to 2014.

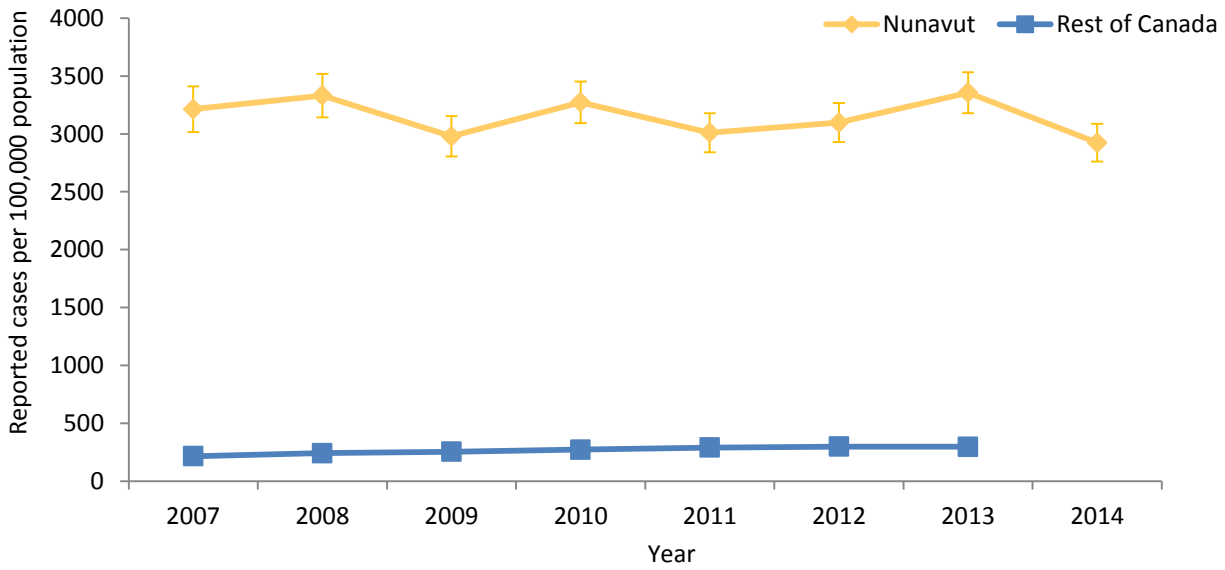


Figure 3: Crude incidence rates of chlamydia in Nunavut by region, 2007 to 2014.

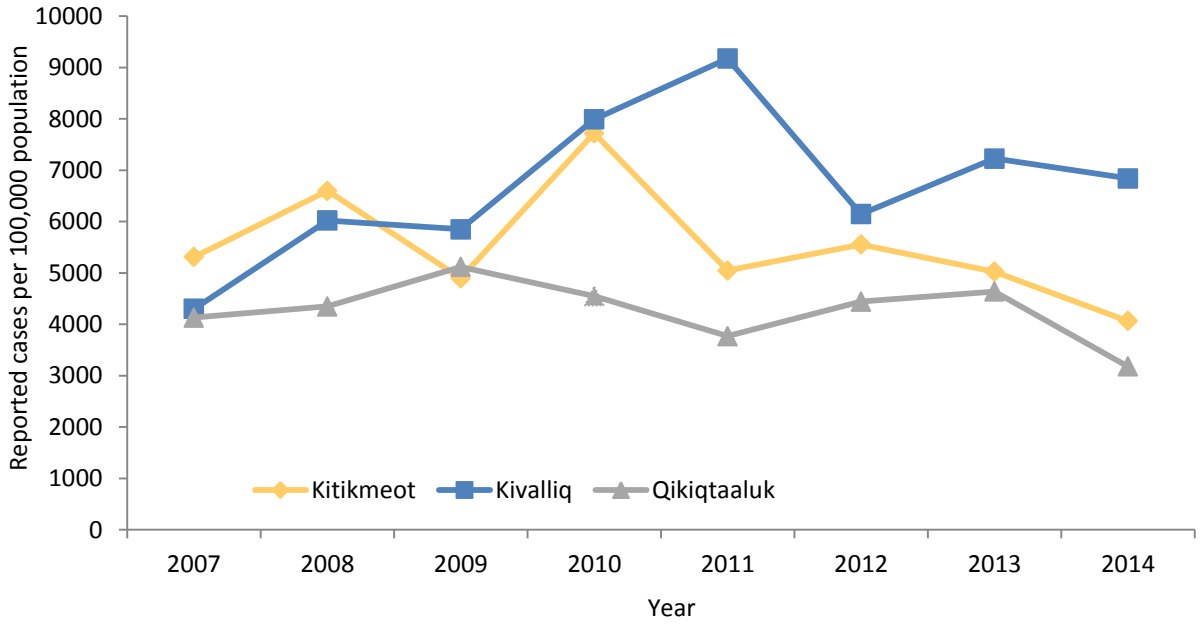
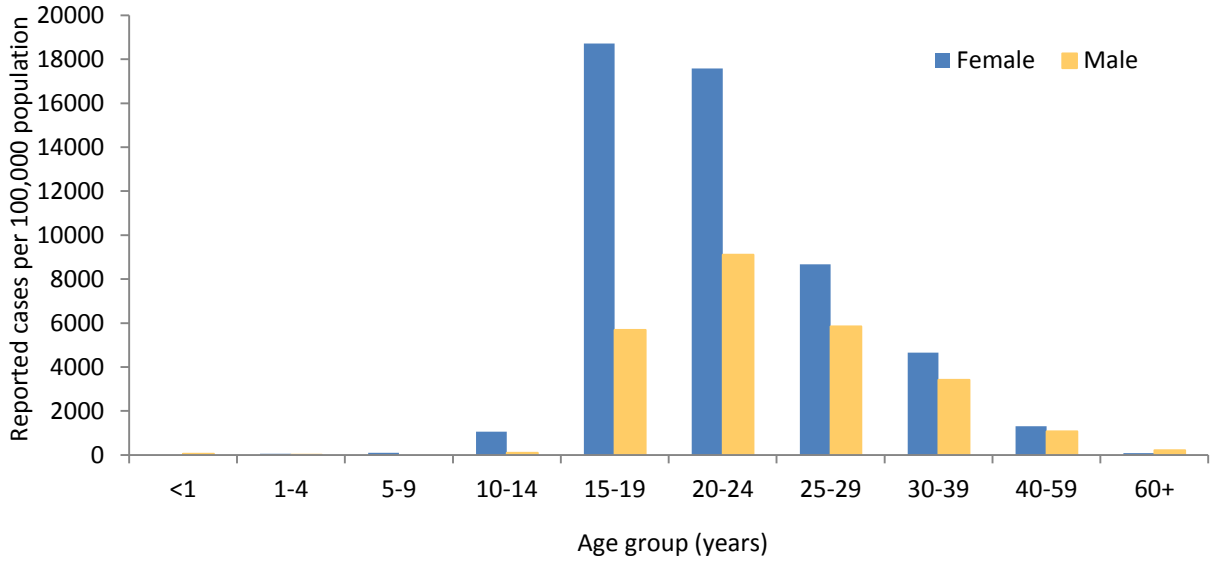


Figure 4: Average annual crude incidence rates of chlamydia in Nunavut by age and sex, 2007 to 2014.*



* *This figure contains one or more rates with numerators containing fewer than 20 cases and should be interpreted with caution; please see Appendix B for details.*

GONORRHEA

Summary:

- Gonorrhea is an STI caused by the bacteria *Neisseria gonorrhoeae.*
- Incidence in Nunavut increased from 2007 to 2010; it has since declined somewhat although not to the rate seen in 2007.
- Gonorrhea was the second most frequently reported disease in Nunavut from 2007 to 2014, and accounted for about 25% of all STIs reported in the territory.
- In 2013, the age-standardized rate was nearly 27 times higher than rate for the rest of Canada.
- Kivalliq region exhibited the highest crude incidence of any region during the period of this report.
- There was a nearly even split in the gender of cases with 53% of cases female while 47% were male.
- There were more females than males with gonorrhea among those under 25 years of age, with the opposite relationship in those over the age of 25.

Figure 5: Age-standardized incidence rates of gonorrhea in Nunavut and the rest of Canada, 2007 to 2014.

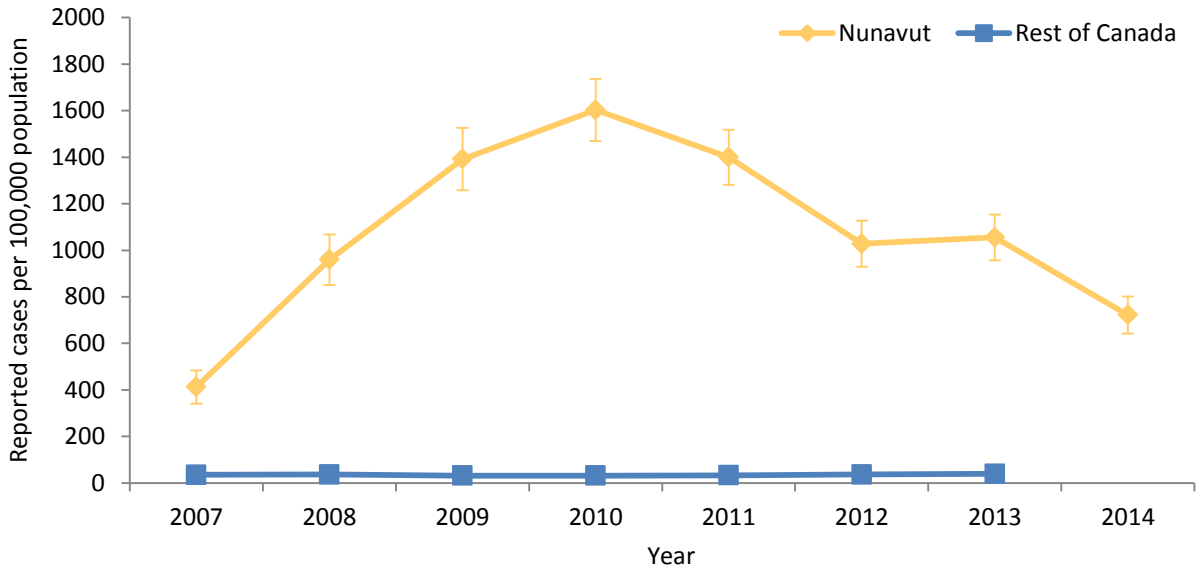


Figure 6: Crude incidence rates of gonorrhea in Nunavut by region, 2007 to 2014.*

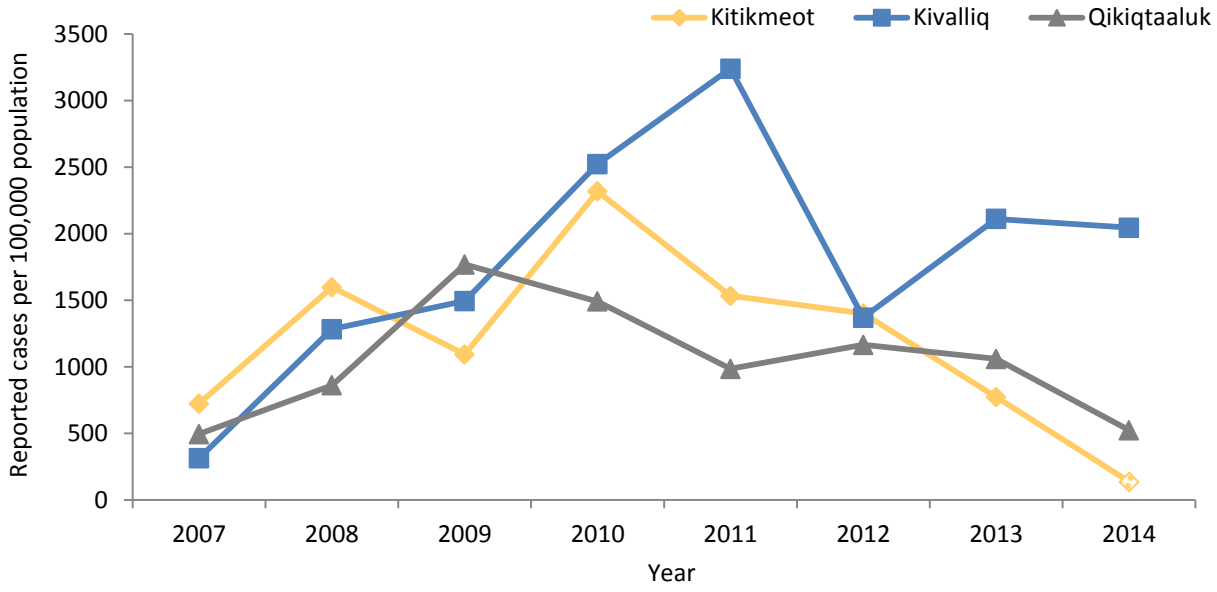
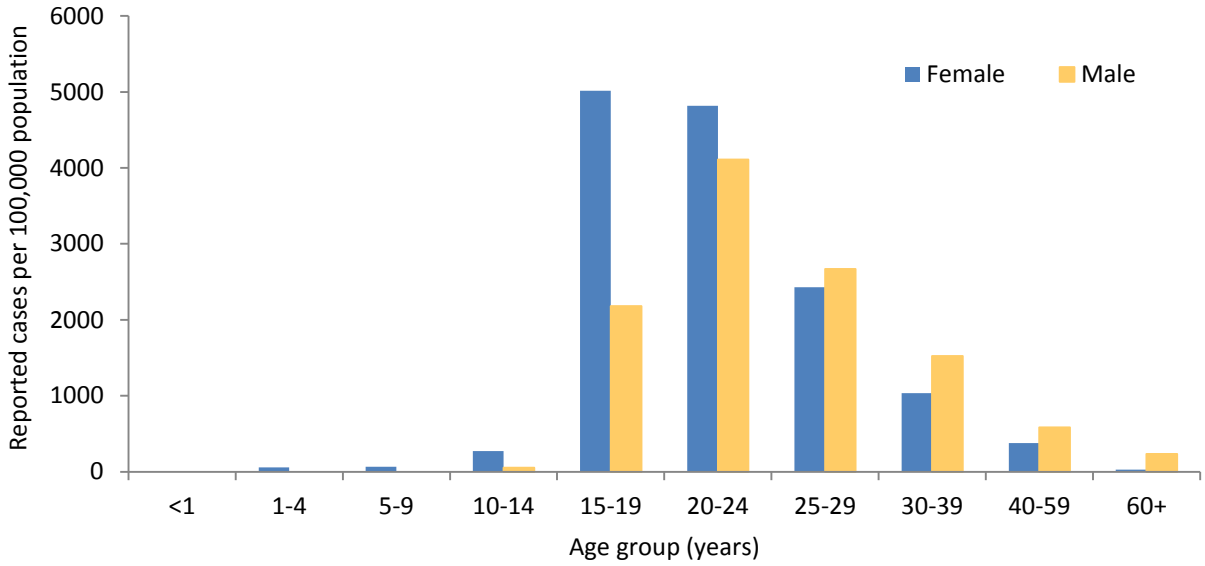


Figure 7: Average annual crude incidence rates of gonorrhea in Nunavut by age and sex, 2007 to 2014.*



* *This figure contains one or more rates with numerators containing fewer than 20 cases and should be interpreted with caution; please see Appendix B for details.*

SYPHILIS

Summary:

- Syphilis is an STI caused by the bacteria *Treponema pallidum.*
- Before the outbreak, which began in in the Qikiqtaaluk region in 2012, there were very few cases of syphilis reported in Nunavut each year. Since that time, there has been a significant increase in cases, with 94 reported in 2014, up from 59 in 2013.
- In 2014, the age-standardized incidence rate of syphilis in Nunavut was more than 15 times higher than in the rest of Canada.
- Between 2007 and 2014, almost all (98%) of syphilis cases were reported in the Qikiqtaaluk region.
- There was a nearly even split between men and women with 51% of cases female and 49% male.
- The age-distribution of cases varies by sex, with female incidence peaking between the ages of 15 and 19 while the incidence among males peaked between the ages of 25 and 29.
- For more details on the syphilis outbreak see "*Syphilis Outbreak in Nunavut: 2013 Summary*". http://gov.nu.ca/health/information/syphilis-outbreak-nunavut

Figure 8: Age-standardized incidence rates of syphilis in Nunavut and the rest of Canada, 2007 to 2014.

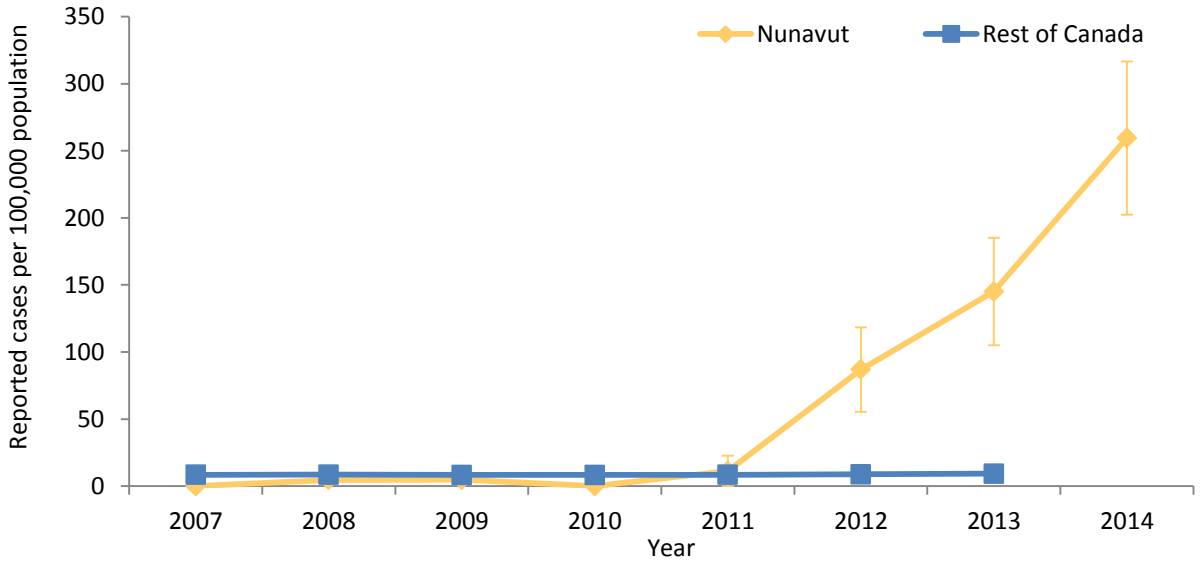


Figure 9: Crude incidence rates of syphilis in Nunavut by region, 2007 to 2014.*

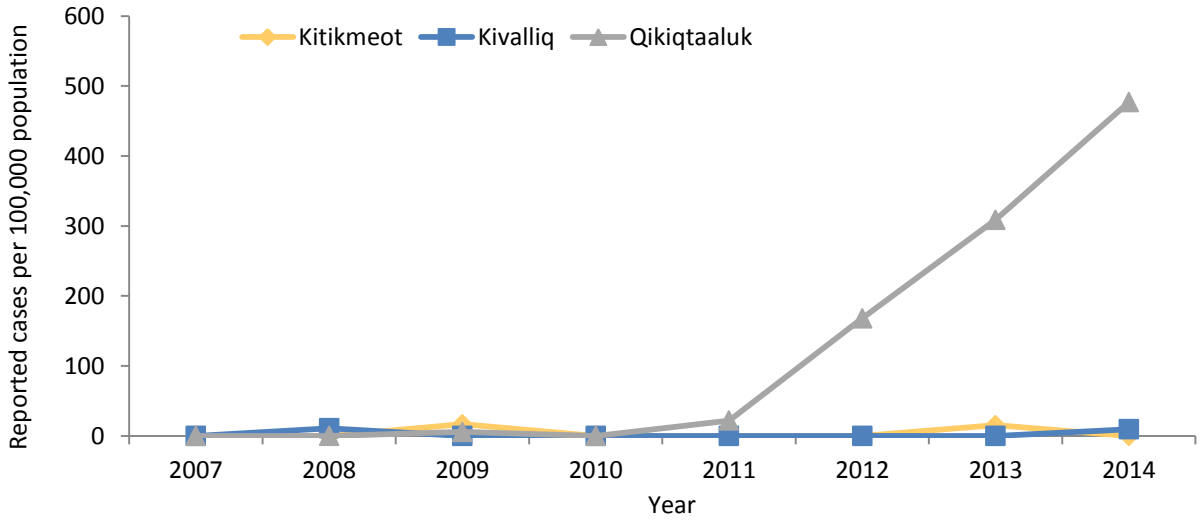
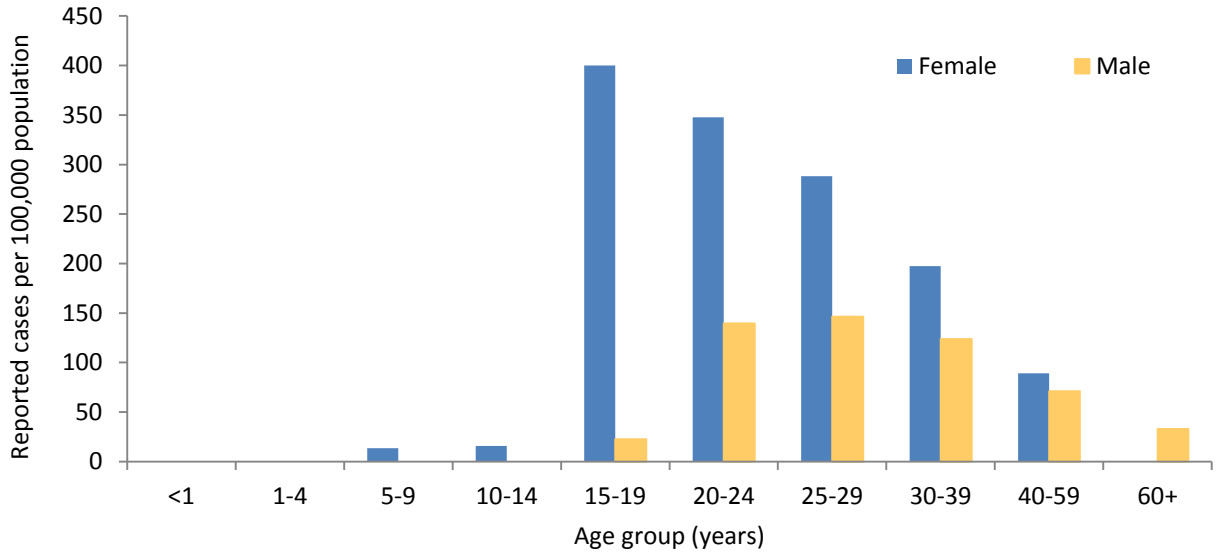


Figure 10: Average annual crude incidence rates of syphilis in Nunavut by age and sex, 2007 to 2014.*



* *This figure contains one or more rates with numerators containing fewer than 20 cases and should be interpreted with caution; please see Appendix B for details.*

BLOOD-BORNE INFECTIONS

This section includes:

- HIV/AIDS
- Hepatitis B
- Hepatitis C
- Human T-cell lymphotropic virus (HTLV)

Section summary:

- All diseases in this section are caused by viruses that may be transmissible through exposure to infected blood.
- Between 2007 and 2014 there were no cases of HIV/AIDS reported in Nunavut. There have only been three cases recorded since 1999.
- Hepatitis B and C can cause both acute and chronic diseases which are differentiated by the timing and duration of symptoms. The counts presented here represent both newly diagnosed acute cases as well as chronic cases that may have been previously diagnosed in other jurisdictions.
- The reporting of hepatitis varies by province/territory and so comparisons between Nunavut and Canada are not appropriate. Nunavut reports a combination of acute and chronic hepatitis cases, while some jurisdictions may report on only one or the other of these types of cases.
- Between 2012 and 2014 there was an average of three hepatitis B cases and four hepatitis C cases reported per year.
- HTLV screening has decreased in recent years. There was one case reported in 2013 and none in 2014.

Table 2: Frequency table of hepatitis B and C cases in Nunavut by year.

Disease/Infection	2007	2008	2009	2010	2011	2012	2013	2014	Total
Hepatitis B	3	3	6	1	17	2	4	5	**41**
Hepatitis C	3	3	5	8	11	5	2	6	**43**

INFECTIONS SPREAD BY DIRECT CONTACT

This section includes:

- Methicillin-resistant *Staphylococcus aureus* infection (MRSA)
  For information on Group B Streptococcal disease, another infection spread by direct contact, please refer to the IBD section on page 27.

MRSA

Summary:

- MRSA is a contagious bacterial infection which was initially considered a nosocomial (i.e. healthcare acquired) infection but is now more commonly present in the community.
- Differences in rates of MRSA over time and between regions may be accountable to differences in clinical practices (ex. more swabbing) more than actual disease occurrence.
- Comparisons with national data are not possible, as MRSA is not uniformly reported throughout the country.
- The Kivalliq region reported the highest incidence of MRSA between 2007 and 2014, while the Qikiqtaaluk region reported the lowest incidence during this period.
- Reported cases were 48% female, 52% male.
- The average annual incidence appears to be highest among those between 0 and 4 years of age.

Figure 13: Crude incidence rates of MRSA in Nunavut, 2007 to 2014.

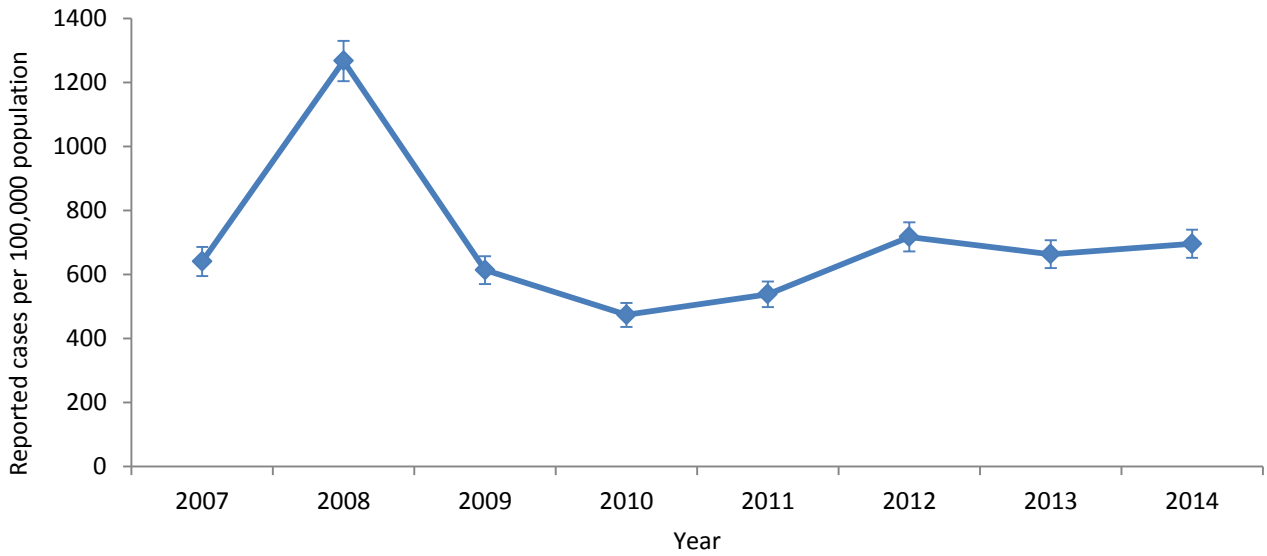


Figure 14: Crude incidence rates of MRSA in Nunavut by region, 2007 to 2014.*

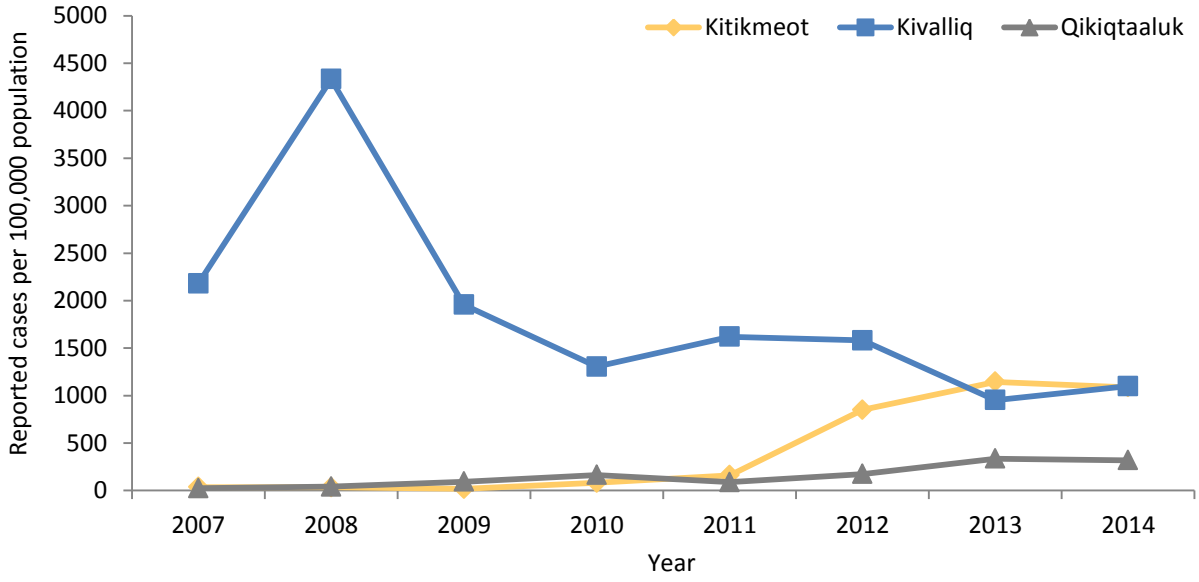
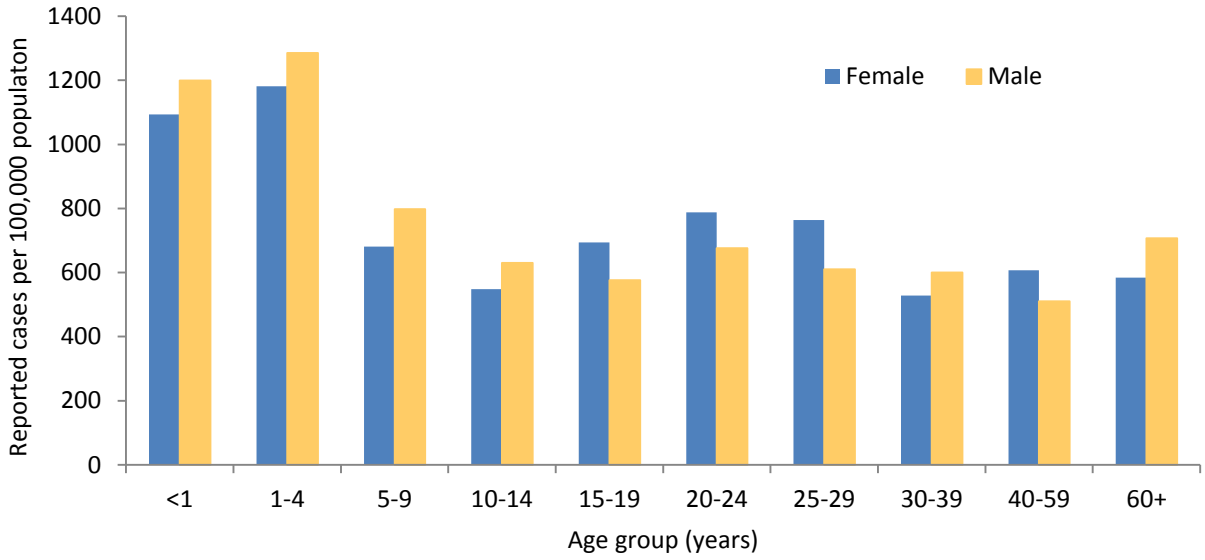


Figure 15: Average annual crude incidence rates of MRSA in Nunavut by sex and age group, 2007 to 2014.*



* *This figure contains one or more rates with numerators containing fewer than 20 cases and should be interpreted with caution; please see Appendix B for details.*

ENTERIC, FOOD AND WATERBORNE INFECTIONS

This section includes:

- Salmonellosis
- Giardiasis
- Campylobacteriosis
- Trichinosis
- Cryptosporidiosis
- Verotoxigenic *E. coli*
- Yersiniosis
- Amoebiasis
- Botulism

Section summary:

- Salmonellosis was the most commonly reported (43%) of the enteric, food and waterborne infections under surveillance.
- On average, the fewest number of monthly cases of these infections occurred in February, after which monthly counts increased slightly from March to December.
- Crude incidence varies considerably among the regions each year.
- Cases were split evenly split with 48% female and 52% male.
- The highest rates of enteric infections appear to be among those one to four years of age and those 60 years of age and over.

Figure 16: Breakdown of types of enteric, food and waterborne infections reported in Nunavut from 2007 to 2014, as percentage of total reported.

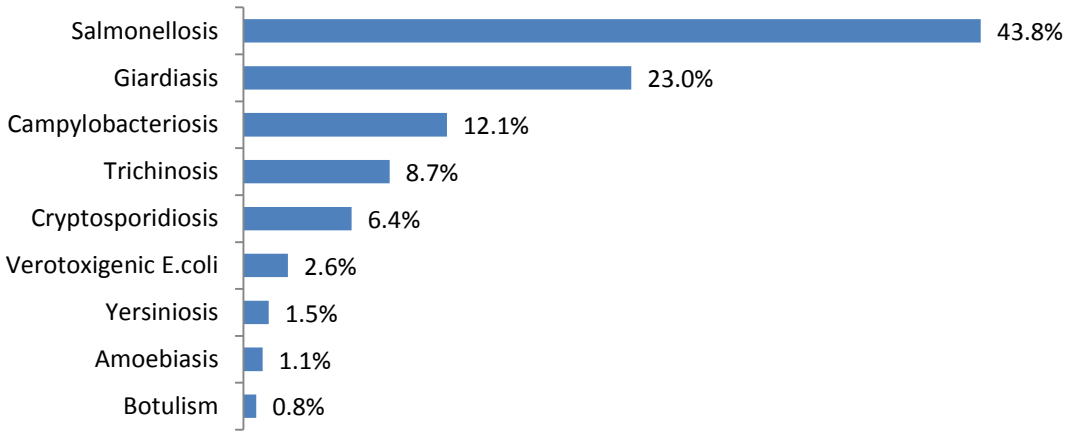


Figure 17: Average number of enteric, food and waterborne infections reported each month in Nunavut, from 2007 to 2014.

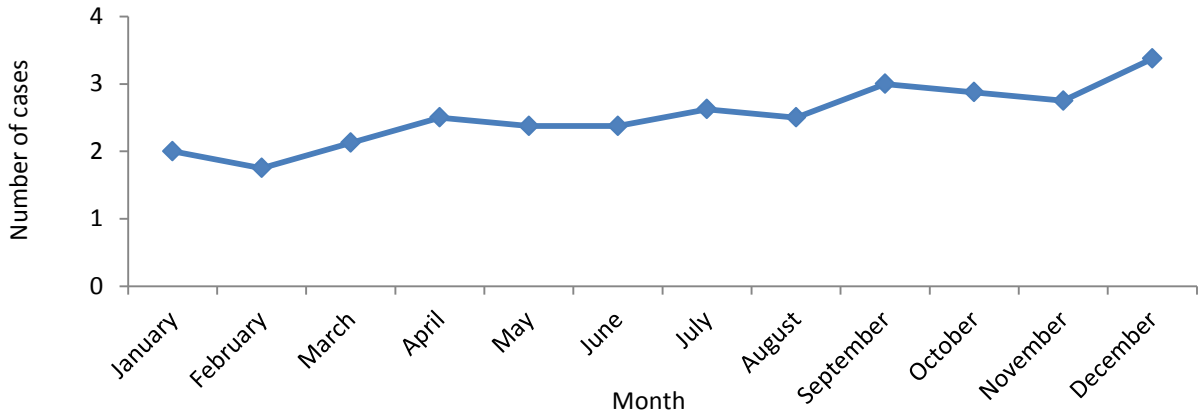
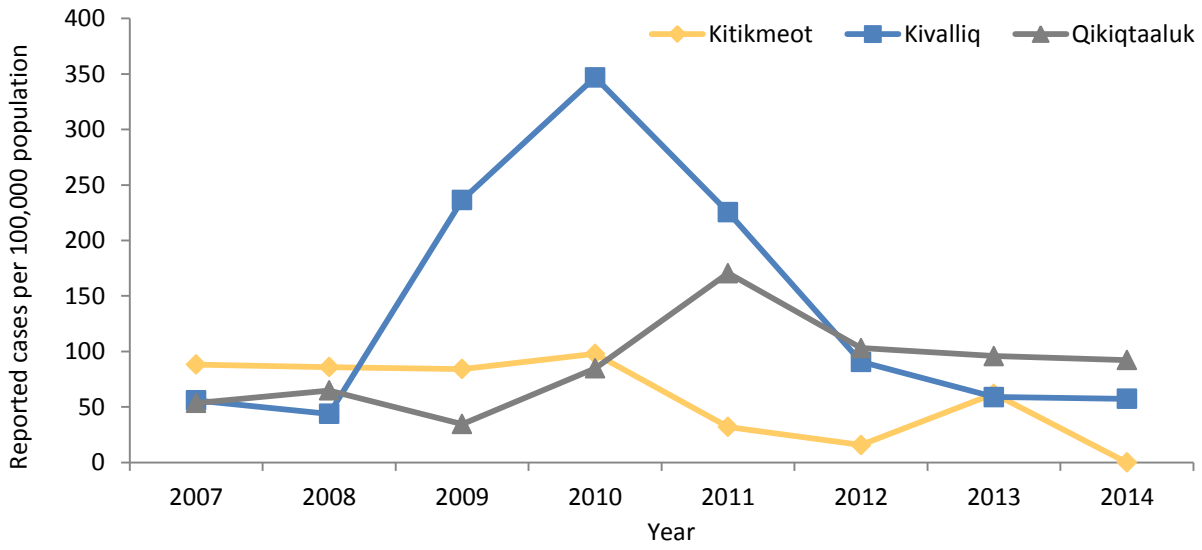
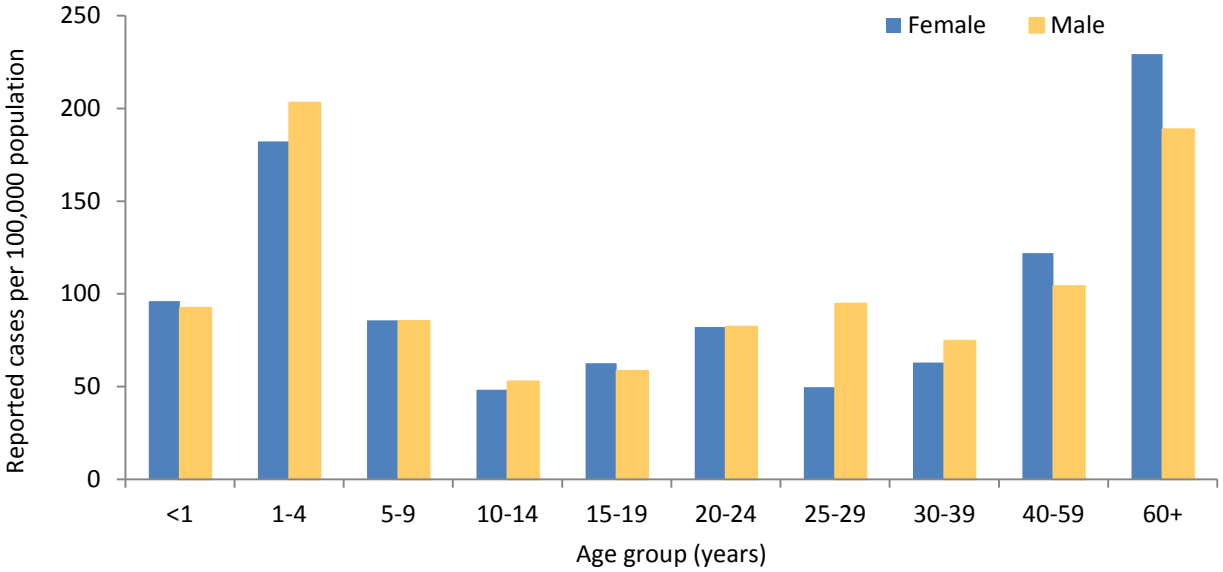


Figure 18: Crude incidence rates of all enteric, food and waterborne infections in Nunavut by region, 2007 to 2014.*



* *This figure contains one or more rates with numerators containing fewer than 20 cases and should be interpreted with caution; please see Appendix B for details.*

Figure 19: Average annual crude incidence rates of all enteric, food and waterborne infections in Nunavut by sex and age group, 2007 to 2014.*



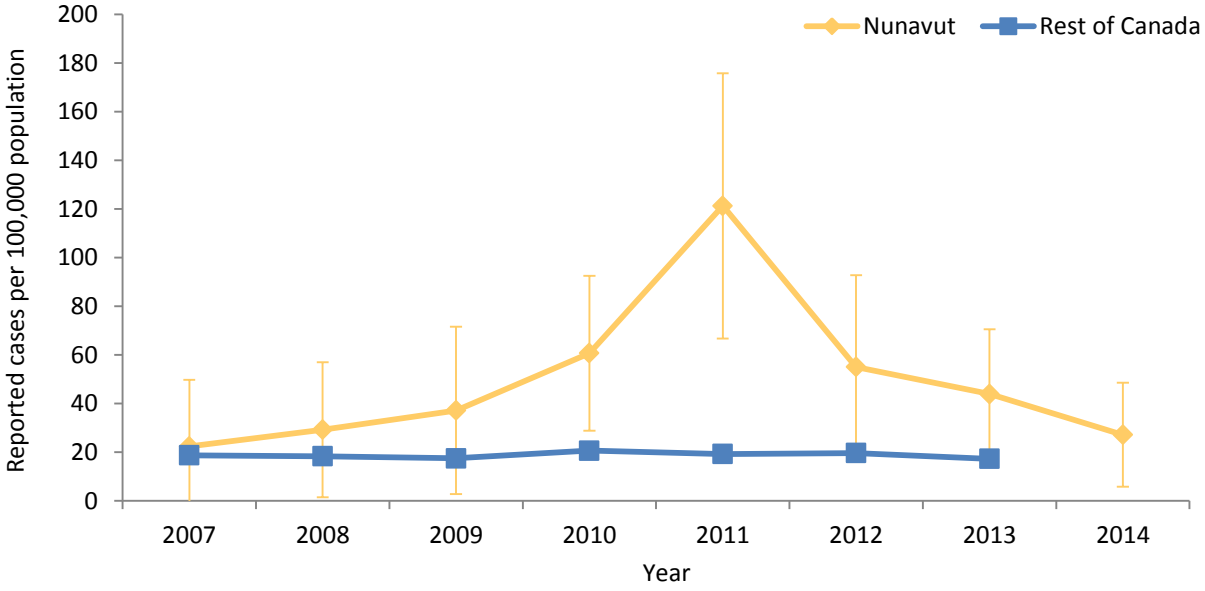
* *This figure contains one or more rates with numerators containing fewer than 20 cases and should be interpreted with caution; please see Appendix B for details.*

SALMONELLOSIS

Summary:

- Salmonellosis is a common foodborne disease often responsible for individual cases or outbreaks of gastrointestinal illness. It is caused by bacteria of the genus Salmonella.
- On average, 14 cases of salmonellosis were reported per year from 2007 to 2014.
- Peak incidence of salmonellosis occurred in 2011 with 34 cases reported, although confidence intervals overlap with preceding years, indicating that variation may be due to chance alone and should not be interpreted as being important.
- Due to small case numbers, the standard error estimations for age-standardized rates in Nunavut are wide and often overlap with those of the rest of Canada, making it difficult to conclude any real differences in rates over time.

Figure 20: Age-standardized incidence rates of salmonellosis in Nunavut and the rest of Canada, 2007 to 2014.



VACCINE-PREVENTABLE INFECTIONS

This section includes:

- Pertussis (whooping cough)
- Measles, mumps and rubella

For information on vaccine-preventable invasive bacterial diseases (Hi, IPD and IMD), see page 27.
Follow the links to see the Nunavut routine immunization schedules for children and adults.

Summary:

- There were no cases of measles, mumps, or rubella reported between 2007 and 2014.
- No cases of pertussis were reported in 2013 and 2014.
- The highest number of pertussis cases in a single year was reported in 2009 (n = 25).
- Although the Kitikmeot region showed the highest crude incidence of pertussis in a single year, Qikiqtaaluk reported about 67% of all cases between 2007 and 2014.
- The highest incidence of pertussis was found among females less than one year of age, over two-and-a-half times higher than among males of the same age group.

Figure 21: Crude incidence rates of pertussis in Nunavut by region, 2007 to 2014.*

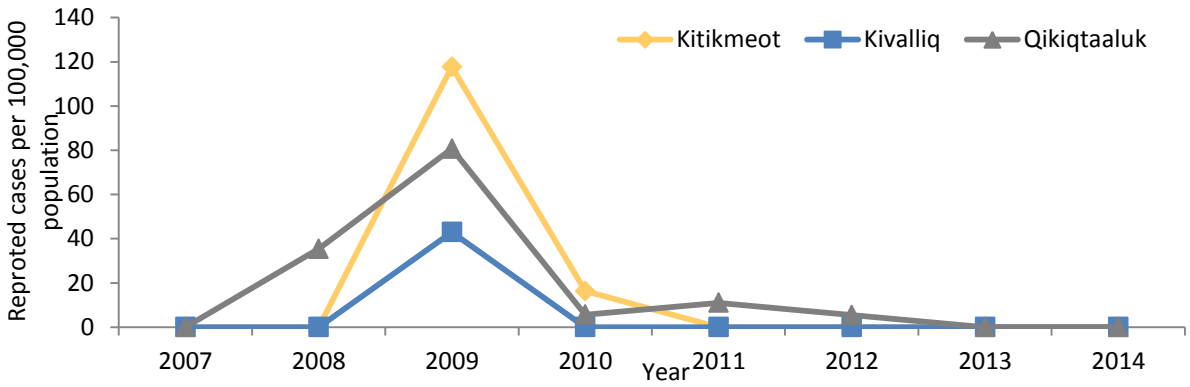
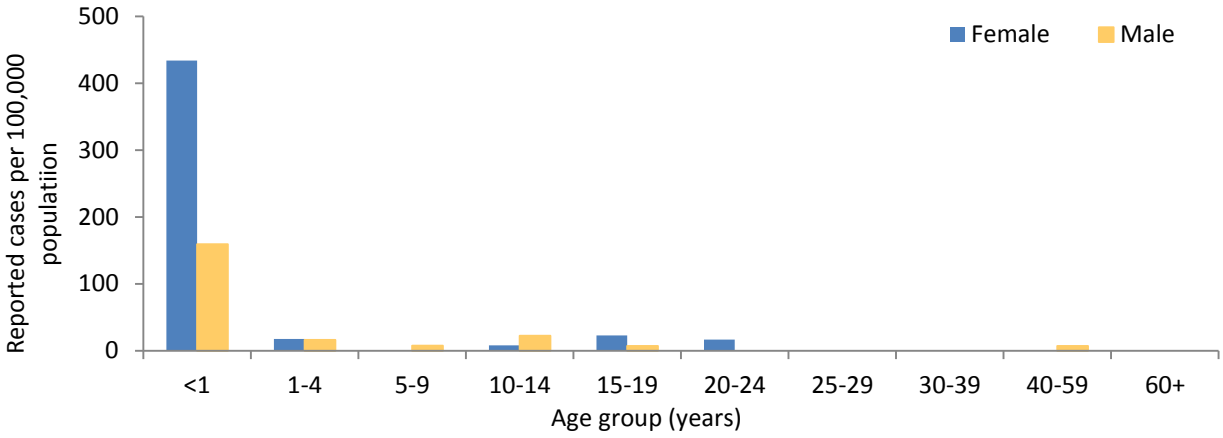


Figure 22: Average annual crude incidence rates of pertussis in Nunavut by sex and age group, 2007 to 2014.*



* *This figure contains one or more rates with numerators containing fewer than 20 cases and should be interpreted with caution; please see Appendix B for details.*

VECTORBORNE AND ZOONOTIC INFECTIONS

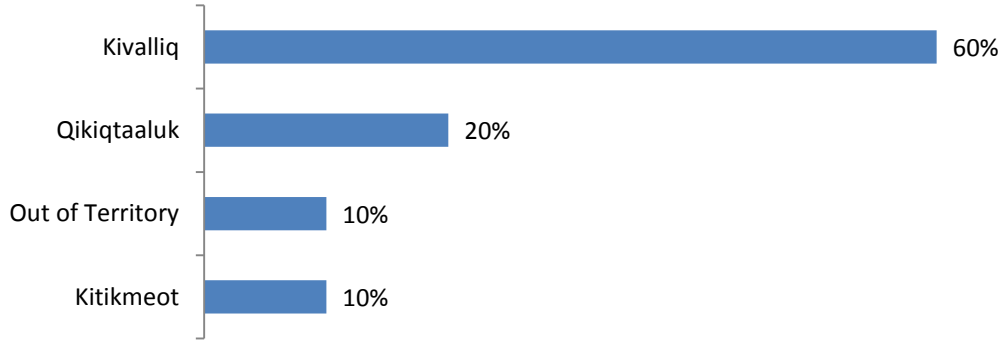
This section includes:

- Brucellosis
- Malaria
- Rabies and animal bites

Section summary:

- Vectorborne pathogens are transmitted by a vector species such as a mosquito or tick, while zoonotic pathogens are those that can be transmitted from animals to humans.
- There were ten cases of brucellosis between 2007 and 2014. Brucellosis is a zoonotic disease spread by contact with or the consumption of infected animal products.
- There was one case of malaria between 2007 and 2014. Malaria is transmitted via infected mosquitoes and is most commonly seen in tropical countries. This case was likely contracted abroad.
- While there were no reported cases of rabies in humans, there is heightened surveillance for animal exposures and bite incidents as part of disease prevention activities. This is due to the presence of endemic rabies in fox populations throughout Nunavut.

Figure 23: Breakdown of brucellosis cases by region in Nunavut as percentage of all reported, 2007 to 2014. (n=10)



TUBERCULOSIS

Summary:

- Tuberculosis is a severe illness caused by bacteria of the *Mycobacteria tuberculosis* complex. It can be both respiratory and non-respiratory in that it can affect the lungs as well as other part of the body. This report only contains incidence of active tuberculosis, and not cases of the non-infectious latent form of the disease.
- Since 2007 there has been no clear trend in tuberculosis incidence in Nunavut, although it remains consistently higher than in the rest of Canada. Annual age-standardized rates of acute disease have ranged from approximately 119 to 328 cases per 100,000.
- In 2013, the age-standardized rate of tuberculosis in Nunavut was nearly 40 times higher than the pooled rates of the rest of Canada.
- Between 2007 and 2014, 90.5% of cases occurred in Qikiqtaaluk region and 9.4% in Kivalliq region (0.1% had no region specified). There were no cases in Kitikmeot region during this period.
- Of the cases of tuberculosis 62% were male and 38% female.
- Tuberculosis in Nunavut predominantly affected individuals over 15 years of age and children under one year of age.

Figure 24: Age-standardized incidence rates of active tuberculosis in Nunavut and the rest of Canada, 2007 to 2014

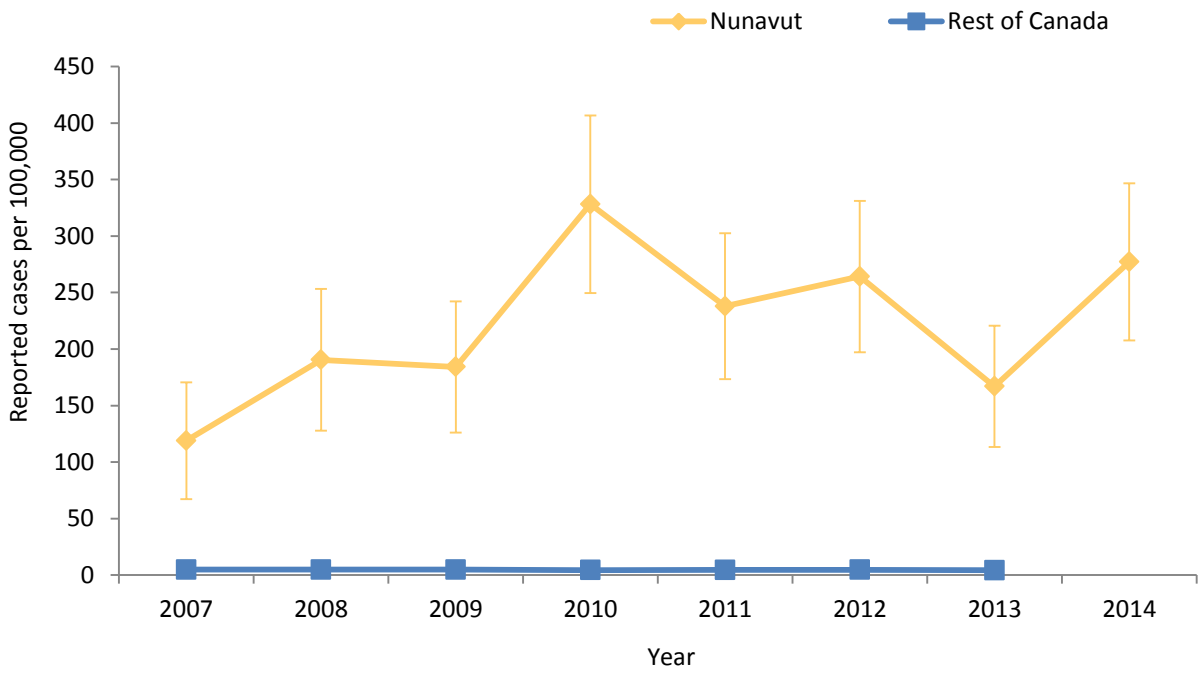


Figure 26: Crude incidence rates of active tuberculosis in Nunavut by region, 2007 to 2014.*
Note: there were no cases in the region of Kitikmeot during this period.

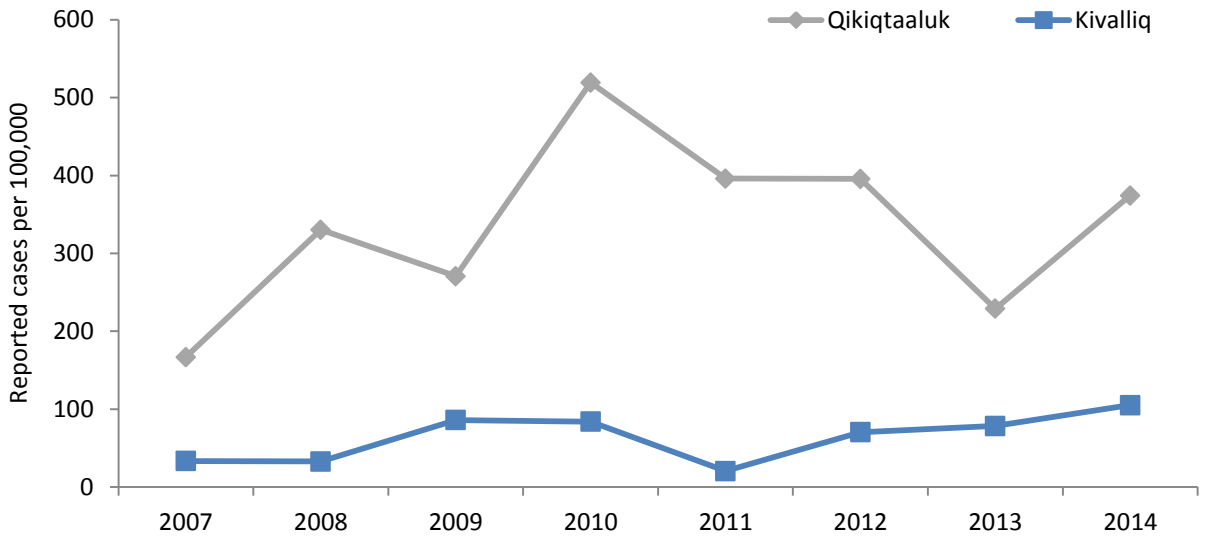
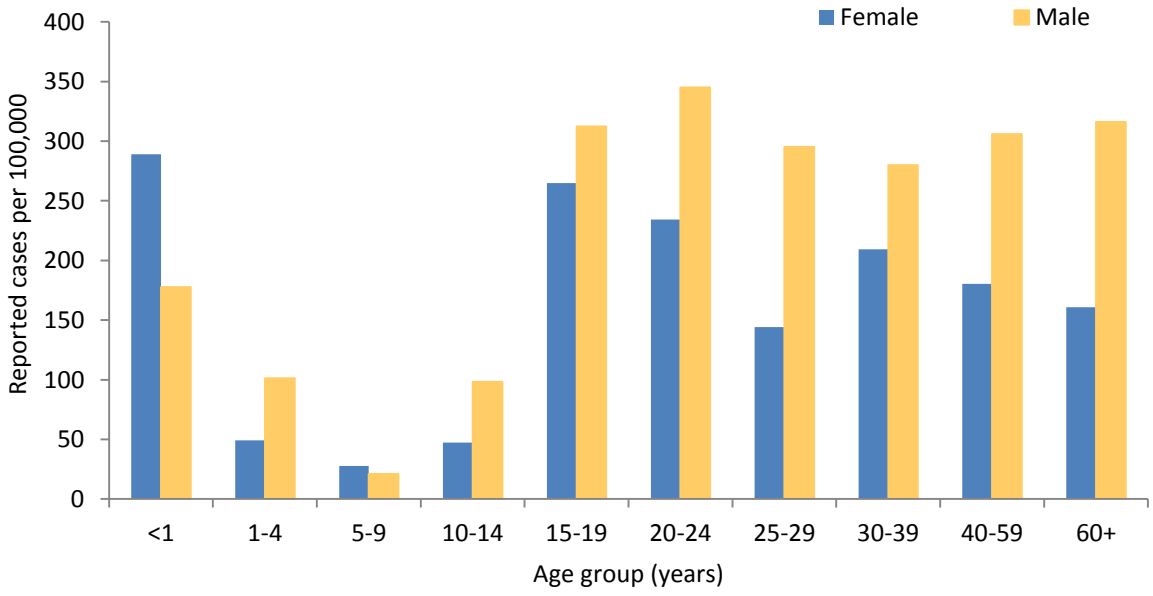


Figure 25: Average annual crude incidence rates of active tuberculosis in Nunavut by sex and age group, 2007 to 2014.*



* *This figure contains one or more rates with numerators containing fewer than 20 cases and should be interpreted with caution; please see Appendix B for details.*

INVASIVE BACTERIAL DISEASES (IBDs)

This section includes:

- Neonatal group B streptococcal disease (nGBS)
- Invasive group A streptococcal disease (iGAS, causative agent *Streptococcus pyogenes*)
- Invasive *Haemophilus influenzae* (Hi) disease
- Invasive meningococcal disease (IMD, causative agent *Neisseria meningitidis*)
- Invasive pneumococcal disease (IPD, causative agent *Streptococcus pneumoniae*)

Section summary:

- IBDs are part of International Circumpolar Surveillance (ICS) reporting, which includes northern Canadian populations as well as populations in other circumpolar countries. Northern populations tend to be more vulnerable to IBDs, warranting extra surveillance. Participating areas from Canada include Yukon, North West Territories, Northern Quebec, Nunavut and Labrador. Data for the Canadian jurisdictions was only available for 2010 to 2014.
- Hi, IMD and IPD are all transmitted via infected mucus or saliva. iGAS is spread via infected saliva or contact with infected wounds. Neonatal group B streptococcus most commonly infects infants before or during birth as a result of maternal infection.
- Vaccines currently exist for the pathogens causing IMD, Hi Type B and certain strains of IPD, but not for group B streptococcus or iGAS.
- Hi and IPD were the most reported IBDs (77% of all cases) between 2007 and 2014.
- The monthly average number of all IBDs tends to peak twice yearly: once in March (late winter) and once in August (late summer).
- The frequency, rate, and age distribution of cases in Nunavut resembles that seen in other Canadian Northern regions. Most cases occur among those less than one year of age.
- 39% of cases were among females, 61% among males.

Figure 27: Breakdown of IBDs reported in Nunavut from 2007 to 2014 as percentage of total reported. (n=149)

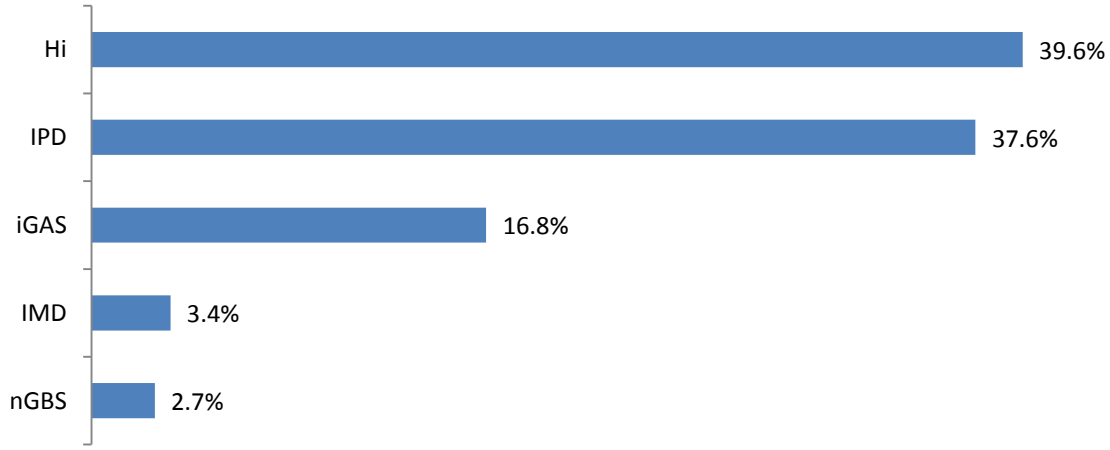


Figure 29: Age-standardized incidence rates of IBDs in Nunavut and other Northern Canadian ICS regions excluding Nunavut, 2010-2014.

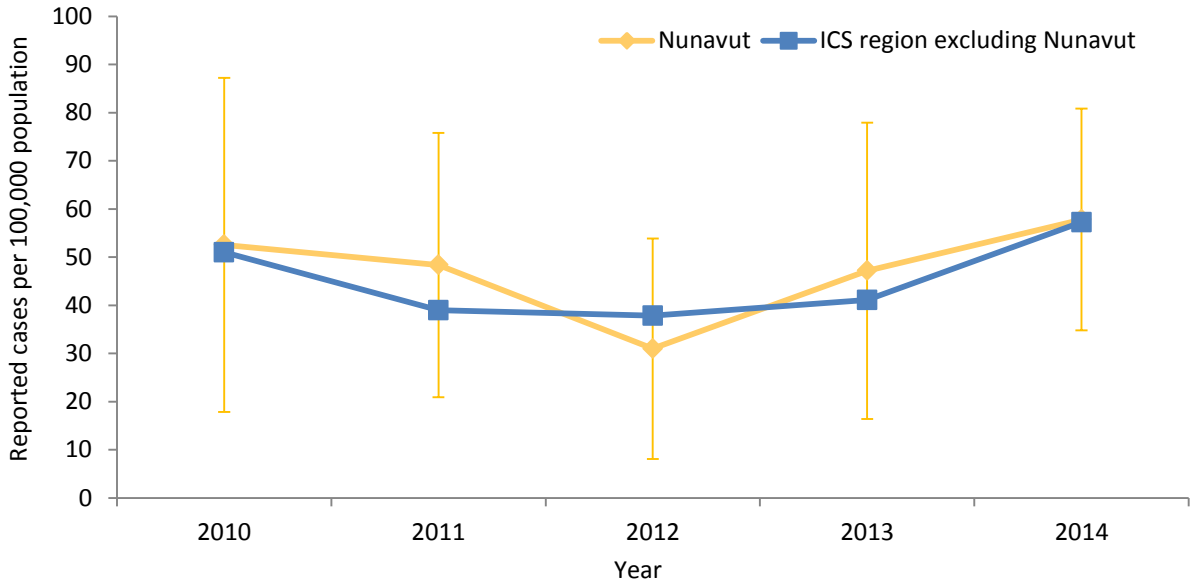


Figure 28: Average crude incidence rates of IBDs in Nunavut and other Northern Canadian ICS regions excluding Nunavut by age and sex, 2010 to 2014.*

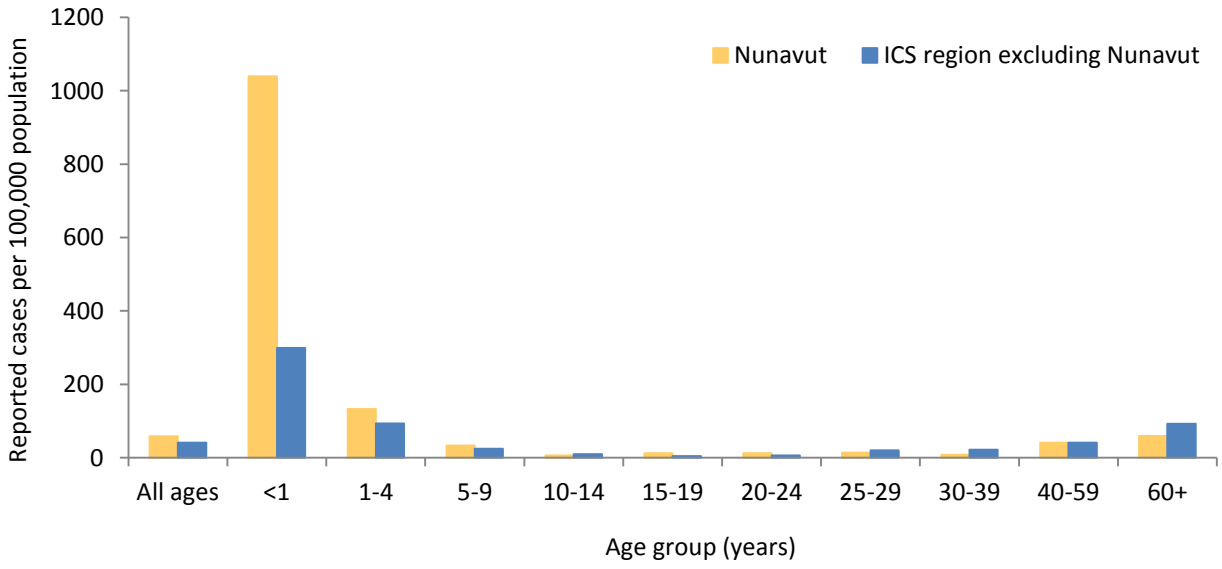
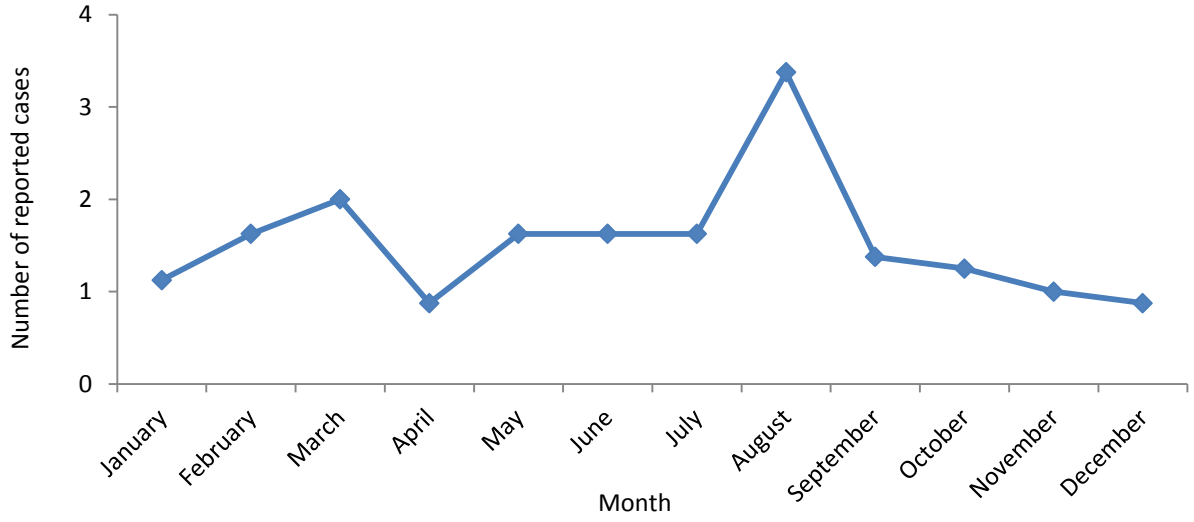


Figure 30: Average number of IBDs reported per month in Nunavut from 2007 to 2014.



Invasive *Haemophilus influenza* disease (Hi)

Summary:

- Nunavut has a publicly funded vaccine for Hi serotype B (HiB). There is currently no vaccine available for serotype A.
- About 60% of all Hi cases reported from 2007 to 2014 were Hi serotype A (HiA).
- Rates of Hi are generally similar among the regions, except for certain years in which Kitikmeot showed a spike in incidence. The dramatic variation in rates within Kitikmeot may be due to the small population and the small number of cases.

Figure 31: Breakdown of invasive *H. influenzae* cases in Nunavut by serotype, 2007 to 2014

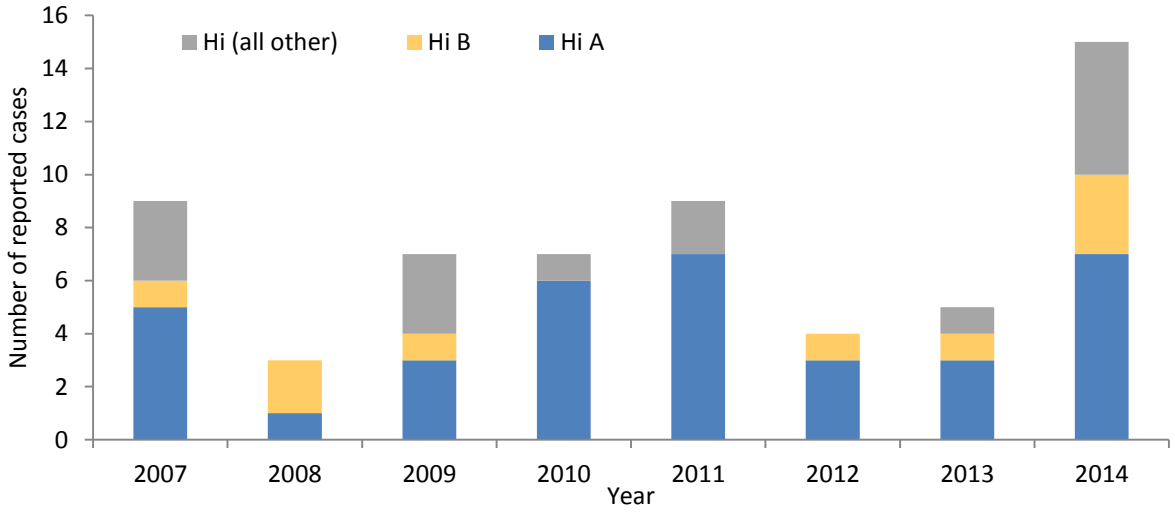
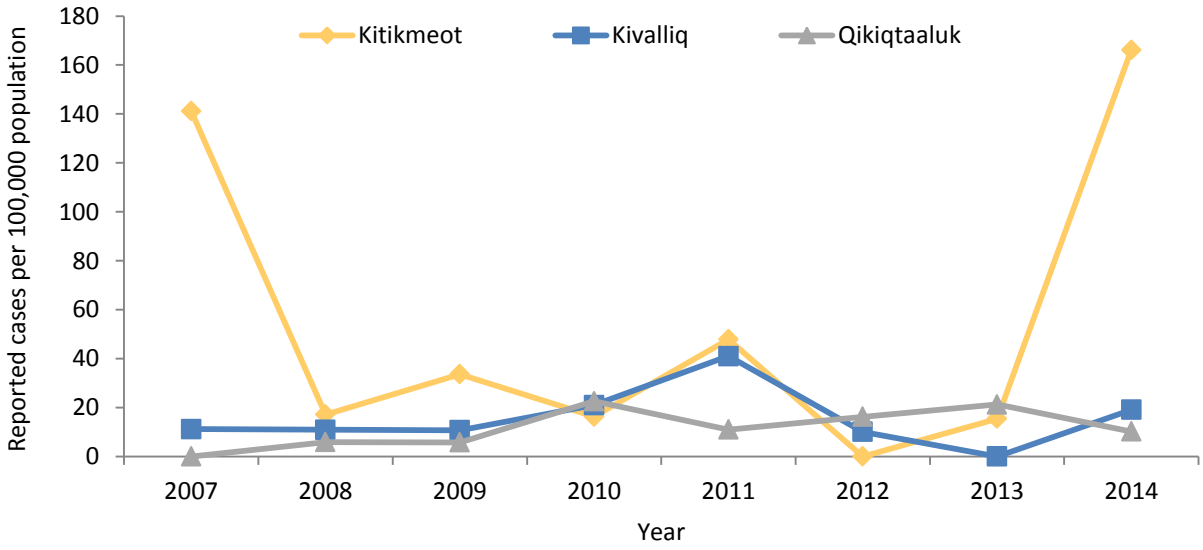


Figure 32: Crude incidence rates of invasive *H. influenzae* in Nunavut by region, 2007 to 2014. *



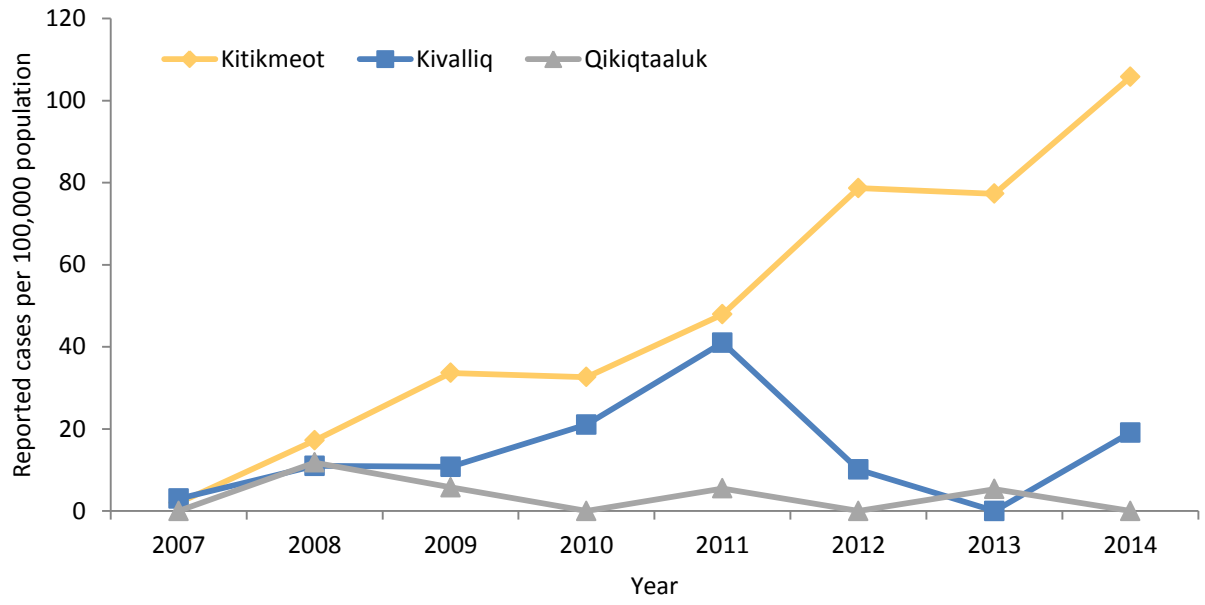
* *This figure contains one or more rates with numerators containing fewer than 20 cases and should be interpreted with caution; please see Appendix B for details.*

Invasive Pneumococcal disease (IPD)

Summary:

- IPD is caused by the *Streptococcus pneumoniae* bacterium.
- Nunavut has a publicly funded program which provides two types of vaccine protecting against multiple serotypes of the S. *pneumoniae* strain that can cause IPD.
- The Kitikmeot region has seen an increase in cases since 2007 and showed the highest crude incidence rate in a single year.

Figure 33: Crude incidence rates of IPD in Nunavut by region, 2007 to 2014. *



* *This figure contains one or more rates with numerators containing fewer than 20 cases and should be interpreted with caution; please see Appendix B for details.*

OTHER INFECTIONS SPREAD BY RESPIRATORY ROUTES

This section includes:

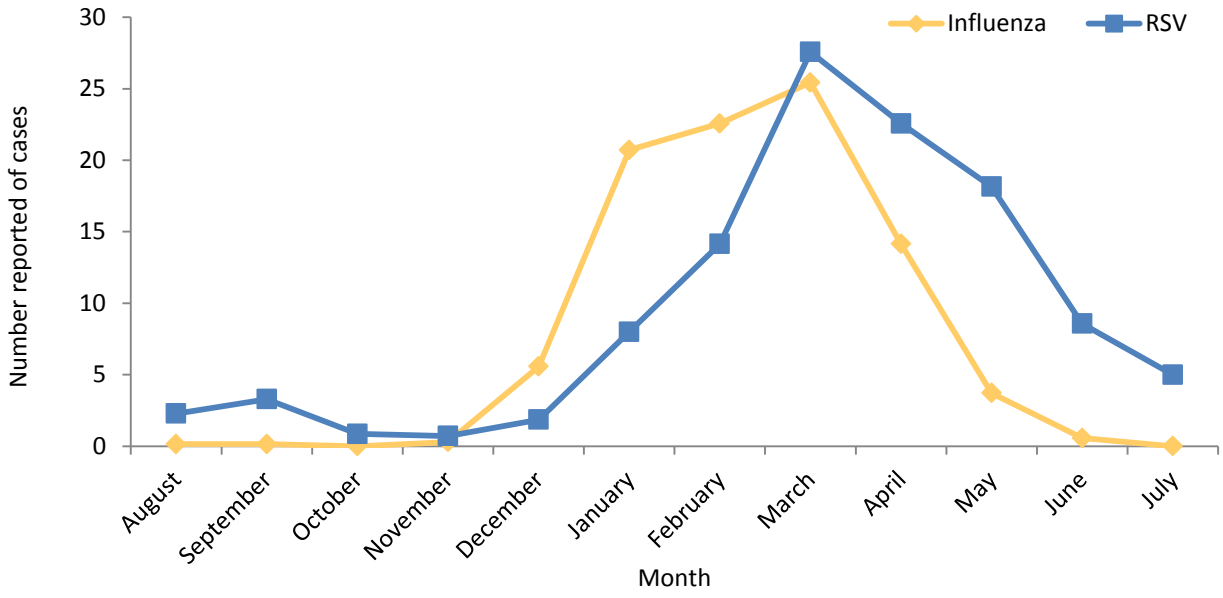
- Influenza
- Respiratory syncytial virus (RSV)
- Legionellosis

For information on Invasive Meningococcal Disease, Invasive Pneumococcal Disease and Invasive Group A Streptococcal Disease, please see page 27.

Section summary:

- Between 2007 and 2014 there were an average of 165 influenza cases per year and 123 RSV cases per year.
- The majority of influenza cases are seen from December until April. The RSV season follows a similar pattern, peaking during March.
- During the 2009 pandemic influenza outbreak, the Nunavut Department of Health conducted increased testing and surveillance for influenza. This resulted in a higher than expected number of cases being reported.
- It is important to note that 55% of influenza cases were seen among children less than 9 years of age. RSV affects even younger children, with 98% of Nunavut cases observed among those under four years of age.

Figure 34: Average number of influenza and RSV cases reported each month in Nunavut, 2007 to 2014.



CONCLUSIONS

This document represents the first time that a comprehensive report on reportable communicable diseases has been compiled by the Department of Health containing data from the time period 2007-2014. The data in this report help describe the unique context of Nunavut and identify which reportable communicable diseases constitute the greatest burden on Nunavummiut. Such information provides valuable supporting evidence for policy makers and program planners in the territory who must prioritize public health interventions and services.

It is clear that in Nunavut, sexually transmitted infections and tuberculosis represent major ongoing concerns. Invasive bacterial diseases are another concern, although rates are comparable to other regions in Northern Canada. The distribution of tuberculosis and invasive bacterial diseases also demonstrates how illness can vary between the regions.

Conversely, Nunavut has seen very few cases of certain diseases, notably HIV/AIDS and vaccine preventable diseases such as measles, mumps, rubella and pertussis, as well as other infections that are present on the Reportable Disease List (Appendix A). The reason for the very low rate of HIV/AIDS is not known given the high rate of other sexually transmitted diseases.

The hard work of front line health care providers as well as regional and territorial staff contributes to the control of communicable diseases in Nunavut.

Use This Form for the Following Reportable Diseases
(as per the 1990 *Public Health Act*, amended January 6, 2000)

SCHEDULE A – Item I
Reportable to Chief Medical Health Officer by telephone as soon as suspected and followed within 24 hours by a written report.

1. Amoebiasis
2. Anthrax
3. Botulism
4. Campylobacteriosis
5. Cholera
6. Diphtheria
7. E. coli (verotoxigenic)
8. Food Poisoning
   - I. Staphylococcal
   - II. Bacillus cereus
   - III. Clostridium perfringens
   - IV. Other and undetermined
9. Gastroenteritis, epidemic (including institutional outbreaks)
10. Hantaviral Disease (including Hantavirus Pulmonary Syndrome
11. Hemorrhagic fevers
12. Hepatitis (all forms)
    12.1 Invasive Streptococcus Pneumoniae infection
13. Influenza
14. Invasive Group A Streptococcal infections (including Toxic Shock Syndrome, necrotising fascitis, myositis and pneumonitis)
15. Invasive Haemophilus influenzae type B (HIB) infections
16. Invasive Neisseria meningitidis infections
17. Legionellosis
18. Malaria
19. Measles
20. Meningitis/Encephalitis
21. Neonatal group B Streptococcal infections
22. Pertussis (whooping cough)
23. Plague
24. Poliomyelitis
25. Rabies (or exposure to rabies)
26. Rubella and congenital Rubella syndrome
27. Salmonellosis
    27.1 Severe Acute Respiratory Syndrome (SARS)
28. Shigellosis
    28.1 Smallpox
29. Syphilis
30. Tetanus
31. Tuberculosis
32. Typhoid and paratyphoid fevers
    32.1 West Nile Virus
33. Yellow fever
34. Epidemic forms of other diseases
35. Unusual clinical manifestations of disease

SCHEDULE A – Item II
Reportable to Chief Medical Health Officer in writing within 7 days.

1. Acquired Immunodeficiency Syndrome (AIDS) and any Human Immunodeficiency Virus (HIV) Infection.
2. Brucellosis
3. Chancroid
4. Chicken Pox (Varicella)
5. Chlamydial Infections
6. Congenital Cytomegalovirus infection
7. Congenital or Neonatal Herpes simplex infection
8. Creutzfeldt-Jacob Disease
   8.1 Cryptosposidiosis
   8.2 Cyclospora
9. Giardiasis (symptomatic cases only)
10. Gonococcal infections
11. Hemolytic Uremic Syndrome
12. Human T-cell lymphotrophic Virus infection (HTLV-1 or 2)
13. Leprosy
14. Listeriosis
15. Lyme Disease
    15.1 Methicillin-resistant Staphylococcus aureus infection (MRSA)
16. Mumps
17. Psittacosis/ Ornithosis
18. Q-fever
    18.1 Respiratory Syncytial Virus (RSV)
19. Tapeworm infestations (including Echinococcal disease)
20. Trichinosis
21. Toxoplasmosis (symptomatic only)
22. Tularemia
23. Vancomycin-Resistant Enterococci (VRE)

Forward Completed Form to:

Communicable Disease Control Office
Health Protection Unit
Dept. of Health and Social Services
Box 1000, Station 1000
Iqaluit, Nunavut X0A 0H0
Phone (867) 975-5743
Fax: (867) 979-3190

Revised September 16 2003

APPENDIX B: RATES WITH SMALL NUMERATORS

Regional rates having 20 or fewer cases in the numerator do not provide sufficient evidence for decision making and should be interpreted with caution.

Regional

Diseases that have rates with small numerators are indicated by an asterisk in the following table.

Disease/Infection	Region	2007	2008	2009	2010	2011	2012	2013	2014
Syphilis	Kitikmeot	*	*	*	*	*	*	*	*
	Kivalliq	*	*	*	*	*	*	*	*
	Qikiqtaaluk	*	*	*	*	*			
MRSA	Kitikmeot	*	*	*	*	*			
	Qikiqtaaluk	*	*	*		*			
Enteric, food and waterborne infections	Kitikmeot	*	*	*	*	*	*	*	*
	Kivalliq	*	*				*	*	*
	Qikiqtaaluk	*	*	*	*		*	*	*
Pertussis	Kitikmeot	*	*	*	*	*	*	*	*
	Kivalliq	*	*	*	*	*	*	*	*
	Qikiqtaaluk	*	*	*	*	*	*	*	*
Tuberculosis	Kivalliq	*	*	*	*	*	*	*	*
IBDs (Hi and IPD)	Kitikmeot	*	*	*	*	*	*	*	*
	Kivalliq	*	*	*	*	*	*	*	*
	Qikiqtaaluk	*	*	*	*	*	*	*	*

Age group and sex

Years in which small numerators (including zero) are present are indicated. Please note that for IBD data, all years and age groups have small numerators and are not included in the chart below.

Legend: C=chlamydia, G=gonorrhea, S=syphilis, M=MRSA, E=enteric, food and waterborne, P=pertussis, T= tuberculosis.

Females

Age Group (years)	2007	2008	2009	2010	2011	2012	2013	2014
<1	CGSMEPT	CGSMEPT	CGSMEPT	CGSMEPT	CGSMEPT	CGSMEPT	CGSMEPT	CGSMEPT
1-4	CGSEPT	CGSEPT	CGSMEPT	CGSMEPT	CGSMEPT	CGSMEPT	CGSMEPT	CGSMEPT
5-9	CGSMEPT	CGSEPT	CGSMEPT	CGSMEPT	CGSMEPT	CGSMEPT	CGSMEPT	CGSMEPT
10-14	CGSMEPT	CGSEPT	CGSMEPT	CGSMEPT	CGSMEPT	CGSMEPT	CGSMEPT	CGSMEPT
15-19	SMEPT	SEPT	SMEPT	SMEPT	SMEPT	SMEPT	SMEPT	MEPT
20-24	SMEPT	SEPT	SMEPT	SMEPT	SMEPT	SMEPT	SMEPT	MEPT
25-29	GSMEPT	SMEPT	SMEPT	SMEPT	SMEPT	SMEPT	SMEPT	SMEPT
30-39	GSMEPT	GSEPT	SMEPT	SMEPT	SMEPT	SMEPT	SMEPT	GSMEPT
40-59	CGSMEPT	CGSEPT	CGSMEPT	CGSMEPT	CGSEPT	CGSEPT	CGSEPT	CGSEPT
60+	CGSMEPT	CGSMEPT	CGSMEPT	CGSMEPT	CGSMEPT	CGSMEPT	CGSMEPT	CGSMEPT

Males

Age Group (years)	2007	2008	2009	2010	2011	2012	2013	2014
<1	CGSMEPT	CGSMEPT	CGSMEPT	CGSMEPT	CGSMEPT	CGSMEPT	CGSMEPT	CGSMEPT
1-4	CGSMEPT	CGSEPT	CGSMEPT	CGSMEPT	CGSMEPT	CGSEPT	CGSEPT	CGSEPT
5-9	CGSMEPT	CGSEPT	CGSMEPT	CGSMEPT	CGSMEPT	CGSMEPT	CGSMEPT	CGSMEPT
10-14	CGSMEPT	CGSEPT	CGSMEPT	CGSMEPT	CGSMEPT	CGSMEPT	CGSMEPT	CGSMEPT
15-19	SMEPT	SMEPT	SMEPT	SMEPT	SMEPT	SMEPT	SMEPT	SMEPT
20-24	SMEPT	SEPT	SMEPT	SMEPT	SMEPT	SMEPT	SMEPT	SMEPT
25-29	SMEPT	SMEPT	SMEPT	SMEPT	SMEPT	SMEPT	SMEPT	SMEPT
30-39	GSMEPT	SEPT	SMEPT	SMEPT	SMEPT	SMEPT	SMEPT	SMEPT
40-59	CGSMEPT	CSMEPT	CSMEPT	CSMEP	CSMEPT	CGSEP	CGSEPT	CGSEPT
60+	CGSMEPT	CGSMEPT	CGSMEPT	CGSMEPT	CGSMEPT	CGSMEPT	CGSMEPT	CGSMEPT