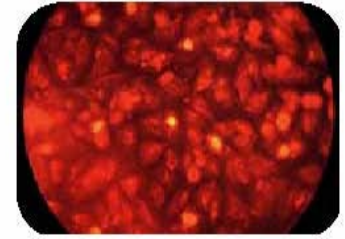
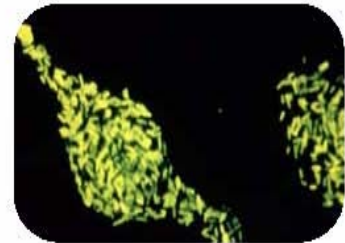
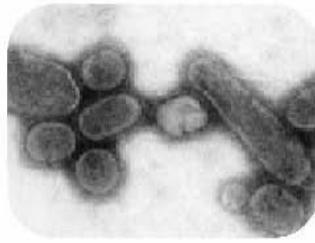
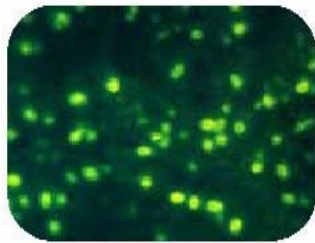


# Infectious Diseases

in Algoma 1995-2004



Algoma Health Unit  
*for healthier communities*

## Message from the Medical Officer of Health

I am pleased to present our first health status report on infectious diseases entitled *Infectious Diseases in Algoma 1995-2004*.

This report represents a comprehensive overview of diseases that have presented in the Algoma district and the role of public health in preventing and managing the spread of these diseases. Outlined below are key strategies to prevent and control infectious diseases:

### **Vaccination**

Vaccines represent the most cost effective strategy to prevent death and serious illness from infectious diseases. Prior to vaccines, many children died from infections. Childhood vaccination has dramatically reduced the tragedy that some of these infections inflicted.

### **Hygiene**

Treated water, proper food storage (refrigeration), proper cooking (adequate heat), hand washing, and overall cleanliness continue to prevent the transmission of disease and the associated illness and death.

### **Surveillance**

Occasionally, serious disease outbreaks occur. Public health monitors the incidence of disease to detect increases in the number of cases of infectious disease and/or increases in the number of severe and fatal cases of infectious disease. Control strategies and contact tracing are instituted to block the transmission of infection from one person to another. Other health agencies in the community and the general public are often able to put up barriers to infectious disease transmission and should never let down their guard.

This infectious disease report provides information and knowledge about communicable disease in Algoma. We all have a role in prevention. If anyone has questions about infectious diseases and what a person can do to prevent infection, contact staff at the Algoma Health Unit for more information.

Maintain vaccination levels and maintain living conditions that minimize your risk of contracting a serious infectious disease.



Allan A. Northan MD MHSc FRCP(C)  
Medical Officer of Health  
Algoma Health Unit

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## Acknowledgements

The development of the report *Infectious Diseases in Algoma 1995-2004* was an excellent example of teamwork and tenacity. Appreciation and recognition are extended to all the dedicated Algoma Health Unit staff who had a hand in creating this report.

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# Executive Summary

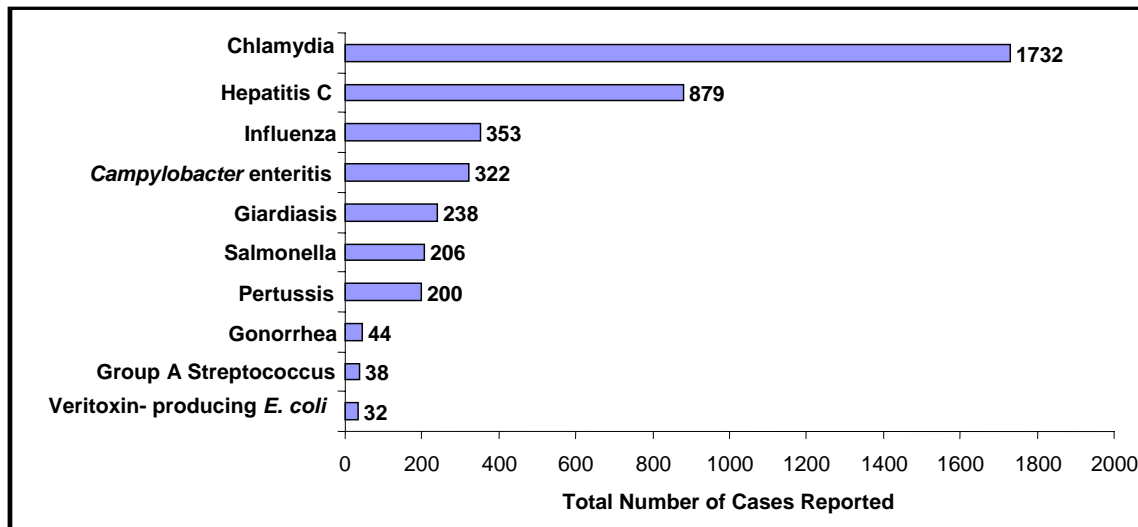
## Infectious Diseases in Algoma 1995-2004

The goal of the report *Infectious Diseases in Algoma 1995-2004*, is to provide Algoma citizens with an overview of the prevalence of infectious diseases in the Algoma district. Strategies to reduce the risk of contracting diseases are included throughout the report. The role of public health in prevention, management, and tracking of infectious diseases is also highlighted.

*Infectious Diseases in Algoma 1995- 2004* report is intended to be a resource for the Algoma Health Unit, health and social agencies, physicians and other healthcare providers, elected officials and those that provide programs and services to groups at risk for infectious diseases.

The most commonly reported infectious diseases in Algoma from 1995 to 2004 are highlighted below (Figure 1).

**Figure 1. The 10 Most Commonly Reported Infectious Diseases in Algoma 1995-2004**



## Report Highlights

### Vaccine Preventable Diseases

- Chickenpox is a common childhood disease that doesn't usually cause serious complications, but can be an uncomfortable experience for children. It is vastly underreported and public health does not publish rates. A chickenpox vaccine is now available and over the next few years it is expected that widespread vaccination will result in a significant reduction in chickenpox cases.
- *Haemophilis influenzae* type b (Hib) infection can be serious in children especially if this infection manifests as meningitis or epiglottitis. Due to widespread use of the Hib vaccine, no cases of Hib were reported between 1995 and 2004. 99% of 6-year olds in Algoma are vaccinated against Hib.

- The Algoma Health Unit provides vaccinations to travellers and other high risk individuals to prevent hepatitis A. From 1995 to 2004 there were 14 lab-confirmed cases.
- In Ontario, a hepatitis B vaccination is offered to all grade 7 students as a universal program and to individuals who meet high risk criteria. The Algoma age-adjusted rate for hepatitis B was low at 1.7 cases per 100,000 and similar to the Ontario rate of 1.5 cases per 100,000.
- For influenza from 1995 to 2004, the Algoma rate was higher than that of the province. The average age-adjusted rate was 27 cases per 100,000 in Algoma compared to 16 cases per 100,000 in Ontario. 353 lab-confirmed cases of influenza were reported, however the disease is vastly underreported making the actual presence of influenza multiples of the lab-confirmed reports. In Ontario, a universal influenza immunization program was introduced in 2000 making the vaccine free to all provincial residents aged six months or older. Since 2001, the Algoma Health Unit and the Group Health Centre have run successful community influenza campaigns that vaccinate 22,000 people per year.
- Although Algoma didn't have any outbreaks of invasive meningococcal disease (IMD) during the past decade, there were 7 lab-confirmed individual cases reported from 1995 to 2004. The average age-adjusted rate in Algoma for IMD was low at 0.6 cases per 100,000, similar to the Ontario rate of 0.7 cases per 100,000.
- Pneumococcae can cause meningitis, pneumonia, and infections of the blood. Prevnar, a vaccine against pneumococcal disease was introduced as a public vaccine in Ontario in 2005.
- There were no cases of rubella or tetanus in Algoma from 1995 to 2004.
- A measles outbreak in Algoma in 1995 resulted in 17 lab-confirmed cases. During 1995 other areas in Ontario also experienced outbreaks. As a result, in 1996 Ontario instituted a new, two-dose immunization schedule for measles using the Measles, Mumps, Rubella (MMR) vaccine. Since the two-dose program has been in place, Algoma has had no new cases of measles reported and few new cases have been reported across Ontario.
- Between 1995 and 2004, the annual age-adjusted rate for pertussis (whooping cough) in Algoma was 17 cases per 100,000 almost double the rate of the Ontario rate at 9 cases per 100,000. There were 200 lab-confirmed cases of pertussis reported in Algoma. It is important that young children are immunized against pertussis to reduce the number and severity of cases.

## **Diseases Spread by Close Personal Contact**

- The average age-adjusted rate for group A streptococcus in Algoma was 3.1 cases per 100,000 population similar to the Ontario rate at 2.4 cases per 100,000 population. From 1995 to 2004, 38 cases of invasive group A streptococcus were reported in Algoma. Invasive group A streptococcal disease includes flesh eating disease and serious infections of the blood and meningitis.
- Group B streptococcal (GBS) infections represent a serious potential health risk to newborn infants. This disease is easy to test for and very preventable. There were 7 lab-confirmed cases of GBS between 1995 and 2004 in Algoma.
- Most people who are exposed to TB bacteria do not develop active tuberculosis. When a person's immune system isn't able to kill TB germs, bacteria can remain alive but inactive. This is called latent TB infection, often detected by a positive TB skin test. A person with latent TB infection has no symptoms, is not sick, and poses no risk of spreading the bacteria. There were only 16 cases of active TB from 1995 to 2004 in Algoma. Two thirds of these cases were pulmonary TB (TB of the lungs).

## **Sexually Transmitted and Blood Borne Diseases**

- The average age-adjusted rate of lab-confirmed chlamydia infections was 194 cases per 100,000 in Algoma, greater than the provincial rate of 140 cases per 100,000. Since many chlamydia infections are symptom-free, the actual rates of infection are likely greater than the reported rates. From 1995 to 2004, there were 1732 lab-confirmed cases of chlamydia - 1312 cases were female (76%) and 420 cases were male (24%). Overall the predominant age groups for chlamydia cases were ages 20-24 and ages 25-29.
- The average age-adjusted rate for gonorrhoea was 4 cases per 100,000 in Algoma, 6.5 times less than the Ontario rate of 26 cases per 100,000. From 1995 to 2004, 44 lab-confirmed cases of gonorrhoea were reported. These cases were split evenly between males (50%) and females (50%).
- The average age-adjusted rate for newly diagnosed HIV cases was 1.0 case per 100,000 in Algoma. Ontario's rate was 2.1 cases per 100,000 double that of Algoma's. There were 12 new lab-confirmed cases of the HIV infection between 1995 and 2004.
- Fewer than 5 lab-confirmed cases of syphilis were reported to the Algoma Health Unit between 1995 and 2004 and the incidence rate per year for Ontario was 1 case per 100,000 population. It is reasonable to expect that more cases will present in Algoma as part of an increasing trend in Canada.
- The average age-adjusted rate for hepatitis C in Algoma is 67 cases per 100,000. This rate is slightly higher than the Ontario rate at 54 cases per 100,000. From 1995 to 2004, 879 lab-confirmed cases of hepatitis C were reported.

## **Gastrointestinal Diseases Spread by Food and Water**

- There were 14 lab-confirmed cases of amebiasis from 1995 to 2004.
- The average age-adjusted rate for *Campylobacter* enteritis in Algoma was 24 cases per 100,000 while the Ontario rate was higher at 43 cases per 100,000. There were 322 lab-confirmed cases from 1995 to 2004.
- Cryptosporidiosis is a parasitic infection with the majority of outbreaks worldwide occurring in recreational swimming pools that are not properly filtered by existing water treatment systems. Cryptosporidiosis has been rare in Algoma with less than 5 cases reported.
- The average age-adjusted rate for giardiasis in Algoma and Ontario is the same with 19 cases per 100,000. From 1995 to 2004 there were 238 lab-confirmed cases.
- The average age-adjusted rate for salmonellosis in Algoma was 17 cases per 100,000 with the Ontario rate at 22 cases per 100,000. From 1995 to 2004, there were 206 lab-confirmed cases of salmonella reported.
- For listeriosis, a serious yet rare infection, there were less than 5 lab-confirmed cases reported in Algoma between 1995 and 2004.
- For shigellosis, from 1995 to 2004, there were a total of 11 lab-confirmed cases reported.
- The average annual age-adjusted rate in Algoma for veritoxin-producing *Escherichia coli* (VTEC) was 2.6 cases per 100,000 compared with the Ontario rate of 4.8 cases per 100,000. The provincial rate was double that of Algoma. There were 32 lab-confirmed cases reported from 1995 and 2004.
- Yersiniosis is a bacterial infection transmitted by natural means from wild and domesticated birds and mammals to humans. From 1995 to 2004, there were a total of 24 lab-confirmed cases reported in Algoma.

## **Diseases Spread by Insects and Animals**

- In Algoma, Lyme disease is rare with less than 5 lab-confirmed cases between 1995 and 2004.
- Malaria is rare in Algoma with less than 5 cases reported between 1995 and 2004. Malaria usually can be prevented by the use of anti-malarial drugs and personal protection measures against mosquito bites. Malaria is not contracted in Algoma but people can be infected when travelling to malaria endemic destinations. Suspicion of malaria should be entertained when diagnosing fevers of unknown origin where travel has been part of the picture.
- The Algoma Health Unit investigates more than 300 animal-to-human contacts each year. There were no human cases of rabies in Algoma.
- In Algoma, West Nile virus was first detected in a crow in 2001. Since then, positive birds have been confirmed across the district. The first positive mosquito was trapped in August 2005. There has been no detection of human or animal cases of the West Nile virus to date.

# Infectious Diseases in Algoma 1995-2004

## Overview

### Introduction

Infectious diseases are those diseases that spread from one host to another. The host may be a person or an animal. In either case, an agent -- a parasite, bacterium, virus -- multiplies in the host and then travels to another person. This is how the disease is spread through the population. Because of the potential for widespread outbreaks, certain infectious diseases are deemed reportable by law.

Healthcare providers and other professionals who know or believe a person may have a reportable infectious disease shall immediately report the information to the Medical Officer of Health. The current list of Reportable Diseases for Ontario can be found in Appendix 1. These diseases are reportable so that health agencies can take appropriate steps to reduce the spread of diseases.

### Public Health's Role

The Algoma Health Unit monitors reported cases of these diseases to prevent further spread. For example, public health staff may:

- track people who have been in close contact with a person who has the disease to make sure these additional people get tested for the disease or take precautionary measures to reduce their risk of getting the disease;
- track the original source to reduce the risk;
- examine trends in a number of cases of reportable diseases to focus public health interventions; and
- educate people on ways to protect themselves including ways to prevent disease such as receiving vaccinations and practicing safer personal behaviours.

The report you are reading summarizes the incidence of reportable diseases in Algoma between 1995 and 2004. We report these data to provide a snapshot on this dimension of our community's health and also to highlight the need to remain vigilant in immunizations, to practice safe food handling techniques and to encourage people to protect their own health. We explain patterns over time in the disease rates, describe public health's actions to reduce the burden of that

disease to our community and suggest ways in which you can reduce your risk of catching the disease.

The diseases in this report are grouped by the following headings:

- Vaccine Preventable Diseases
- Diseases Spread by Close Personal Contact
- Sexually Transmitted Infections (STIs) and Blood Borne Diseases
- Diseases Spread by Food and Water
- Diseases Spread by Insects and Animals

## Data Source and Interpretation

The source for Algoma data cited in this report is from the Ministry of Health and Long-Term Care's integrated Public Health Information System (iPHIS). iPHIS is an information system for public health reporting and surveillance in Ontario, under the *Health Protection and Promotion Act* (HPPA). In 2005, iPHIS replaced the Reportable Disease Information System (RDIS) and during which time data conversion occurred. The source for the provincial data is Reportable Diseases Online, a web publication of Health Canada.

Only lab-confirmed cases of diseases are accounted for in this report. In many instances the number of cases for some diseases is undoubtedly higher than the number indicated in this report, as it is very probable that not all persons presenting symptoms sought medical attention. Also with diseases caused by contaminated food and water, it is sometimes difficult to isolate the exact cause of the illness so not all cases can be designated as lab-confirmed.

For some diseases, annual age-adjusted rates are reported. For other diseases, the annual number of cases is too low to report and we thus report the average rate over the time period of 1995 to 2004. When case counts are low (less than 5 cases) the exact case count is not stated because such reporting may compromise the confidentiality of the persons who contracted the disease.

Age-adjusted rates take into account any differences in the age structure of two communities or changes in age structure of a population over time. Age-adjusted rates represent the overall disease rate of a community as if it had the same population structure as a reference population (for example, the population structure of Ontario as a whole). This adjustment corrects for differences in age structures of the population. Thus only age-adjusted rates, standardized with the same reference population should be used to compare communities.

Confidence intervals have also been used to determine if the variability between the Algoma disease rate and the Ontario disease rate is statistically below, above, or no different. Because of the large numbers of cases of diseases reported in Ontario, the data is considered to be of census quality and thus stable. Therefore, for the purposes of comparison in this report Ontario

confidence intervals are not necessary. If the Algoma confidence intervals overlap the Ontario rate, then we can conclude that the difference between the two rates is not statistically significant.

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## Vaccine Preventable Diseases

The widespread use of vaccinations has reduced the burden of many diseases and has even eliminated some. Some immunizations received in childhood, such as tetanus, require periodic boosters, while other immunizations, such as influenza, are more short lived and require annual shots.

---

### Chickenpox

Chickenpox is caused by the *Varicella-zoster* virus and is highly contagious. Most cases of chickenpox occur in children before 12 years of age.

Children with chickenpox will feel flu-like symptoms such as fatigue, mild headache, fever up to 39° C (102° F), chills and muscle or joint aches a day or two before the itchy, red rash appears. The rash appears anywhere on the body as raised red blisters that are extremely itchy. Some children have only a few blisters while others can have as many as 500. Children will be most infectious (contagious) from 1 to 2 days before the rash appears. These blisters dry up and form scabs in 4 to 5 days.

Everyone who has been infected with chickenpox carries the virus for the rest of their life. The virus can reactivate and appear later in life as shingles. Individuals with chickenpox should avoid contact with pregnant women, newborns, and persons with weakened immune systems. A chickenpox vaccine is now available and is publicly funded for children 1 year of age and children 5 years of age who have never had chickenpox. Over the next few years, it is expected that widespread vaccination will result in a significant reduction in chickenpox cases.

Chickenpox is a reportable disease but since it is such a common childhood disease that does not generally cause serious complications, parents often do not report cases to their healthcare providers. Thus, the disease is vastly underreported, and public health generally does not publish the reported incidence rates.

## *Haemophilus Influenzae* Type b (Hib)

*Haemophilus influenzae* type b (Hib) was the most common cause of bacterial meningitis and a leading cause of other serious invasive infections in young children before the introduction of Hib vaccines in Canada in 1988. Hib also causes a serious infection of the throat making it difficult for children to breathe (epiglottitis). Hib spreads to others through coughing and sneezing.

Hib is a modern success story about the effectiveness of how vaccines prevent disease and clearly illustrates why all children need to be vaccinated. Prior to the introduction of this vaccine, Hib caused serious sickness and death in young children.

### **In Algoma**

Due to the widespread use of the Hib vaccine, no cases of Hib were reported in Algoma between 1995 and 2004 compared to pre-vaccine era.

During the period of this report, 99% of 6-year-old children in the district of Algoma were vaccinated against Hib.

## Hepatitis A

Hepatitis A, is caused by the hepatitis A virus (HAV) and is transmitted through food and water. The illness is often associated with travelling to tropical destinations and symptoms can range from fever, cramps, diarrhea, anorexia, nausea, and jaundice. The Algoma Health Unit conducts travel consultations for residents who are planning to travel to other countries. These consultations provide information about the risk of hepatitis A infections and about the need to be careful of where and what you eat and drink while travelling. Vaccinations to prevent hepatitis A are also offered to travellers and others at risk for hepatitis A infections.

### **In Algoma**

From 1995 to 2004, there were 14 lab-confirmed cases of hepatitis A.

## Hepatitis B

Hepatitis B, the most prevalent type of hepatitis worldwide, is spread through the blood and other body fluids from an infected person. This infection is caused by the hepatitis B virus (HBV). It is primarily a sexually transmitted disease, but it can also be contracted through dirty needles during intravenous drug use, body and ear piercing, and tattooing. An infected mother can pass it to her child at birth.

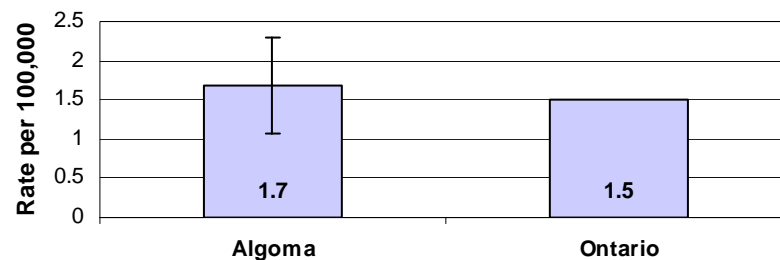
The hepatitis B infection can present with symptoms ranging from no symptoms at all to mild non-specific illness like loss of appetite, nausea, and tiredness, to signs of severe liver involvement including jaundice of the skin and eyes, to liver failure. It is the biggest cause of liver disease worldwide.

Hepatitis B can be prevented by adopting safer sex practices, immunization with hepatitis B vaccine or giving hepatitis B immune globulin to people who have had recent contact with infected body fluids. In Ontario, a hepatitis B vaccination is offered to all grade 7 students as a universal program. Hepatitis B vaccine is also offered to individuals who meet high risk criteria.

### In Algoma

The age-adjusted rate for hepatitis B in Algoma was 1.7 cases per 100,000 population. This was similar to the Ontario rate of 1.5 cases per 100,000 population (Figure 2).

**Figure 2. Average Age-Adjusted Rates for Hepatitis B, Algoma and Ontario, 1995-2004**



In Algoma between 1995 and 2004, 20 lab-confirmed cases of hepatitis B were reported.

### Influenza

Influenza, commonly known as “the flu” is a serious, acute respiratory infection caused by a virus. People who get influenza have a cough, fever, chills, sore throat, headache, muscle aches, and fatigue. Children can also get earaches, nausea, vomiting, and diarrhea. Illness due to influenza usually lasts from 3 to 5 days, but can last longer. Coughing and fatigue can persist for several weeks, making the return to full personal and work activities difficult. Influenza is a serious disease that can cause death in the elderly. Vaccinations can prevent many strains of influenza. Because the strains vary each year, yearly flu shots are necessary.

Although lab-confirmed cases of influenza are reportable, since most people do not require hospital care, the disease is vastly underreported making the actual

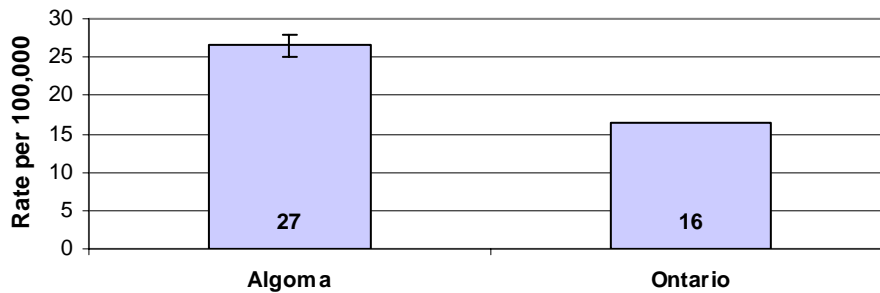
presence of influenza multiples of the lab-confirmed reports. In Ontario, a universal influenza immunization program was introduced in 2000 making the vaccine free to all provincial residents aged six months or older.

### In Algoma

Since 2001, the Algoma Health Unit and the Group Health Centre have formed a partnership to run an influenza vaccination campaign. This very successful campaign vaccinates approximately 22,000 individuals per year. Many physicians, worksites, and pharmacies also vaccinate against influenza annually.

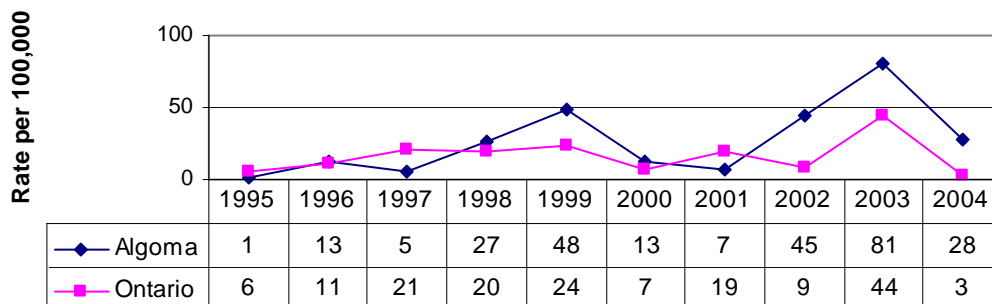
From 1995 to 2004, the average age-adjusted rate for influenza was 27 cases per 100,000 in Algoma, higher than the Ontario rate at 16 cases per 100,000 (Figure 3).

**Figure 3. Average Age-Adjusted Rates for Influenza, Algoma and Ontario, 1995-2004**



The annual age-adjusted rates for both Algoma and Ontario followed similar trends with two influenza outbreaks occurring in Algoma in 1998-1999 and 2002-2003 (Figure 4).

**Figure 4 . Annual Age-Adjusted Rates for Influenza, Algoma and Ontario, 1995-2004**



In Algoma there were 353 lab-confirmed cases of influenza reported from 1995 to 2004.

## Invasive Meningococcal Disease (IMD)

Invasive (life threatening) meningococcal disease (IMD) is caused by the bacterium, *Neisseria meningitidis*, also called the meningococcus. There are several strains of the bacterium.

Meningococcal disease often affects previously healthy people of all ages; they can become extremely ill rapidly. Life threatening illness arises when the infection invades the lining of the brain (meningitis) or the blood stream (blood poisoning).

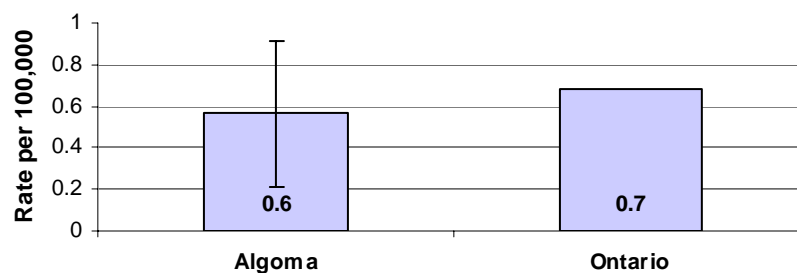
Life threatening meningococcal disease occurs in Canada, and periods of increased activity occur roughly every 10 to 15 years but with no consistent pattern. Children under 1 year of age are at highest risk, followed by those under 5 years, and then those between 15 and 19 years of age.

Some types of meningococcal disease can be prevented by routine immunization. In Ontario, a publicly funded meningococcal C vaccine is now available to 1-year-old children, children in grade 7 and those aged 15 to 19 years of age. Vaccination is the best protection against this disease.

### In Algoma

The average age-adjusted rate in Algoma for invasive meningococcal disease was 0.6 cases per 100,000 population, similar to the Ontario rate of 0.7 cases per 100,000 population (Figure 5). Fortunately, this is a rare disease.

**Figure 5. Average Age-Adjusted Rates for Invasive Meningococcal Disease, Algoma and Ontario, 1995-2004**



Although Algoma did not report any invasive meningococcal outbreaks during the past decade, there were 7 lab-confirmed individual cases of IMD reported to the Algoma Health Unit from 1995 to 2004.

## Invasive Pneumococcal Disease (IPD)

*Streptococcus pneumoniae* (pneumococcus) is the leading cause of bacterial infection in infants and young children. In a nationwide Canadian study, 88% of invasive (life threatening) pneumococcal infections occurred in children under 5 years of age. Children under 2 years of age are particularly vulnerable.

Children who attend daycare have approximately 2-3 times greater risk for contracting invasive pneumococcal disease (IPD). The elderly, and adults who are immuno-compromised or have certain chronic illnesses, are also at higher risk.

Pneumococcal diseases are caused by bacteria. They are serious diseases that are very common and potentially life threatening to children. Examples of pneumococcal diseases are meningitis (infection of the lining of the brain), bacteremia (blood infection), pneumonia (inflammation of the lungs), and acute otitis media (middle ear infections).

The bacteria are spread from person to person by coughing or sneezing and sharing food or drink. With young children the bacteria is also spread when sharing toys that are frequently put in their mouths, such as those used for teething. It is common for people, especially children, to carry the bacteria in their throats without becoming ill from it.

There are 90 different types of *streptococcus pneumoniae* bacteria. Although a pneumococcal vaccine that protects against 23 of these types has been available for several years for individuals over 2 years of age, until recently there has been no vaccine available for children under the age of 2 years. Prevnar is the only pneumococcal vaccine that can be used for immunization of infants from 6 weeks to 2 years of age. This vaccine provides protection in 97% of children who are vaccinated. This vaccine provides protection against the 7 main types of *streptococcus pneumoniae* that account for over 85% of all life threatening infections in children. The routine schedule is 2, 4, 6, and 12-15 months of age.

Invasive pneumococcal diseases became reportable in Ontario in 2001. Prior to 2002, IPD cases were combined with incidence of encephalitis.

### **In Algoma**

Twenty-seven (27) lab-confirmed cases of IPD were reported to the Algoma Health Unit during the 3-year period from 2001 to 2004, with more than 50% of the cases occurring in 2004.

## Measles

Measles (rubeola) is a very contagious disease. It causes rash, cough and fever, and can lead to ear and eye infections, pneumonia, diarrhea, seizures, brain damage, and even death. Fortunately, it is vaccine preventable.

The vaccination schedule for infants in Canada has included a vaccination against measles for many years; thus, the incidence rate is now low. In less-developed parts of the world, measles remains a serious and common disease.

Despite the vaccination program, outbreaks can occur. Although infants are protected through maternal antibodies, these levels slowly decrease over time, so it is important to have children vaccinated at 1 year of age or shortly after to maintain immunity. Also, there will always be a proportion of the population that will not have antibodies and will be more susceptible to disease until immunized.

### **In Algoma**

An outbreak in the Algoma district in 1995 resulted in 17 lab-confirmed cases of measles. Other areas in Ontario also experienced local outbreaks in 1995. As a result of these outbreaks, Ontario instituted a new, two-dose immunization schedule for measles included in the Measles, Mumps, Rubella (MMR) vaccine in 1996.

Since the two-dose program has been in place, the Algoma district has had no new cases of measles reported and across Ontario, few cases have been reported. For Ontario, the annual incidence rate for measles is 2.4 reported cases per 100,000 population and most of these cases were from the 1995 outbreaks. As of January 2005, the second dose of MMR vaccine is now recommended to be given at 18 months rather than with the 4 to 6 year booster.

In 2004, 95% of 7-year-old children in Algoma were vaccinated against measles.

## Mumps

Mumps is an acute viral disease usually characterized by fever, swelling, and tenderness of one or more of the salivary glands. Mumps infection during the first trimester of pregnancy may increase the rate of miscarriage. The virus is spread through contact with respiratory droplets or saliva of an infected person. Prior to the widespread use of the mumps vaccine, mumps was a major cause of viral meningitis (an infection of the fluid and lining covering the brain and spinal cord) in Canada. If an outbreak situation were to occur in a public health jurisdiction, non-immunized children would be excluded from school for 26 days or until they were immunized against mumps.

## **In Algoma**

Since the introduction of the two-dose Measles, Mumps, Rubella (MMR) vaccine in 1996, there has been a dramatic decrease in the number of cases of mumps reported to the Algoma Health Unit. A total of 16 cases were reported in Algoma from 1995 to 2004. The annual incidence rate in Algoma from 1995 to 2004 was 1.3 cases per 100,000 population while the Ontario rate was 0.5 cases per 100,000 population.

In 2004, 95% of 7-year-old children in Algoma were vaccinated against mumps.

## **Pertussis**

Pertussis, also known as whooping cough, is a highly contagious infection of the respiratory tract caused by the bacterium *Bordetella pertussis*. The disease can affect individuals of any age, but severity is greatest among young infants. It is spread very easily from an infected person through coughing and sneezing.

Children with pertussis may have spells of violent coughing causing them to vomit or stop breathing for a short period of time. The cough can last for weeks, making it difficult to eat, drink, and even breathe. Pertussis can cause serious complications such as pneumonia, brain damage, seizures, and even death.

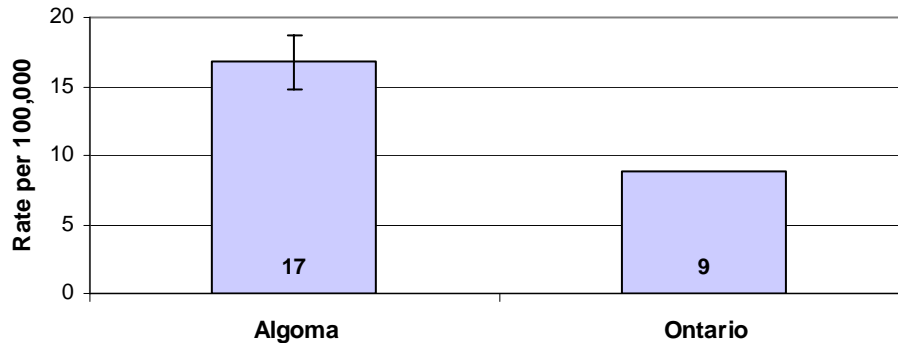
The goal of pertussis control is to reduce the number of young children who get the disease. Due to the widely available vaccination, pertussis rates tend to be low, but outbreaks can occur. The National Advisory Committee on Immunization now recommends an additional pertussis vaccination as part of the 14 to 16 year old booster.

Pertussis cases are tracked, including contact follow up. Immunization status is reviewed and medications are recommended for treatment and prevention purposes. Non-immunized students may be excluded from daycare or school for a period of time. The reoccurrence of pertussis has been partly due to the low vaccine effectiveness of the previously used whole-cell vaccine. Since the introduction of improved acellular vaccine, which produces a better immune response and has a lower incidence of side effects, outbreaks have declined.

### In Algoma

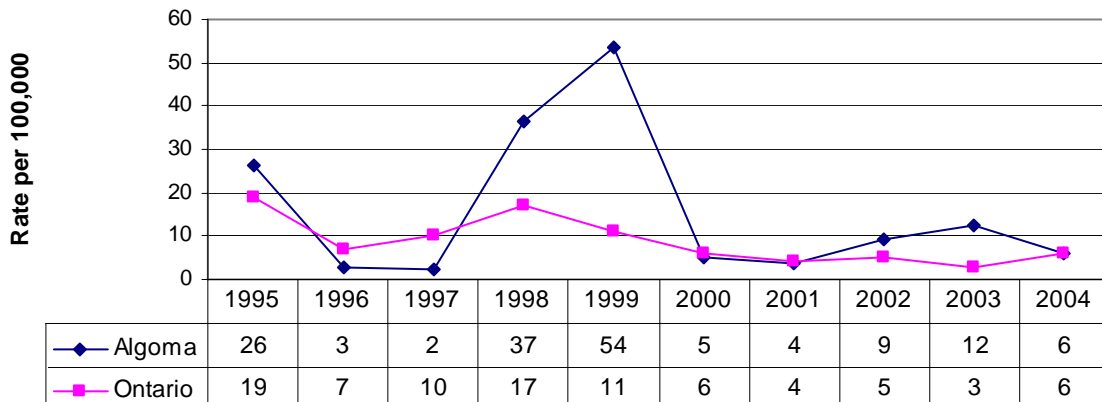
The average age-adjusted rate for pertussis in Algoma was 17 cases per 100,000 population, almost double the rate for Ontario at 9 cases per 100,000 population (Figure 6).

**Figure 6. Average Age-Adjusted Rates for Pertussis, Algoma and Ontario, 1995-2004**



The annual age-adjusted rates for both Algoma and Ontario follow similar trends with outbreaks in Algoma occurring in 1994-1995 and again in 1998-1999 (Figure 7). These 2 outbreaks may explain why Algoma's average age-adjusted rate is higher.

**Figure 7. Annual Age-Adjusted Rates for Pertussis, Algoma and Ontario, 1995-2004**



In Algoma, there were 200 reported lab-confirmed cases of pertussis between 1995 and 2004.

## Rubella

Rubella, also known as German measles, is a viral disease that results in a rash, swollen lymph nodes, and fever. If contracted during pregnancy, rubella can give rise to congenital rubella syndrome, which can lead to miscarriage, stillbirth, and fetal deformities including congenital heart disease, cataracts, deafness and mental retardation. Infected infants who appear normal at birth may later show eye, ear, or brain damage. The main goal of immunization is the prevention of rubella infection in pregnancy. The eradication of rubella requires continued high levels of vaccination.

### **In Algoma**

Because of widespread vaccinations, no cases of rubella were reported in Algoma for more than a decade.

In 2004, 95% of 7-year-old children in Algoma were vaccinated against rubella.

## Tetanus

Tetanus is an acute and often fatal disease caused by the toxin producing bacterium *Clostridium tetani*. The organism is found in soil, but has also been found in the intestines of animals and humans. Wounds that are contaminated with dirt, feces, or saliva and are associated with tissue injury increase the risk for tetanus.

Tetanus immunization programs are highly effective, provide long lasting but not lifetime protection, and are recommended for the whole population. Tetanus vaccination begins in early infancy with boosters recommended every 10 years in adulthood.

### **In Algoma**

There were no cases of tetanus reported since 1995.

In 2004, 93% of 7-year-old children in Algoma were vaccinated against tetanus.

## Travel Vaccines

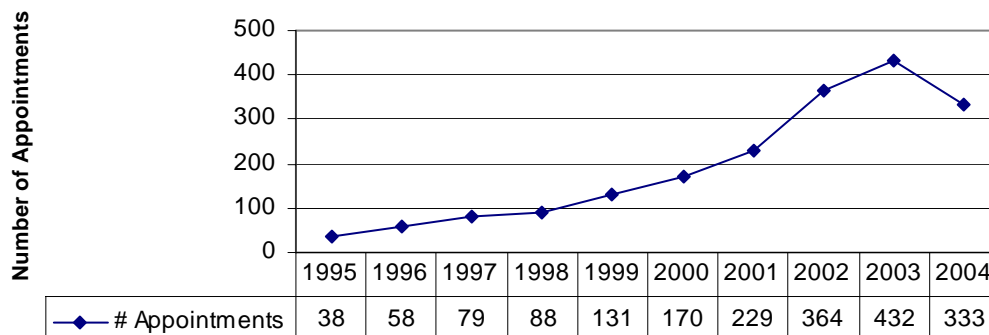
Immunization travel clinics are available at the Algoma Health Unit to make sure people who are travelling are protected from diseases that may be prevalent in the areas where they are going. The most popular travel vaccines that the Algoma Health Unit administers include hepatitis A, hepatitis B, tetanus, diphtheria, typhoid, yellow fever, and Japanese encephalitis.

Travel consultations are provided on an individual basis to determine which vaccines would be recommended for a particular destination. Appointments can

be made for these vaccinations at Algoma Health Unit Immunization Clinics throughout the district.

Since the inception of the travel consultation program in April 1995, almost 2000 travellers have accessed our services for travel advice and vaccinations. The number of consultations has dramatically increased over the 10-year period, due to popularity in foreign travel and increased awareness of the Algoma Health Unit travel clinic. From 1995 to 2004, the number of consultations has increased tenfold (Figure 8).

**Figure 8. Number of Travel Consultation Appointments provided by the Algoma Health Unit, 1995-2004**



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## **Diseases Spread by Close Personal Contact**

Diseases spread by close personal contact are most often passed between family members or people who share living arrangements. Transmission can also occur among casual contacts, but is much less likely since repeated, close, and prolonged exposure is usually required for infection. Infections can occur through direct contact or from large droplets produced by coughing and sneezing. Many people carry these organisms without being sick.

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### **Encephalitis/Meningitis**

Encephalitis/Meningitis describes an infection of the lining of the brain. Both these diseases are caused by a number of bacteria or viruses. This diagnosis can be made when the cause of infection is a virus, bacteria, or unknown.

#### **In Algoma**

There were 6 cases of encephalitis/meningitis from 1995 and 2004.

### **Encephalitis-Primary Viral**

The diagnosis of encephalitis–primary viral is typically given when there is evidence of central nervous system changes and it is believed that a virus is the cause. This type of infection is much less serious than invasive meningococcal disease also known as bacterial meningitis.

#### **In Algoma**

There were 22 lab-confirmed cases of encephalitis–primary viral from 1995 to 2004.

### **Group A Streptococcus (GAS)**

Group A streptococcus (GAS) is a bacterium commonly found in the throat and on the skin. GAS can be present at these sites and cause no symptoms of disease, but may also cause infections that range from mild to severe and even life threatening. Most GAS infections are relatively mild illnesses, such as "strep throat" or impetigo, a mild skin infection that is common in children. Occasionally, however, these bacteria can reach parts of the body where bacteria are not usually found, such as the blood, deep muscle and fat tissue, or

the lungs. When this happens, the infection is said to be invasive. Three of the most severe but least common forms of invasive GAS disease are necrotizing fasciitis (flesh-eating disease), meningitis, and streptococcal toxic shock syndrome.

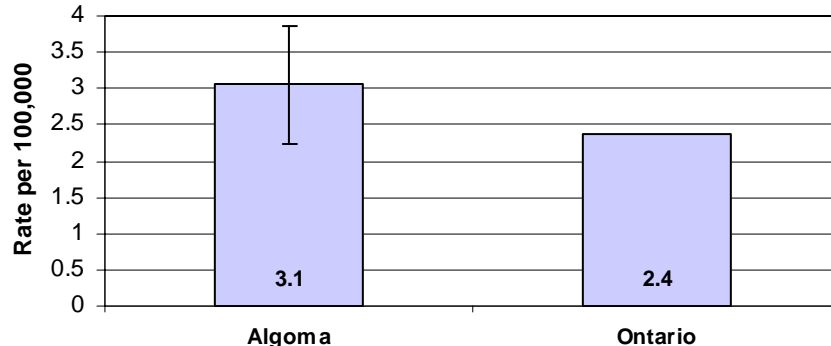
Group A streptococci are spread by direct contact with secretions from the nose and throat of infected persons or by contact with infected wounds or sores on the skin.

The spread of all types of GAS infections may be reduced by good hand washing, especially after coughing and sneezing, before preparing foods, and before eating. All wounds should be kept clean and watched for possible signs of infection like increasing redness, swelling, drainage, and pain at the wound site. A person with signs of an infected wound, especially if fever develops, should seek medical care.

### **In Algoma**

The average age-adjusted rate for group A streptococcus in Algoma was 3.1 cases per 100,000 population similar to the Ontario rate at 2.4 cases per 100,000 population (Figure 9).

**Figure 9. Average Age-Adjusted Rates for Group A Streptococcus, Algoma and Ontario, 1995 to 2004**



In Algoma from 1995 to 2004, 38 cases of invasive group A streptococcus were reported.

### **Group B Streptococcal (GBS) Infection**

Group B streptococcal (GBS) infections represent a serious potential health risk to newborn infants. This disease is easy to test for and very preventable.

Many pregnant women harbour GBS in their genital tracts and can pass it on to their babies during labour and delivery. Risk factors include premature births and mothers with signs and symptoms of diabetes. If not detected and treated

the life of the newborn may be jeopardized by this infection. Other outcomes may include speech, hearing or visual problems, delayed motor skills, or seizure disorders.

### **In Algoma**

There were 7 lab-confirmed cases of GBS between 1995 and 2004.

## **Tuberculosis (TB)**

Tuberculosis (TB) has existed for centuries, and was previously known as "consumption." It is a serious disease that usually attacks the lungs, but can also affect other parts of the body, including the brain, the lymph nodes, and bones. Even though TB is completely curable with antibiotics, it continues to be a major health problem that kills as many as three million people worldwide every year.

When someone with infectious TB coughs or sneezes, the bacterium *Mycobacterium tuberculosis* is spread through the air from person to person. For most Canadians, the risk of developing TB is very low. However, there are approximately 2,000 new cases of TB reported in Canada each year, so it is important to know the symptoms and how to minimize the risks.

The symptoms of TB in the lungs can include a bad cough that lasts longer than two weeks, pain in the chest, coughing up blood or phlegm, weakness or feeling very tired, weight loss, lack of appetite, chills, fever, and night sweats.

Most people who are exposed to TB bacteria do not develop tuberculosis. In some cases, the person's immune system is able to kill the TB germs. When this does not happen, the bacteria can remain alive but inactive in the body. This is called latent TB infection, often detected by a positive TB skin test. A person with latent TB infection has no symptoms, is not sick, and poses no risk of spreading the bacteria.

### **In Algoma**

There have been only 16 cases of TB over the 10-year span from 1995 to 2004. Two thirds of these cases were pulmonary TB or TB of the lungs.

### **TB Skin Testing**

The Algoma Health Unit has an effective TB control program which includes: identifying active TB cases and follow up; TB skin testing of individuals at high risk of being infected; and dispensing free TB medications for treatment and prevention. TB skin testing clinics are held at all offices of the Algoma Health Unit by appointment.

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## **Sexually Transmitted Infections (STIs) and Blood Borne Diseases**

Sexually transmitted infections (STIs) and blood borne diseases are caused by a variety of bacteria and viruses found in blood and body fluids (semen, vaginal fluids, and sometimes breast milk and saliva). Some STIs such as chlamydia, gonorrhoea, and syphilis are primarily contracted through unprotected sexual contact. Other infections, like human immunodeficiency virus (HIV) and hepatitis B, can be spread through both blood and sexual transmission. Some STIs can be transmitted from mother to infant through vaginal delivery.

Blood borne diseases such as hepatitis C can be spread by unsterile equipment such as needles, tattooing and piercing equipment.

The Algoma Health Unit's Sexual Health Program provides confidential individual STI screening, diagnosis, treatment, and counselling for both men and women. Anonymous HIV counselling and testing is also encouraged and available. As well, the Algoma Health Unit provides community education, consultation, and health promotion. Condoms are available free of charge.

The best preventative measures to reduce your risk of acquiring a sexually transmitted infection include delaying onset of intercourse, limiting the number of sexual partners, using latex condoms 100% of the time for oral, vaginal, and anal intercourse. Next to abstinence, the safest practice is mutual monogamy.

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### *Sexually Transmitted Infections*

#### **Chlamydia**

Chlamydia is a bacterial infection caused by a bacterium known as *Chlamydia trachomatis*. It is transmitted through unprotected oral, genital, or anal sex with an infected person. It can also be spread from mother to child during birth.

Symptoms for chlamydia infection in females include changes in vaginal discharge (colour, odour, amount), burning during urination, abnormal vaginal bleeding, and lower abdominal and pelvic pain. For males, symptoms include burning during urination, discharge from penis, and testicular pain. If left untreated in women, tubal infertility, ectopic pregnancy, and chronic pelvic pain may occur. Chlamydia is likely under-diagnosed because the majority of infected individuals do not have any symptoms.

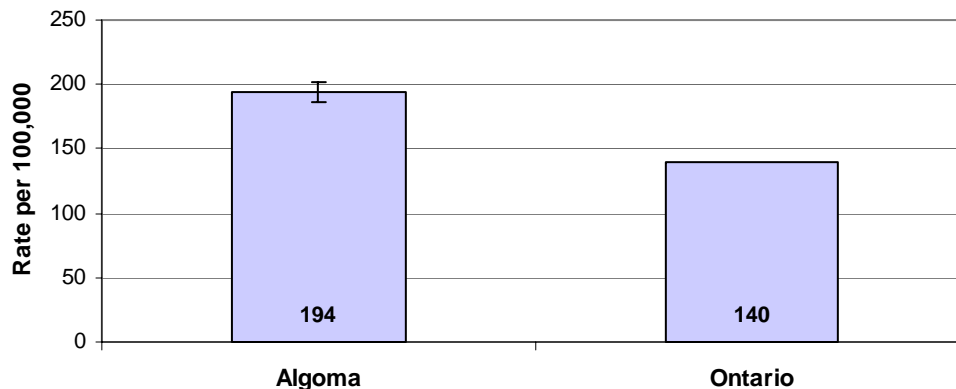
Chlamydia can now be detected through urine testing for men and women. This non-invasive screening tool will likely increase the number of people who access testing. More females than males are diagnosed with chlamydia because females routinely see their healthcare providers for cervical screenings (PAP tests) and birth control. If circumstances warrant, STI screening may also be done during these routine visits. Females need to be aware that STI screening is not automatically done at the time of cervical screening. Women can ask their healthcare provider about their practice for STI screening. Males may not routinely visit their healthcare provider so they do not present as many opportunities for STI screening.

Chlamydia can be easily treated with antibiotics. All sex partners should be tested, counseled, and treated. Persons with chlamydia should abstain from sexual intercourse until they and their sex partners have completed treatment, otherwise re-infection is possible.

### **In Algoma**

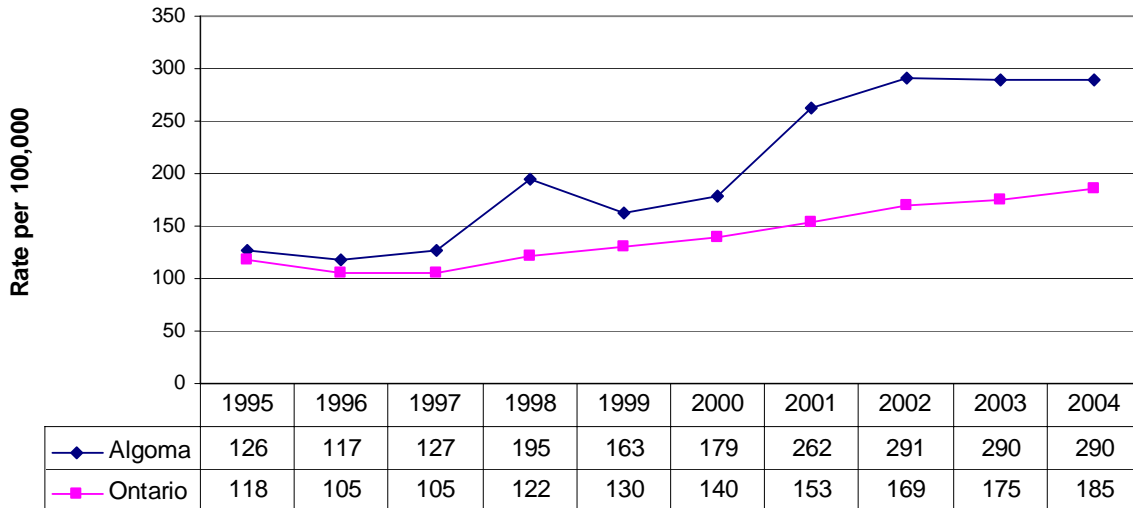
The average age-adjusted rate of lab-confirmed chlamydia infections was 194 cases per 100,000 in Algoma, greater than the provincial rate of 140 cases per 100,000 (Figure 10). Since many chlamydia infections are symptom-free, the actual rates of infection are likely greater than the reported rates.

**Figure 10. Average Age-Adjusted Rates for Chlamydia, Algoma and Ontario, 1995-2004**



The annual age-adjusted rates for chlamydia for both Algoma and Ontario follow similar trends showing that this infection is on the rise. Since 1995, Algoma's chlamydia rate has been outpacing that of Ontario (Figure 11).

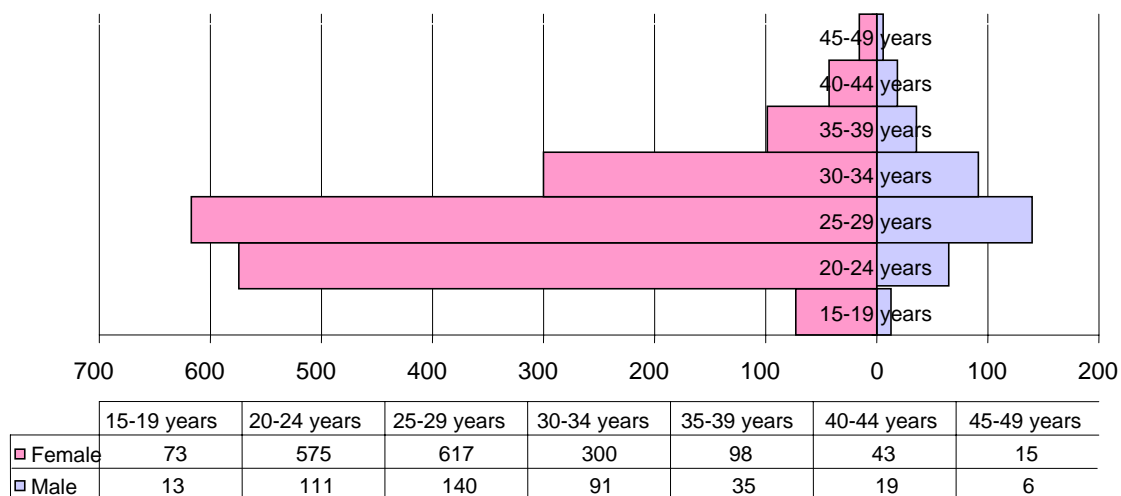
**Figure 11. Annual Age-Adjusted Rates for Chlamydia, Algoma and Ontario, 1995-2004**



From 1995 to 2004, there were 1732 lab-confirmed cases of chlamydia with 1312 cases female (76%) and 420 cases male (24%).

Overall, the predominant age groups for chlamydia cases were ages 20-24 and ages 25-29 (Figure 12).

**Figure 12. Average Age-Adjusted Rates by Age Groups by Gender for Chlamydia in Algoma, 1995-2004**



## Gonorrhoea

Gonorrhoea is a sexually transmitted infection caused by the bacteria *Neisseria gonorrhoeae*. It is transmitted through unprotected oral, genital, or anal sex with an infected person. It can also be spread from mother to child during birth. More than 50% of people infected show no symptoms or have symptoms that are not recognized as *Neisseria gonorrhoeae*.

Untreated in females, this infection may lead to pelvic inflammatory disease (PID) which can cause tubal infertility, chronic pelvic pain, and life threatening ectopic pregnancy. Men can develop scarring of the urethra, making urination difficult. Infertility is sometimes a complication of gonorrhoea in males. Gonorrhoea can spread to the blood and cause infection and damage in the joints, heart, liver, and brain.

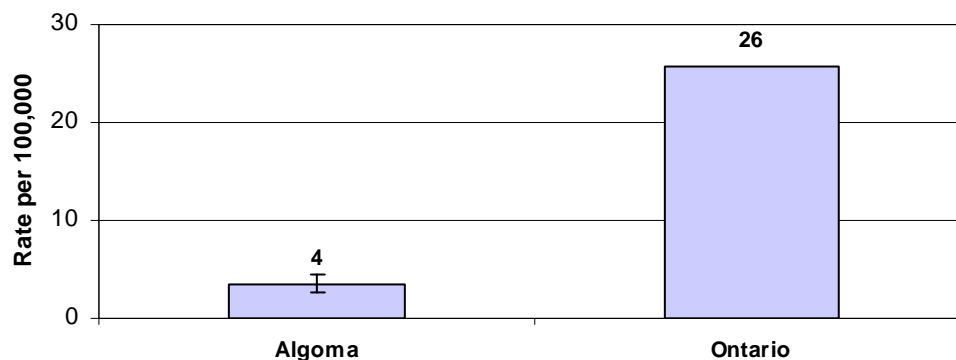
In males, when symptoms occur, they can appear in 2 to 7 days after becoming infected. However, it is not uncommon for symptoms to take as long as 30 days to appear. Symptoms in males include a white or yellowish discharge from the penis, pain when urinating, and painful or swollen testicles. When a woman has symptoms, they can be so non-specific as to be mistaken for a bladder or vaginal infection. If symptoms do present in women they can include a painful or burning sensation when urinating, increased vaginal discharge, or vaginal bleeding between periods.

Urine testing is commonly used to detect gonorrhoea for both males and females. Gonorrhoea is treated with oral antibiotics. For resistant strains, alternative antibiotics are prescribed.

### In Algoma

The average age-adjusted rate for gonorrhoea was 4 cases per 100,000 population in Algoma, 6.5 times less than the Ontario rate of 26 cases per 100,000 population (Figure 13).

**Figure 13. Average Age-Adjusted Rates for Gonorrhoea, Algoma and Ontario, 1995-2004**



In Algoma from 1995 to 2004, 44 lab-confirmed cases of gonorrhoea were reported. These cases were split evenly between males (50%) and females (50%).

## HIV/AIDS

HIV (human immunodeficiency virus) is a virus that attacks the immune system and weakens the body's ability to fight off infections and diseases. AIDS (acquired immune deficiency syndrome) is the late stage of HIV infection and is life threatening. There is no cure, nor is there a vaccine to prevent HIV infection, however, it is mostly preventable through lifestyle choices.

HIV can be found in blood, semen, vaginal fluids, and breast milk of an infected person. The virus is spread by unprotected sexual intercourse - oral, vaginal, and anal. It is also spread through sharing contaminated needles or syringes while injecting drugs. An infected mother can also pass the virus on to her baby during pregnancy or at birth. Unsterilized needles used for tattooing, skin piercing, or acupuncture along with occupational exposure in health care and personal care settings, also pose risks for transmitting HIV. In Canada, blood donors have been screened and tested for HIV infection since 1985.

When people are initially infected with HIV, the symptoms can go unnoticed or are brushed off as having the flu. When people start developing opportunist infections (those infections that take advantage of weaknesses in the immune defenses), they then seek medical attention. Some common opportunist infections include oral yeast infections, Kaposi's sarcoma (a type of skin disease), and fatal pneumonia. The onset of these infections can take several years after the initial contact with the HIV virus.

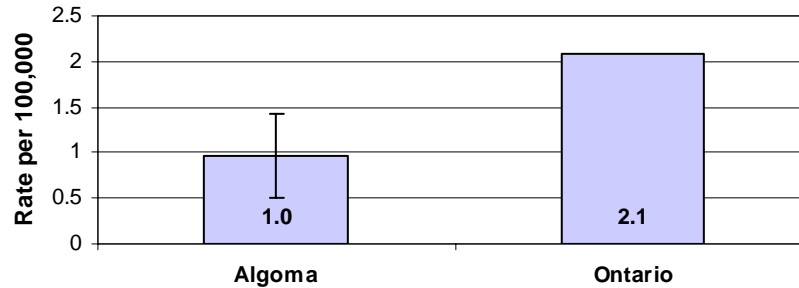
The only way to know if HIV is present is to screen for the virus through blood work. Early detection of the virus is very important so that people do not spread HIV unknowingly. Prenatal HIV testing was introduced in Ontario in January 1999.

There is no way to "clear" HIV from the body and there is no cure for AIDS. There are drugs that can slow down the HIV virus, and slow down the damage to the immune system. In most cases, these drugs work very well. The newer, stronger anti-HIV drugs have also helped reduce the rates of most opportunistic infections. This is an increasingly complex area with rapid changes in optimal therapy as new research becomes available.

## In Algoma

The average age-adjusted rate for newly diagnosed HIV cases was 1.0 case per 100,000 in Algoma. For Ontario it was 2.1 cases per 100,000, double that of Algoma (Figure 14).

**Figure 14. Average Age-Adjusted Rates for HIV/AIDS, Algoma and Ontario, 1995-2004**



In Algoma, there have been 12 new lab-confirmed cases of the HIV infection between 1995 and 2004.

## Syphilis

Syphilis is a complex yet rare infection caused by the *Treponema pallidum* bacterium. This infection progresses through 5 stages from primary syphilis (earliest stage) to tertiary syphilis (final stage). In the tertiary stage, syphilis can do the most damage to the body, affecting the brain, blood vessels, the heart and bones. It can eventually lead to death. Syphilis is passed from person to person through direct contact with a syphilis sore during vaginal, anal, or oral sex. Infants can be infected with syphilis when in utero resulting in miscarriage, stillbirth, premature birth, and congenital infection. The newborn can be infected during delivery.

In primary syphilis, a painless open sore appears at the site where the bacteria first entered the body, usually the genital area, throat, or anus. Symptoms can occur within a few weeks or several months after the initial infection. While the sore may go away on its own without treatment, the infection remains and leads to secondary syphilis. In secondary syphilis, the symptoms can include patchy hair loss, a rash on the soles of the feet or the palms of the hands or elsewhere on the body, fever, swollen glands, and muscle and joint pain. Again, these symptoms usually disappear without treatment but the infection does not. There are people who are infected with syphilis who do not show any symptoms for years.

Syphilis is diagnosed through a simple blood test. In Ontario, pregnant women are routinely screened for syphilis. Syphilis is treated with penicillin or other antibiotics. Testing, treatment, and contact tracing are very important to

control this infection and prevent serious and long-term health effects that occur when the infection is left untreated.

### **In Algoma**

Fewer than 5 lab-confirmed cases were reported to the Algoma Health Unit between 1995 and 2004. During this time period the incidence rate per year for Ontario was 1 case per 100,000 population. It is reasonable to expect that eventually more cases will present in Algoma as part of an increasing trend in Canada.

## *Blood Borne Infections*

### Hepatitis C

Hepatitis C is a disease characterized by inflammation of the liver and caused by the hepatitis C virus (HCV). Hepatitis C has only been described since 1989 and has been reportable since 1992.

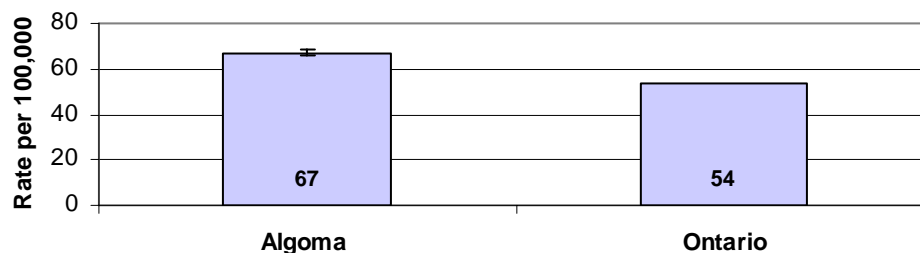
Hepatitis C is transmitted mainly by direct contact with infected blood or blood products. Intravenous drug users are at highest risk for hepatitis C. The risk seems greatest from young adult to middle age.

Prior to modern screening techniques, people who received blood transfusions were at risk of contracting hepatitis C but new screening techniques have virtually eliminated the risk of transmission to users of Canada's blood system. No vaccine is available for prevention of the hepatitis C infection. The immune system has great difficulty overcoming the hepatitis C virus. This results in most hepatitis C infections becoming chronic and may eventually lead to liver disease and liver failure.

### **In Algoma**

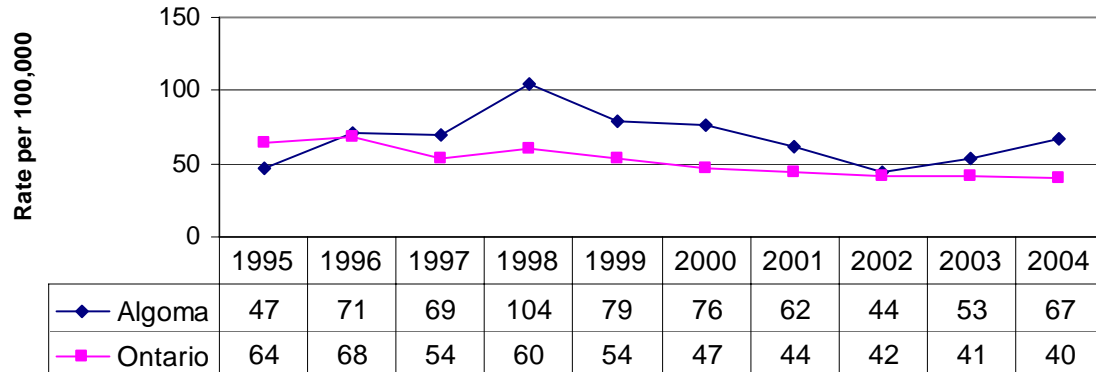
The average age-adjusted rate for hepatitis C in Algoma is 67 cases per 100,000 population. This rate is slightly higher than the Ontario rate at 54 cases per 100,000 population (Figure 15).

**Figure 15. Average Age-Adjusted Rates for Hepatitis C, Algoma and Ontario, 1995-2004**



The annual age-adjusted rates trend for hepatitis C for Algoma and Ontario is similar with Algoma being slightly higher for most years (Figure 16).

**Figure 16. Annual Age-Adjusted Rates for Hepatitis C, Algoma and Ontario, 1995-2004**



In Algoma from 1995 to 2004, 879 lab-confirmed cases of Hepatitis C were reported. Almost 80% of the cases were between the ages of 25-50 years.

## **Diseases Spread by Food and Water**

Bacteria, parasites, and viruses that find their way into food or water supplies can spread disease. The source of contamination is feces from an infected person or animal.

Since the contaminated water outbreak in Walkerton Ontario in 2000, many government agencies and public health units have increased education efforts to ensure water safety. Significant changes have been made to the Safe Drinking Water Act and more attention is being focused on safe drinking water.

The Algoma Health Unit strives to ensure that safe drinking water is used by all public establishments and works with local building departments and municipalities to safely dispose of sewage waste in a manner that poses no risk to human health. With the aid of the public health laboratory, the Algoma Health Unit public health inspectors assess individual and public water quality and determine suitable options to provide consistent drinkable water. Public health inspectors test many local area water systems and investigate complaints. The health unit receives adverse water reports and acts to protect people from drinking contaminated water.

The Algoma Health Unit conducts mandatory inspections of all public food preparation establishments each year. To reduce the risk of food borne illness, the Algoma Health Unit encourages restauranteurs to take their food handling certification course. Public health inspectors will award food premises who go beyond the regulations for cleanliness and food handling techniques with Gold Seal and Eat Smart! Awards.

Education is provided through trapper's seminars, food handler courses, trade shows, displays, water well safety books, and other community outreach. Two safe water conferences have been hosted in Sault Ste. Marie.

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## Amebiasis

Amebiasis is a worldwide intestinal illness caused by a microscopic parasite, called *Entamoeba histolytica*. The parasite lives only in humans and is excreted in human stools. Infections happen after eating food or drinking water that has been contaminated by feces that contain amoeba cysts. Water can be contaminated with human waste where sewage disposal practices are poor. Raw vegetables can also be another source if human waste is used as fertilizer. Although this is not permitted in Canada, it is a practice still followed in other parts of the world.

Anyone can acquire this illness, but it is most common among people who live in or travel to developing countries with poor sanitary conditions. People who live in institutions with poor sanitation and people with weakened immune systems are also more susceptible. In addition, people who live in rural areas with unprotected water supplies and poor sewage disposal are at risk.

Symptoms include nausea, diarrhea, weight loss, abdominal tenderness, and occasionally fever but some people may experience no symptoms at all. Amebiasis is treated with antibiotics.

Public health promotes proper hand washing hygiene to prevent transmission of many diseases including amebiasis. Travel consultations are also available to those who may be visiting countries with less developed infrastructures.

### **In Algoma**

There were 14 lab-confirmed cases of amebiasis from 1995 to 2004.

## *Campylobacter* Enteritis

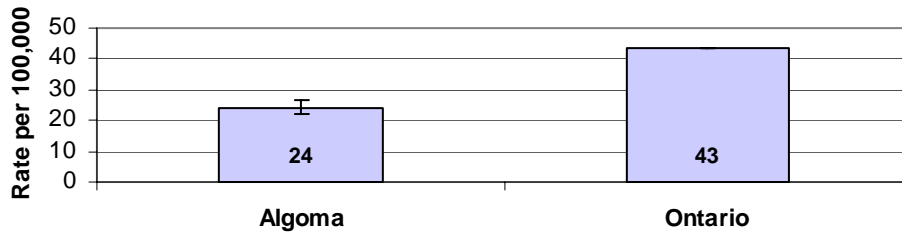
*Campylobacter* enteritis is caused by an infection from one of several species of the bacterium *Campylobacter*. Transmission occurs primarily through the fecal-oral route by ingesting contaminated food or water. When symptoms occur, they include mild to severe diarrhea, vomiting, abdominal pain, and fever. As with other food and water borne diseases, sometimes cases go unreported since many people recover quickly and do not seek medical help for mild symptoms.

When the Algoma Health Unit receives a lab-confirmed case of *Campylobacter* enteritis, a public health inspector conducts a prompt and thorough investigation of possible causes. The investigation may include restaurant inspections and food handling reviews. Animal transmission is also investigated.

## In Algoma

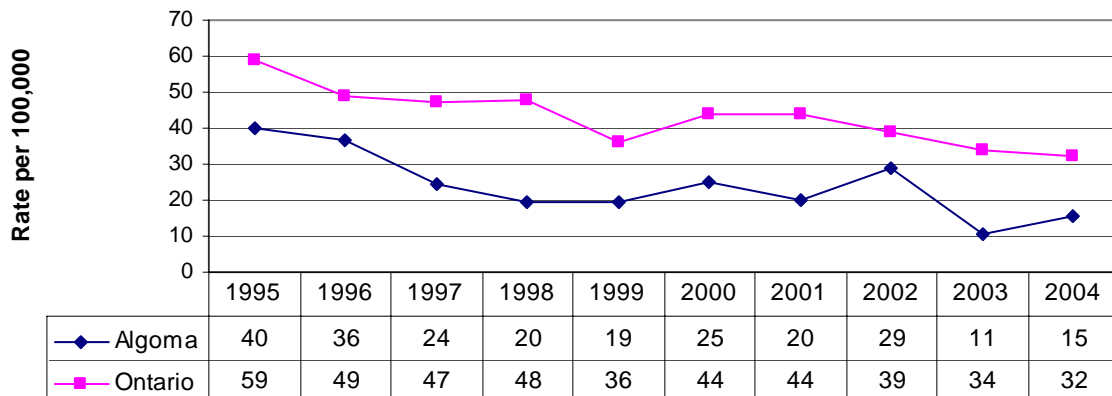
The average age-adjusted rate for *Campylobacter* enteritis in Algoma was 24 cases per 100,000 population while the Ontario rate was 43 cases per 100,000 population (Figure 17).

**Figure 17. Average Age-Adjusted Rates for *Campylobacter* enteritis, Algoma and Ontario, 1995-2004**



The annual age-adjusted rates for *Campylobacter* enteritis in Algoma are consistently lower than the provincial rates. Both rates have been declining consistently over the 10-year report period possibly due to better food handling procedures (Figure 18).

**Figure 18. Annual Age-Adjusted Rates for *Campylobacter* enteritis in Algoma and Ontario, 1995 to 2004**



In Algoma, there were 322 lab-confirmed cases of *Campylobacter* enteritis from 1995 to 2004.

## Cryptosporidiosis

Cryptosporidiosis is a parasitic infection caused by *Cryptosporidium parvum*. This infection often occurs without symptoms. Symptoms may include diarrhea (may be watery), cramps, appetite loss, and vomiting; and may occur within 1 day to 12 days from exposure. The infected person may also excrete oocysts (parasites) for weeks after they are feeling well, complicating the identification

of the source. The majority of outbreaks have been from recreational swimming pools that were not properly filtered by existing water treatment systems. Contaminated drinking water can also cause outbreaks.

To reduce the occurrence of infection from recreational waters, public health inspectors regularly inspect all public pools and spas to ensure they are complying with the regulations. When attempting to isolate the source during an investigation, individuals are asked if they used a specific recreational pool before or after they became ill. The public health inspector closes pools and spas if chemical or other parameters are not met.

### **In Algoma**

Cryptosporidiosis was rare from 1995 to 2004 with less than 5 cases reported.

## Giardiasis

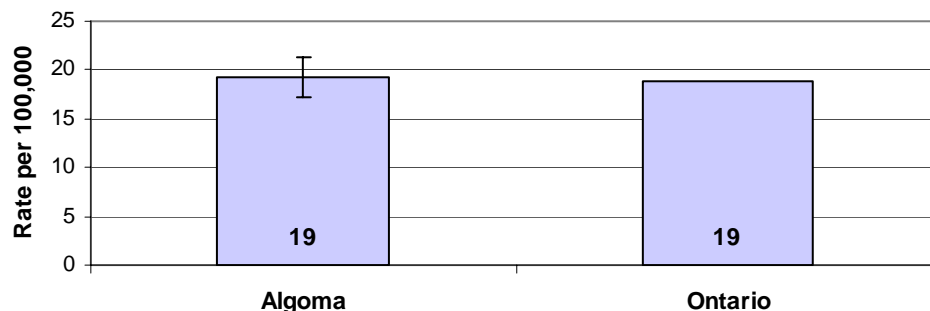
Giardiasis is an infectious disease caused by a parasite *Giardia lamblia*. It is ingested when drinking unfiltered surface water. Symptoms include chronic diarrhea, bloating, cramps, fatigue, and weight loss. It is difficult to get a lab-confirmed diagnosis because the parasite is not found in every bowel movement. In addition, many people may only have mild symptoms and may not seek medical attention.

The public health inspectors of the Algoma Health Unit ensure that all public establishments that use surface water or ground water under the direct influence of surface water have installed special filtration and water treatment systems to prevent the occurrence of illness. The *Giardia lamblia* parasite is difficult to isolate, so all surface water systems are assumed to have *Giardia lamblia* and are required to be filtered to ensure the removal of the parasite.

### **In Algoma**

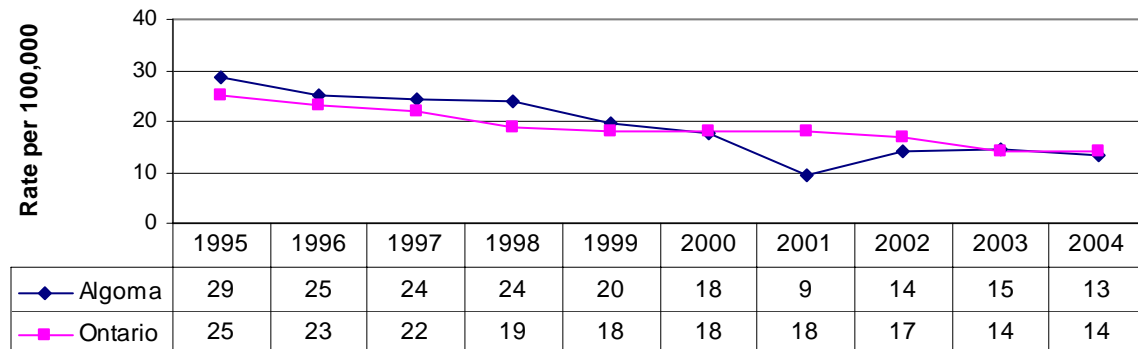
The average age-adjusted rates for giardiasis in Algoma and Ontario are the same with 19 cases per 100,000 (Figure 19).

**Figure 19. Average Age-Adjusted Rates for Giardiasis, Algoma and Ontario, 1995-2004**



The annual age-adjusted rates of giardiasis in Algoma were close to the province wide rates. From 1995 to 2004, there was a trend of declining rates for both Algoma and Ontario (Figure 20).

**Figure 20. Annual Age-Adjusted Rates for Giardiasis, Algoma and Ontario, 1995-2004**



In Algoma from 1995 to 2004, there were 238 lab-confirmed cases of giardiasis.

## Listeriosis

Listeriosis is a serious yet rare infection caused by eating foods contaminated with the bacterium *Listeria monocytogenes* that is found in soil and water. Vegetables can become contaminated from soil or manure used as fertilizer for crops. Animals can carry the bacterium without appearing ill inadvertently contaminating foods like meats and dairy products. Pasteurization and thorough cooking generally kill *Listeria monocytogenes*.

The disease affects primarily pregnant women, newborns, and adults with weakened immune systems. Symptoms include fever, muscle aches, and sometimes nausea or diarrhea. If the infection spreads to the central nervous system headaches, stiff neck, confusion, loss of balance, and convulsions can occur.

Infected pregnant women may experience only a mild, flu-like illness; however, infections during pregnancy can lead to miscarriage or stillbirth, premature delivery, or infection of the newborn. Healthy adults and children occasionally get ill from *Listeria monocytogenes* but they rarely become seriously ill.

The risk of a healthy individual developing listeriosis is very small, however if symptoms occur, physician consultation is recommended. Antibiotics are prescribed to treat listeriosis.

### In Algoma

Listeriosis was rare from 1995 to 2004 with less than 5 cases reported.

## Salmonellosis

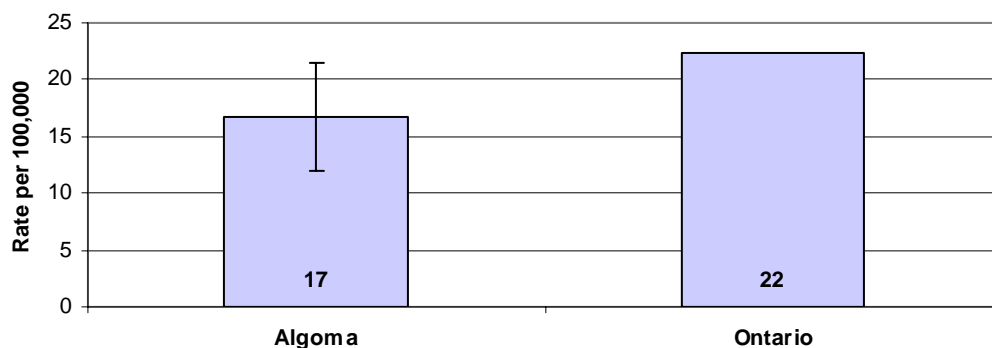
Salmonellosis is caused by infection from one of several non-typhoidal species of the bacteria *Salmonella*. Salmonellosis is contracted from eating improperly handled food such as contaminated poultry products or raw egg products or from handling particular animals such as pet turtles. As with other food borne illnesses, symptoms include mild to severe diarrhea, fever, headache, abdominal pain, nausea, and vomiting.

Better food handling procedures, including the new recommendation to cook whole poultry to a temperature of 82° C instead of just to 74° C, should reduce the number of cases. The Algoma Health Unit has focused its prevention efforts on education regarding intact eggs as potential carriers of *Salmonella*. The Algoma Health Unit has also provided education about being more careful when acquiring reptile pets as they may carry *Salmonella*. Thorough hand washing is recommended after handling these exotic pets.

### In Algoma

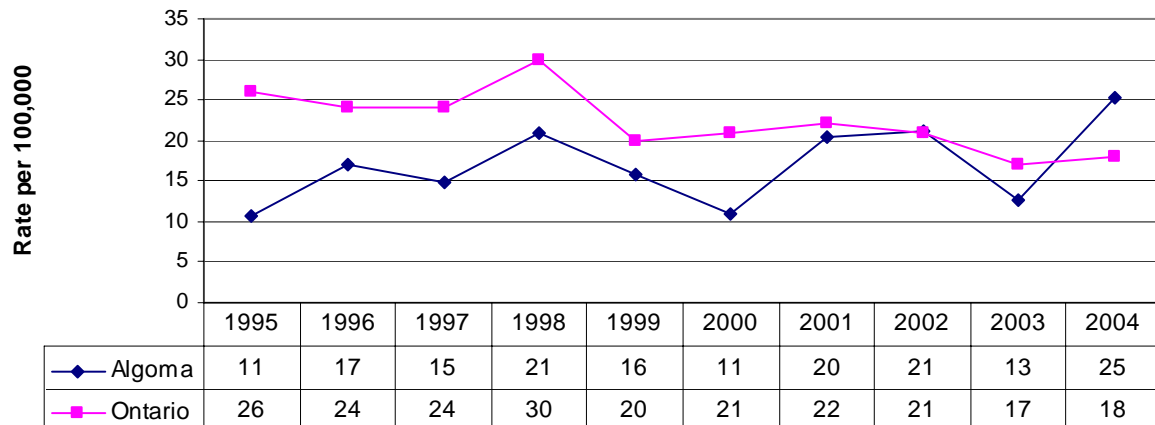
The average age-adjusted rate for salmonellosis in Algoma was 17 cases per 100,000 population. The Ontario rate was 22 cases per 100,000 population (Figure 21). The confidence intervals for the Algoma rate indicate that it is likely that there is not much difference between the Algoma and Ontario rate.

**Figure 21. Average Age-Adjusted Rates for Salmonellosis, Algoma and Ontario, 1995-2004**



The Algoma annual-age adjusted rate was almost consistently lower than the Ontario rate (Figure 22).

**Figure 22. Annual Age-Adjusted Rates for Salmonellosis, Algoma and Ontario, 1995-2004**



In Algoma from 1995 to 2004, there were 206 lab-confirmed cases of salmonella reported. Salmonellosis is one of the more common food borne illnesses reported in Algoma.

## Shigellosis

Shigellosis is an infectious disease caused by a group of bacteria *Shigella* that are found naturally in the intestinal tracts of humans. Humans acquire the bacteria from improper hand hygiene after using the bathroom. Contaminated food may be a source of infection if prepared or served by infected food handlers or if the food is grown using unsanitary practices. Symptoms of shigellosis include fever, stomach cramps, and diarrhea that may often be bloody.

The Algoma Health Unit promotes safe drinking water and hygienic food handling procedures to reduce the risk of acquiring shigellosis. Staff provide education to high risk facilities such as daycares about proper hand hygiene for staff, diaper handling, and supervised hand washing of young children.

### In Algoma

From 1995 to 2004, there were a total of 11 lab-confirmed cases reported.

## Veritoxin-producing *Escherichia coli* (VTEC)

*Escherichia coli* (*E. coli*) is a bacterium that can cause a potentially deadly disease. It is contracted by drinking contaminated water or eating improperly handled food. *E. coli* has many different strains. Symptoms of *E. coli* infections include severe diarrhea (may include blood) and cramps. The incubation period ranges from hours to days depending on the strain.

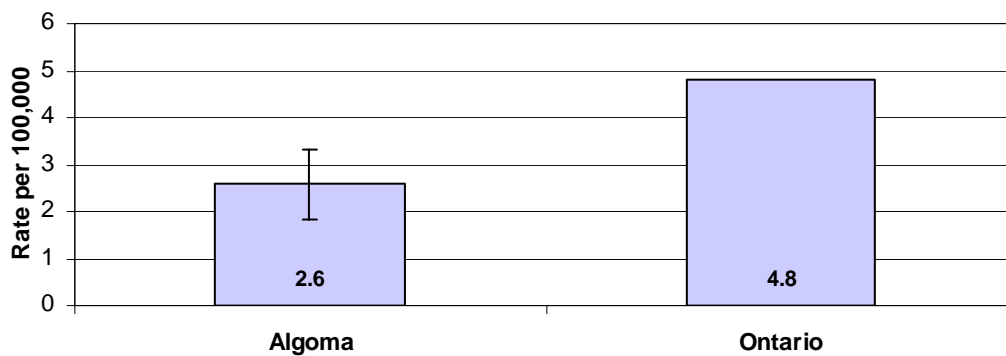
Veritoxin-producing *Escherichia coli* commonly referred as VTEC is a bacterium found in the intestines of healthy cattle. It is most often associated with undercooked ground beef, but other foods and water can also be contaminated with it. Lab-confirmed cases of VTEC are reportable to the Medical Officer of Health.

The Algoma Health Unit investigates cases of *E. coli* infection. Boil Water Orders are issued when indicators suggest a potential for problems in a drinking water supply. Proper waste and sewage disposal are important to reduce the incidence of *E. coli* infections. The Algoma Health Unit also provides education on how to properly cook meat products.

### In Algoma

The average annual age-adjusted rate in Algoma for VTEC was 2.6 cases per 100,000 population, compared with the higher Ontario rate of 4.8 cases per 100,000 population (Figure 23).

**Figure 23. Average Age-Adjusted Rates for Veritoxin-producing *Escherichia coli* (VTEC), Algoma and Ontario, 1995-2004**



In Algoma, there were 32 lab-confirmed cases of VTEC reported from 1995 and 2004.

## Yersiniosis

Yersiniosis is an infection caused by the bacterium *Yersinia enterocolitica*. It is most often acquired by eating contaminated food, especially raw or undercooked pork products as the bacteria is most commonly found in pigs' pharynxes. Drinking contaminated unpasteurized milk or untreated water and contact with infected animals can also be sources for this infection. On rare occasions, the infection can be transmitted through the fecal–oral route.

Approximately two-thirds of cases occur among infants and children. Symptoms in young children include fever, abdominal pain, and diarrhea that is often bloody. In older children and adults symptoms may include right-sided abdominal pain and fever that may be mistaken for appendicitis.

*Yersinia enterocolitica* takes 3 to 7 days to cause symptoms in a host and it is passed on through fecal matter for 2 to 3 weeks. If untreated, the infection may continue to be passed on for 2 to 3 more months.

### **In Algoma**

From 1995 to 2004, there were a total of 24 lab-confirmed cases reported.

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## Diseases Spread by Insects and Animals

Diseases spread by insects are called vector borne. These diseases are caused by bites from mosquitoes, ticks, fleas, and mammals. Diseases spread from animal to human are called zoonotic diseases.

To protect yourself and your family these are some simple things to do. Avoid insects whenever possible by using repellents with DEET, avoid being outdoors at dusk and dawn, and wear long sleeves. Try to prevent ticks by tucking pant legs into socks when hiking in the bush and fields and checking your body for ticks afterwards. If you find a tick on your body go to the emergency room at your hospital right away to have it removed. Make sure the entire tick including the stump is removed, as this is the part of the tick that spreads disease.

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### Lyme Disease

Lyme disease is caused from a bite from a tick that is infected with a spirochete parasite. The illness begins with a skin lesion that resembles a bull's eye. Other symptoms of Lyme disease include fatigue, fever, headache, and stiff neck. As the disease progresses serious manifestations can occur including swelling of joints, chronic arthritis, and neurological and cardiovascular symptoms.

The Algoma Health Unit educates outdoor enthusiasts to dress appropriately before hiking. Tips include tucking pants into socks and carefully checking for ticks after spending time in the woods and fields. If a tick is found, seek medical attention immediately. A healthcare provider should remove the tick. It is important to remove the whole tick including the head which may be buried in the skin.

#### **In Algoma**

Lyme disease was rare in Algoma with less than 5 lab-confirmed cases between 1995 and 2004.

### Malaria

Malaria is caused by a protozoan parasite that lives within red blood cells and is transmitted by the bite of an *Anopheles* mosquito. This mosquito is found in almost all countries in the tropics and subtropics. Recently it has been found in the southern United States. Travellers to any of the more than 100 countries in

which malaria occurs are at risk of contracting malaria. Immigrants from these countries may arrive in Canada with a malarial infection.

No vaccine is available. Malaria usually can be prevented by the use of anti-malarial drugs and personal protection measures against mosquito bites.

### **In Algoma**

Malaria was rare in Algoma from 1995 to 2004 with less than 5 cases reported.

## **Rabies**

Rabies is a potentially fatal disease caused by an infected animal's saliva entering the blood and central nervous system of a person from a bite or scratch. This disease is fatal; there is no treatment once symptoms begin. Immediate reporting of the incident to public health is essential to protect one's life. The Algoma Health Unit investigates all reported incidents of animal bites to humans. Public health inspectors ensure the animals that have bitten a human are free from the rabies virus. Owners of domestic animals must isolate their pet for a period of 10 days.

After a biting incident, the Algoma Health Unit may supply rabies vaccine to a family physician to protect an exposed human who is deemed to be at risk of developing rabies from an animal exposure. As a precautionary measure, if a bat is found where you sleep, seek medical attention and report to public health immediately.

The Algoma Health Unit works with the Ministry of Natural Resources with their raccoon rabies contingency plan and baiting vaccination programs to reduce or eliminate the spread of rabies within the wild animal population. Animal trappers are urged to receive rabies vaccine. Also pet owners are urged to have their pets vaccinated against rabies.

### **In Algoma**

The Algoma Health Unit investigates more than 300 animal-to-human contacts per year. There has never been a human case of rabies in Algoma.

## **West Nile Virus (WNV)**

West Nile virus (WNV) was first detected in North America in New York 1999. It has since spread across the continent and has been confirmed in Quebec, Ontario, Manitoba, Saskatchewan, and Alberta.

West Nile virus is transmitted between mosquitoes and birds, particularly crows and ravens. The disease can be spread to humans from the bite of an infected mosquito. Eighty percent (80%) of people who have been exposed to WNV do

not experience any symptoms. However, 19% of people who have been exposed experience mild symptoms such as fever, headache, body ache, nausea, vomiting, and rash. Very few experience serious symptoms such as high fever, severe headache, muscle weakness, stiff neck, confusion, tremors, numbness, and sudden sensitivity to light.

Public health surveillance strategies each year include dead bird sightings, dead bird submission for viral testing, adult mosquito trapping and viral testing, mosquito larval dipping, human and animal symptoms and case investigation. Mosquito species across the Algoma district have been 98% "bush" bugs (bridge vectors or non-transmitters) compared to the 2% "city" bugs, the species that multiplies and spreads the disease (enzootic Culex species).

So far, control strategies such as spraying for mosquitoes (adulticiding) or chemically treating catch basins for larvae (larviciding) have not been necessary. Prevention messages include preventing mosquito bites by wearing proper clothing, using insect repellent and avoiding high mosquito activity times of day. Preventing mosquitoes from breeding by removing standing water on properties is an important strategy.

Algoma residents are at higher risk of acquiring West Nile virus from a mosquito bite when away from the District of Algoma so preventing mosquito bites when travelling is important.

The Algoma Health Unit recommends people protect themselves from bites from mosquitoes by paying particular attention to areas in their yards where water can pool for example eaves troughs, birdbaths, and swimming pool covers.

### **In Algoma**

The disease was first detected in a crow in 2001. Since then, positive birds have been confirmed across the district. The first positive mosquito was trapped in August 2005. There has been no detection of human or animal cases of West Nile virus to date.

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## **Pandemic/Emerging Disease Planning and Preparedness in Algoma**

Since 2000, the Algoma Health Unit has been working with other government organizations, private industries, and service providers in the Algoma District to prepare for any emerging infectious disease that could affect the health of the public.

The Algoma District Pandemic Plan directly relates to the Ontario Provincial Plan, the Canadian Pandemic Plan, and the World Health Organization Plan.

The Algoma District Pandemic /Emerging Disease Plan covers the following areas:

- Surveillance and Lab Services
- Public Health Measures
- Health Services
- Emergency Response
- Communication
- Vaccines
- Anti-virals

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## Future Watch on Infectious Diseases

Many lessons have been learned in the past by public health that will assist in investigating future emerging diseases. The recent emergence of the SARS virus brought a new focus to public health and how it impacts our daily lives. Infectious disease teams are constantly monitoring new trends. This has been especially noted in the surveillance of avian influenza. This new virus strain has had global attention and continues to be a potential source of the next pandemic. Some more emerging trends in the infectious disease arena are listed below.

### Antibiotic Resistant Organisms

Nosocomial diseases are diseases that are acquired in hospitals or institutional settings. Some of these diseases are caused by antibiotic resistant organisms that are becoming more aggressive. Antibiotic resistant organisms have become a very significant problem in healthcare institutions in recent years as the emergence of resistance is occurring worldwide at an alarming pace. Inappropriate prescribing of broad spectrum antibiotics and incomplete regimes have been factors in the increase.

Medication toxicity levels need to be carefully considered when treating antibiotic resistant organisms thus limiting treatment options. The complexity of antibiotic resistant organisms makes them costly and difficult to treat.

Antibiotic resistant organisms such as MRSA (Methicillin-resistant *staphylococcus aureus*), VRE (Vancomycin-resistant *enterococci*), CA-MRSA (Community acquired-Methicillin-resistant *staphylococcus aureus*) and *Clostridium difficile* are the most prevalent.

In 2000, the World Health Organization gave a harsh warning that humanity is faced with a crisis because the rising rates of drug resistance in many organisms could rob the world of the opportunity to cure many common infectious diseases.

### Sexually Transmitted Infections

Vigilance in screening and effective case management for sexually transmitted infections will continue to be important to meet the increasing trends for chlamydia, gonorrhea, and syphilis.

Due to the advances in antiretroviral therapy, it is anticipated that the life expectancy for people with HIV infection will increase.

### **Travel and Global Warming**

With increasing worldwide travel Northern Hemisphere countries are experiencing some strains of salmonellae that are considered "exotic." This impacts the resources of public health investigators and public health labs as they attempt to determine the sources of positive salmonellosis cases of foreign origin.

It is expected that the affects of global warming will increase the incidence of some infectious diseases. For example, more northern beaches may be closed as warmer water favours the increase in bacterial counts. It is anticipated that swimmers' itch, a reaction to the parasite, schistosomiasis may increase as sand clams are introduced into warmer waters.

Warmer temperatures could increase the introduction of new infectious diseases to the north.

### **Diseases Spread by Insects and Animals**

Diseases spread by insects and animals may be seen to increase over the coming decades.

Malaria, a parasitic disease transmitted by mosquitoes, is starting to be found in the warmer climates of the United States; and the malarial disease is being found in humans who have no history of foreign travel.

Lyme disease has quickly been spreading through the Midwest United States and this type of tick has been located in Sault Sainte Marie, Michigan.

Dengue fever is another disease transmitted by mosquitoes. Travellers could bring this disease home to Canada. At this time, there is no vaccine or medicine to take for dengue fever. If travelling to an infected country insect precautions are recommended.

Exotic pets can introduce the risk of infection. A recent outbreak of monkey pox in the United States focused on diseased pet prairie dogs that were purchased at pet stores.

### **Keep Vaccinating**

Vaccinations are one of the best ways to put an end to the serious effects of certain diseases. Vaccines have reduced or eliminated many infectious diseases that once routinely killed or harmed many infants, children, and adults. However, the viruses and bacteria that cause vaccine-preventable diseases still exist and can be passed on to people who are not protected by vaccines. It is important to keep immunizing to ensure that the progress made over the years is not undone.

## **A Final Note...**

### **How You Can Prevent Spreading Infectious Diseases**

#### **Wash your hands often.**

This is especially important before and after preparing food, before eating, and after using the bathroom.

#### **Get vaccinated.**

Immunization can drastically reduce your chances of contracting many diseases. Keep your recommended vaccinations, as well as your children's, up-to-date. Contact the Algoma Health Unit for more information.

#### **Use antibiotics sensibly.**

Only take antibiotics when necessary. When prescribed, take them exactly as directed. Don't stop taking them early because your symptoms have stopped.

#### **Stay at home if you have signs and symptoms of an infection.**

Don't go to work if you're vomiting, running a fever, or have diarrhea. Don't send your child to school if he or she has these signs and symptoms.

#### **Be smart about food preparation.**

Keep counters and other kitchen surfaces clean when preparing meals. Promptly refrigerate leftovers. Don't leave cooked foods at room temperature for extended periods of time.

#### **Disinfect the 'hot zones' in your home.**

These include the kitchen and bathroom — two rooms that can have a high concentration of bacteria and other infectious agents. Computer keyboards and remote controls are also sources that spread germs.

#### **Practice safer sex.**

The best preventative measures to reduce your risk of acquiring a sexually transmitted infection include delaying onset of intercourse, limiting the number of sexual partners, using latex condoms 100% of the time for oral, vaginal, and anal intercourse. Next to abstinence, the safest practice is mutual monogamy.

#### **Don't share personal items.**

Use your own toothbrush, comb, or razor blade. Avoid sharing drinking glasses or eating utensils.

**Travel wisely.**

Don't fly when you're ill. With so many people confined to such a small area, you may infect other passengers in the plane. Talk to your healthcare provider about any special immunizations you may need.

**Keep your pets healthy.**

Bring your pet to a veterinarian for regular care and vaccinations. Feed your pet a healthy diet and keep your pet's living area clean.

Adapted from: <http://www.mayoclinic.com/health/infectious-disease/1D00004>

## **Appendices**

# **Infectious Diseases in Algoma 1995-2004**

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## REPORTABLE DISEASES 2004

The following specified Reportable Diseases (Ontario Regulations 559/91 amended to O. Reg. 96/03 under the Health Protection and Promotion Act) are to be reported to the Local Medical Officer of Health.

<p>Acquired Immunodeficiency Syndrome (AIDS) Amebiasis <b>*Anthrax</b> <b>*Botulism</b> <b>*Brucellosis</b> Campylobacter enteritis Chancroid Chickenpox (Varicella) Chlamydia trachomatis infections Cholera <b>*Cryptosporidiosis</b> <b>*Cyclosporiasis</b> Cytomegalovirus infection, congenital <b>*Diphtheria</b> <b>*Encephalitis, including:</b> <b>*1. Primary, viral</b> 2. Post-infectious 3. Vaccine-related 4. Subacute sclerosing panencephalitis 5. Unspecified <b>*Food poisoning, all causes</b> <b>*Gastroenteritis, institutional outbreaks</b> <b>*Giardiasis, except asymptomatic cases</b> Gonorrhea <b>*Group A Streptococcal disease, invasive</b> Group B Streptococcal disease, neonatal <b>*Haemophilus influenzae type b disease,</b> <b>*Hantavirus Pulmonary Syndrome</b> <b>*Hemorrhagic fevers, including:</b> <b>*1. Ebola virus disease</b> <b>*2. Marburg virus disease</b> <b>*3. Other viral causes</b> <b>*Hepatitis, viral</b> <b>*1. Hepatitis A</b> 2. Hepatitis B 3. Hepatitis C 4. Hepatitis D (Delta hepatitis) Herpes, neonatal Influenza <b>*Lassa Fever</b> <b>*Legionellosis</b> Leprosy <b>*Listeriosis</b> Lyme Disease</p>	<p>Malaria <b>*Measles</b> <b>* Meningitis, acute</b> <b>*1. bacterial</b> 2. viral 3. other <b>* Meningococcal disease, invasive</b> Mumps Ophthalmia neonatorum Paratyphoid Fever Pertussis (Whooping Cough) <b>*Plague</b> Pneumococcal disease, invasive <b>*Poliomyelitis, acute</b> Psittacosis/Ornithosis <b>*Q Fever</b> <b>*Rabies</b> <b>*Respiratory infection outbreaks in institutions</b> Rubella Rubella, congenital syndrome Salmonellosis <b>*Severe Acute Respiratory Syndrome (SARS)</b> <b>*Shigellosis</b> <b>*Smallpox</b> Syphilis Tetanus <b>* Transmissible Spongiform Encephalopathy, including:</b> <b>* 1. Creutzfeldt-Jacob Disease, all types</b> <b>*2. Gerstmann-Sträussler-Scheinker Syndrome</b> <b>*3. Fatal Familial Insomnia</b> <b>*4. Kuru</b> Trichinosis Tuberculosis <b>*Tularemia</b> Typhoid Fever <b>*Verotoxin-producing E. coli infection indicator conditions, including Haemolytic Uraemic Syndrome (HUS)</b> <b>* West Nile Virus Illness:</b> <b>*1. West Nile Virus Fever</b> <b>* 2. West Nile Virus Neurological Manifestations</b> <b>*Yellow Fever</b> Yersiniosis</p>
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**NOTE: Diseases marked with \* should be reported immediately to the Medical Officer of Health by telephone. Other diseases are to be reported the next working day.**

To report a disease or for more information, please call the Algoma Health Unit at (705) 759-5285.

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## Glossary

*Age-adjusted incidence rate:* Incidence of a disease adjusted for the age of the population. Age-adjusted incidence rates are not the actual rates of disease in the community but rather are the rate that would be expected if the community had the same age structure as a reference population. Age adjusting allows for comparisons of rates between communities that have different population age structures.

*Agent:* a microbe or other organism that causes disease and lives in a host organism.

*Case:* A person who currently has a particular disease.

*Infectious disease:* A disease that readily moves from one infected person or other animal to another.

*Confidence interval (CI):* The computed interval with a given probability e.g. 95%, that the true value of a variable such as a mean, proportion, or rate is contained within the interval.

*Contagious disease:* A disease that can be easily acquired from another person or other animal.

*Host:* A person or animal in which an infective agent lives. The host may or may not have symptoms of the disease.

*Immune:* A person who is not susceptible to a disease due to either having contracted the disease already or because they have been immunized (vaccinated) against the disease.

*Incidence rate:* The number of new cases of a disease in a region divided by that region's population size.

*Infectious disease:* A disease caused by a microbe or other organism entering a human or other animal through the mouth, nose, skin, eyes, via puncture wounds, or via sexual contact.

*Lab-confirmed cases:* Cases of a disease that a public health lab has confirmed to be positive.

*Nosocomial infections:* Infections acquired while in a health care institution.

*Prevalence rate:* The number of active cases of a disease in a region divided by that region's population size.

*Reportable diseases:* Diseases for which, by law, healthcare providers and testing labs must report all cases to a designated government agency.

*Reservoir:* A population of humans or animals in which a population of disease agents reside.

*Susceptible:* A person who is at risk of contracting an infectious disease. Opposite of 'immune.'

*Vaccine-preventable disease:* Diseases for which an effective vaccination is available.

*Sexually transmitted infection:* Diseases that are spread through any type of sexual contact.

*Vector borne:* Diseases spread by insects.

*Zoonoses* (pronounced zoh-oh-noh-seez): Diseases that humans can contract from animal hosts. Example: rabies.

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<b>Total Number of Cases of Infectious Diseases in Algoma 1995-2004</b>	
	<b>Number of Cases</b>
Amebiasis	14
<i>Campylobacter</i> enteritis	332
Chickenpox	Do not collect – underreported
Chlamydia	1732
Cryptosporidiosis	Less than 5
Encephalitis/Meningitis	6
Encephalitis-Primary Viral	22
Giardiasis	238
Gonorrhea	44
Group A Streptococcus (GAS)	38
Group B Streptococcal Infection (GBS)	7
<i>Haemophilus influenzae</i> Type b (Hib)	0
Hepatitis A	14
Hepatitis B	20
Hepatitis C	879
HIV/AIDS	12
Influenza	353
Invasive Meningococcal Disease (IMD)	7
Invasive Pneumococcal Disease ((IPD)	27
Listeriosis	Less than 5
Lyme Disease	Less than 5
Malaria	Less than 5
Measles	17
Mumps	16
Pertussis	200
Rabies	0
Rubella	0
Salmonellosis	206
Shigellosis	11
Syphilis	Less than 5
Tetanus	0
Tuberculosis	16
Veritoxin-producing <i>Escherichia coli</i> (VTEC)	32
West Nile Virus	0
Yersiniosis	24

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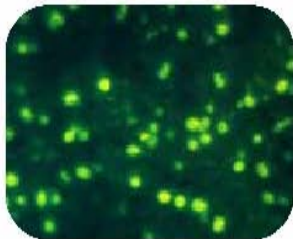
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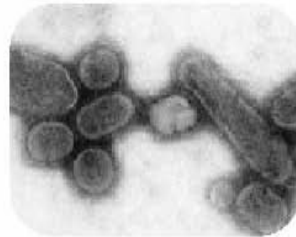
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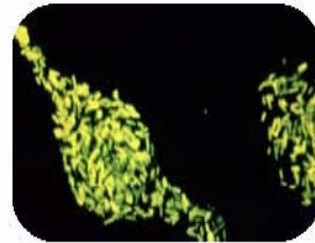
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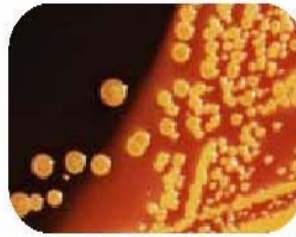
Recreated 1918  
influenza virions



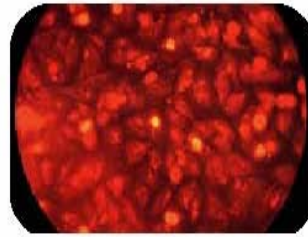
*Salmonella sp.*



*Borrelia burgdorferi*



*Escherichia coli*



Type-A *Chlamydia trachomatis*

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