

**Renfrew County and District
Community Health Status Report
Issue #15, 2008**

Reportable Diseases in Renfrew County and District



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Reportable Diseases in Renfrew County and District (RC&D)

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Executive Summary

Reportable Diseases in Renfrew County and District (RC&D) provides information on diseases that have been reported to the local Medical Officer of Health in compliance with Ontario's Health Protection and Promotion Act. This report examines the ten-year period 1998 to 2007, so that any trends over time can be observed. Where possible, information is provided in relation to provincial objectives for disease incidence and immunization coverage that are identified in Mandatory Health Programs and Services Guidelines.¹

We have provided analysis and comments for the five most common reportable diseases in RC&D: chlamydia, hepatitis C, campylobacter enteritis, influenza, and salmonellosis. In addition, we have provided information on hepatitis B, pertussis, and invasive meningococcal disease. The latter three diseases are preventable by routine vaccination, and there have been at least eight cases of each in RC&D during the 2000 to 2007 period.

Summary information on the diseases examined in this report

Disease	Percent of all RC&D reportable disease cases 2000 - 2007	Range in annual number of cases reported in RC&D 1998 - 2007	Average annual incidence rate/100,000 population 1998 - 2007	
			RC&D	ON
Chlamydia	42%	56 - 127	103	166
Hepatitis C	12%	18 - 49	29	42
Campylobacter	12%	16 - 34	25	37
Influenza	9%	5 - 38	15	18
Salmonellosis	8%	11 - 24	17	21
<i>The 3 disease listed below are less common but are preventable through routine immunization</i>				
Hepatitis B	<1%	0 - 11	1.74	1.24
Pertussis	<1%	0 - 7	1.62	5.58
Meningococcal disease, invasive	<1%	0 - 2	1.0	0.54

Chlamydia

The number of chlamydia cases reported annually in RC&D has been increasing. From 1998 to 2004, there were well *under* 100 cases/year. From 2005 to 2007, there were well *over* 100 cases/year. Chlamydia incidence rates in Ontario have been rising steadily. Incidence rates in RC&D have also been rising, but remain well below Ontario rates.

The highest incidence rates for chlamydia are among young females. In 2007, the incidence rate for females age 15 to 24 was 902 cases/100,000 in RC&D and 1,182 cases/100,000 in Ontario. Both rates are well above the provincial objective of 500 cases/100,000 women age 15 to 24.

Hepatitis C

The hepatitis C incidence rate in RC&D has been consistently below the Ontario rate since 1998 except for 2007, when it was higher.

Campylobacter enteritis

The campylobacter enteritis incidence rate in RC&D has been below the Ontario rate since 1998 except for 2007, when it was higher.

Salmonellosis

The salmonellosis incidence rate in RC&D has been close to or below the Ontario rate from 1998 to 2007.

Influenza

Annual fluctuations in reported influenza incidence rates in RC&D have been similar to fluctuations in Ontario. Mortality rates in RC&D for influenza and pneumonia combined were between 12 and 16 deaths/100,000 population (2000 – 2004). These rates are close to those for Ontario as a whole.

Since influenza viruses are constantly changing, influenza vaccination is provided on an annual basis. Information on annual vaccination coverage is summarized in the table below.

Annual influenza vaccination coverage in RC&D

Target group	Immunization coverage	Provincial Objective
People age 65 and over	about 70% in 2000, 2003 and 2005	70%
Residents of long-term care facilities	between 89 and 96% for the 2003/04 to 2007/08 influenza seasons	95%
Staff of long-term care facilities	over 80% since 2002/03 except in the 2007/08 season, when coverage was down to 77%	70% for health care workers in contact with high-risk individuals
Hospital staff	Under 50%	

Local influenza vaccination coverage for people over age 65, residents of long-term care facilities and staff of long-term care facilities has been similar to coverage in Ontario as a whole. However, local vaccination coverage for hospital staff has been consistently lower than in Ontario as a whole.

Future concerns

It is important to continue with activities directed at the surveillance, prevention, diagnosis, treatment and control of infectious diseases. Future challenges with infectious diseases could include dealing with pandemic influenza, and emerging infectious agents including antibiotic-resistant organisms.

Introduction

Infectious diseases are spread from one host – a person, animal or insect - to another. An infectious agent – a bacterium, virus or parasite – multiplies in the host and can be transmitted to others through food, water, body fluids, contaminated objects, airborne inhalation, or vectors such as mosquitoes and ticks. Although great strides have been made in the elimination and control of many infectious diseases, they are still an important cause of illness and death in Canada.

In Ontario, certain infectious diseases must be reported to the local Medical Officer of Health in compliance with the Health Protection and Promotion Act. See **Appendix A** for the list of reportable diseases.

Reportable Diseases in Renfrew County and District provides information on the reportable diseases that have occurred in Renfrew County and District (RC&D) in recent years. This report examines the ten-year period 1998 to 2007 so that any trends over time can be observed. Where possible, information is provided in relation to provincial objectives for disease incidence and immunization coverage that are identified in Mandatory Health Programs and Services Guidelines, 1997.¹

We have provided analysis and comments for the five most common reportable diseases in RC&D: chlamydia, hepatitis C, campylobacter enteritis, influenza, and salmonellosis. In addition, we have provided information about hepatitis B, pertussis, and invasive meningococcal disease. The latter three diseases are preventable by routine vaccination, and there have been at least eight cases of each in RC&D during the 2000 to 2007 period.

Data Sources and Interpretation

Much of the data in this report is from the Integrated Public Health Information System (iPHIS), which is managed by the Ontario Ministry of Health and Long-Term Care. iPHIS is a web-based surveillance system for reportable diseases in Ontario. Other sources, such as the Canadian Community Health Survey (CCHS) and the Provincial Health Planning Database (PHPDB) are identified throughout the report where applicable. See **Appendix B** for more detailed information on data sources.

Only cases that are confirmed by laboratory testing and/or clinical diagnostic criteria are included in iPHIS. For many diseases, confirmed cases under-represent the actual number of cases occurring in the community. Under reporting is caused by several factors:

- Not all infections cause clinical symptoms.
- Not everyone who experiences symptoms seeks medical attention.
- Often people receive treatment without a laboratory analysis that confirms the identity of the disease.

- Health care providers and administrators may not always recognize when they should report to the Medical Officer of Health.

Note that the statistical significance of differences between groups of data are not assessed. Comparative words are used but they have no statistical meaning. Therefore, conclusions and decisions that require statistical analysis are not warranted by what is presented in this report.

Local Context

Renfrew County and District is comprised of the County of Renfrew, the City of Pembroke, the Township of South Algonquin, and most of Algonquin Provincial Park in Ontario, Canada. This area covers about 15,000 square kilometers. The population has been fluctuating between 100,000 and 101,000 people between 1998 and 2007, ² the time-period covered by this report.

Public Health's Role

Public health units in Ontario have an important role in the prevention and control of infectious diseases. For example, public health staff provide provincially funded vaccines, maintain immunization records, investigate confirmed cases of reportable diseases and manage cases and their contacts. Another example is the provision of food safety information and education, and inspection of all food premises to ensure compliance with food safety regulations.

The Renfrew County and District Health Unit is mandated under the Ontario Health Protection and Promotion Act to review and report on health status in the community on a regular basis. Health status information is used to assist with planning local health promotion and disease prevention programs and services.

This report is the 15th in a series of health status reports published by the Renfrew County and District Health Unit. Most of these reports are available on our web site: <http://www.rcdhu.com/community-health-status/index.htm>.

For more information about community health indicators for Renfrew County and District, contact Peggy Patterson, Coordinator of Program Planning and Evaluation at 613-735-8650 ext. 546 or ppatterson@rcdhu.com.

Summary of Reportable Diseases in RC&D

Figure 1 provides a summary of all reported diseases in Renfrew County and District (RC&D) from 2000 to 2007. The five most common reportable diseases accounted for over 80 percent of all reportable disease cases during this period.

Figure 1: Reportable diseases in RC&D for the eight-year period 2000 to 2007

Ranking	Reportable Disease	Number of Cases	Proportion of Cases
1	Chlamydia	699	42
2	Hepatitis C	205	12
3	Campylobacter enteritis	193	12
4	Influenza*	144	9
5	Salmonellosis	133	8
6	Giardiasis	70	4
7	Streptococcus pneumoniae - invasive	29	2
8	Cryptosporidiosis	24	1
8	Group A Streptococcal disease, invasive	24	1
9	Verotoxin-producing E. Coli	19	1
10	Gonorrhoea, all types	17	1
10	Yersiniosis	17	1
11	Hepatitis B*	14	<1
12	Pertussis (whooping cough)*	13	<1
13	Amebiasis	9	<1
14	Gastroenteritis, institutional outbreaks	8	<1
14	Meningococcal disease, invasive*	8	<1
15	HIV/AIDS	6	<1
15	Hepatitis A	6	<1
16	Cyclosporiasis	5	<1
16	Shigellosis	5	<1
17	Tuberculosis of the lung	4	<1
17	Malaria	4	<1
18	Syphilis, all types	3	<1
18	Encephalitis, primary viral	3	<1
18	Meningitis - bacterial	3	<1
19	Legionellosis	2	<1
19	Mumps*	2	<1
20	Encephalitis, unspecified	1	<1
20	Listeriosis	1	<1
20	Meningitis, viral	1	<1
20	Ophthalmia neonatorum	1	<1
20	Tetanus*	1	<1
	Total	1674	100

* publicly funded vaccine available

Most Common Reportable Diseases in RC&D

Chlamydia

Chlamydia is an infection caused by bacteria called *Chlamydia trachomatis*. It is the most common sexually transmitted infection in North America. It can also be passed from an infected mother to her baby during vaginal birth.

Health Effects

Symptoms of chlamydia in women include abnormal vaginal discharge, a burning sensation during urination, abdominal or lower back pain, bleeding between periods and pain during intercourse. If untreated, chlamydia can cause an infection of the fallopian tubes, which can block them (causing infertility) or scar them. This can lead to pelvic inflammatory disease, a serious condition that causes chronic pain and other problems.

Symptoms in men include painful burning during urination, redness, swelling, burning or itching around the opening of the penis, and discharge from the penis. Complications in men include sterility, prostatitis (an inflammation of the prostate) and difficulty passing urine.

Incidence

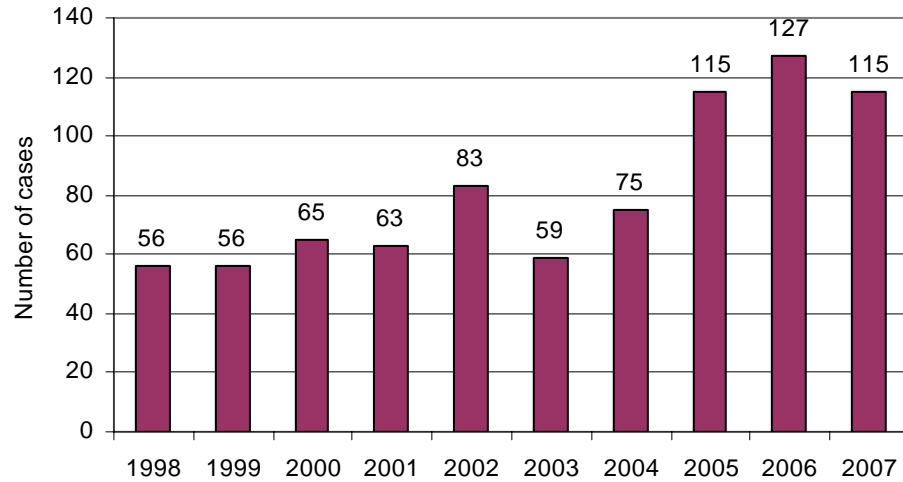
About 75 percent of women and over 25 percent of men who get chlamydia have no symptoms, so they are unaware of their infection. Not all people who experience symptoms seek medical attention, and some who do seek medical attention are treated for chlamydia but the disease is not confirmed by laboratory testing. For these reasons, reported cases under-represent the real incidence of chlamydia.

The reported incidence of chlamydia has been increasing steadily in Canada since 1997.³ Females account for more cases than males. This is thought to be due at least in part to better screening and case finding among females rather than a true difference in distribution.

Chlamydia is the most common reportable disease in Renfrew County and District (RC&D). Over the past eight years (2000 – 2007), chlamydia accounted for 42 percent of all reported disease cases.

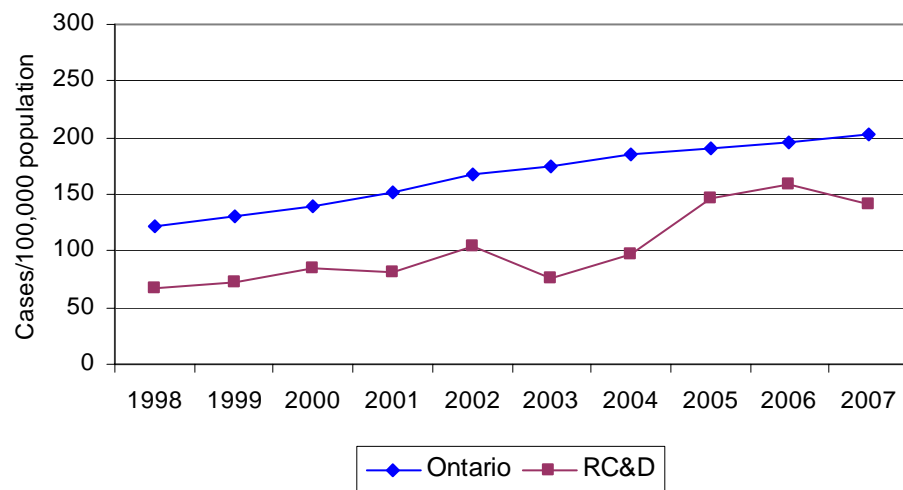
The number of cases reported annually in RC&D has been increasing. From 1998 to 2004 there were well under 100 cases/year. From 2005 to 2007, there were well over 100 cases/year. See Figure 2.

Figure 2: Annual number of reported chlamydia cases in RC&D, 1998 - 2007



Chlamydia incidence rates in Ontario have been rising steadily. Incidence rates in RC&D have also been rising, but remain well below Ontario rates. See Figure 3. The average annual incidence rate over the ten-year period shown was 103 cases/100,000 population in RC&D and 166 cases/100,000 in Ontario.

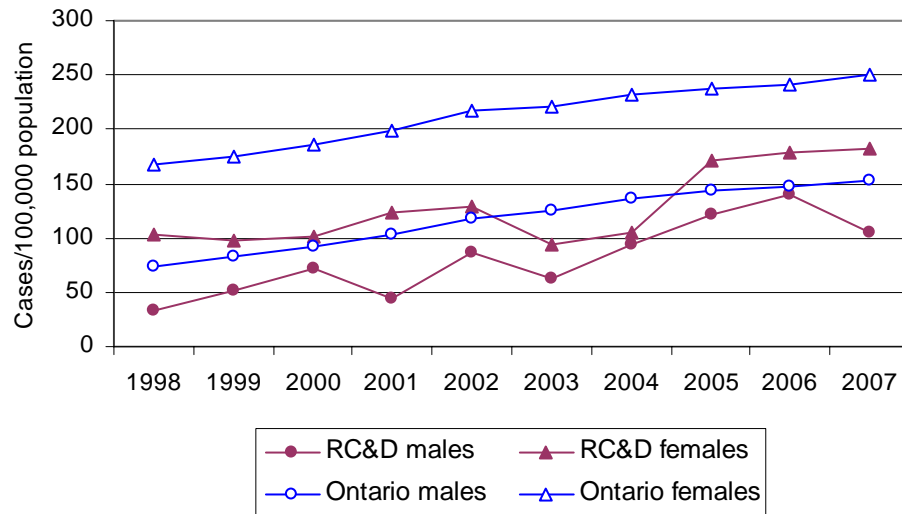
Figure 3: Chlamydia incidence rates, RC&D and Ontario, 1998 - 2007



Rates are age-standardized.

Local incidence rates for males have been consistently below Ontario rates for males except for 2006. Local incidence rates for females have been much lower than Ontario rates for females. See Figure 4.

Figure 4: Chlamydia incidence rates by gender, RC&D and Ontario, 1998 - 2007



Rates are age-standardized.

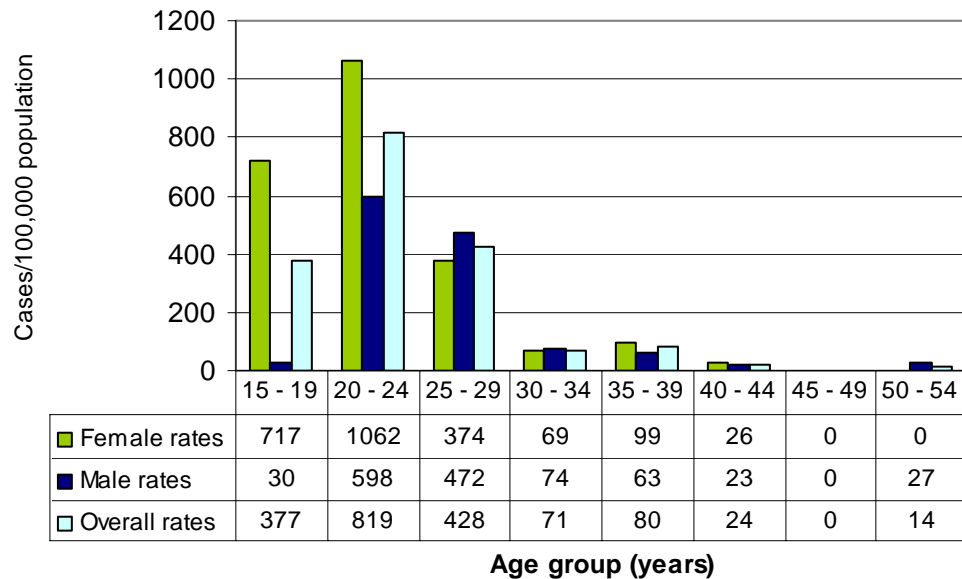
From 2005 to 2007, about 60 percent of reported chlamydia cases in RC&D occurred among females, and 40 percent occurred among males. Female cases were mainly in the 15 - 19 or 20 - 24 age group. Male cases were most often in the 20 to 24 age group. See Figure 5. In Ontario, the most affected age group for both sexes is age 20 to 24.⁴

Figure 5: Average number of confirmed chlamydia cases per year by age group and gender in RC&D, 2005 – 2007

	15 - 19	20 - 24	25 - 29	30 - 34	35 - 39	40 - 45
Females	24	28	10	5	2	1
Males	3	24	16	3	2	1

The 2007 chlamydia incidence rates for females and males in different age groups are shown in Figure 6 below.

Figure 6: Chlamydia incidence rates by age group and gender in RC&D, 2007



A provincial objective is to reduce the incidence rate of genital chlamydia to 500 cases/100,000 women age 15 to 24. In 2007, the incidence rate for females age 15 to 24 was 902 cases/100,000 in RC&D and 1,182 cases/100,000 in Ontario. Both rates are well above the provincial target.

Hepatitis C

The hepatitis C virus is one of several viruses that can destroy the liver. It is transmitted through direct contact with infected blood or blood products. In Canada, the main way to get hepatitis C is by sharing drug needles and by using non-sterile needles for tattooing and body piercing. Donated blood and organs are screened for hepatitis C infection, so the chance of getting the disease this way is very low.

Health Effects

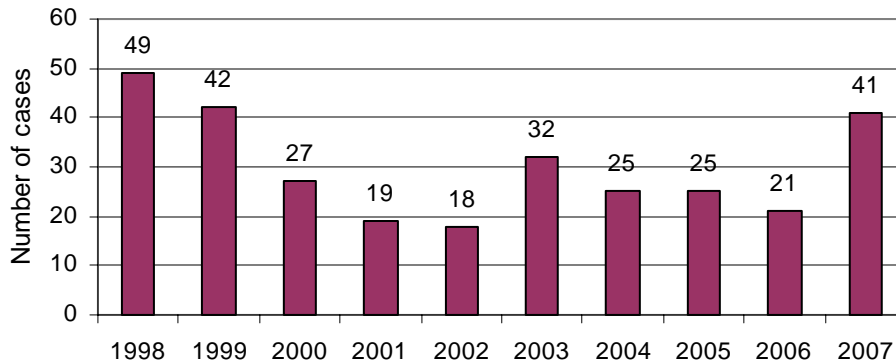
The most common symptoms of acute hepatitis C infection are fatigue and jaundice. Although most people with acute hepatitis C do not have symptoms, 75 to 85 percent will develop a chronic infection and will remain infectious.⁵ Up to 25% of chronic hepatitis C infections result in cirrhosis (scarring) of the liver, liver failure or liver cancer.⁶ The lifetime cost of hepatitis C per patient from the time of diagnosis to death, including medical costs and loss of productivity, is estimated at \$1 million.⁶

Incidence

An estimated 110,000 people in Ontario are infected with hepatitis C as of 2007. About 3,300 people are newly infected with hepatitis C each year, mostly through injection drug use.⁷

Hepatitis C is the second most common reportable disease in RC&D, accounting for 12% of reported disease cases (2000 – 2007). The number of cases reported annually over the past ten years has fluctuated from 18 to 49. See Figure 7.

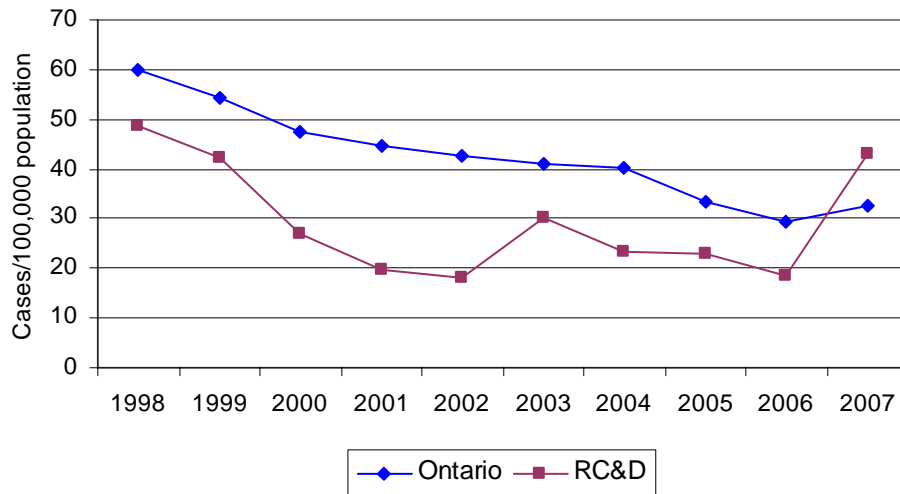
Figure 7: Annual number of reported hepatitis C cases in RC&D, 1998 - 2007



Over 60 percent of hepatitis C cases in RC&D occurred among males (1998 – 2007). Over 70 percent of male cases were between the ages of 35 and 54 when they were diagnosed. Most female cases were distributed between the ages of 25 and 54.

Hepatitis C incidence rates in RC&D have been consistently below Ontario rates except in 2007. See Figure 8. The average annual incidence rate over the ten-year period was 29 cases/100,000 population in RC&D and 42 cases/100,000 in Ontario.

Figure 8: Hepatitis C incidence rates, RC&D and Ontario, 1998 - 2007



Rates are age-standardized

Campylobacter enteritis

Campylobacter enteritis is a type of food poisoning caused by a group of bacteria called campylobacter. It is one of the most common causes of diarrhea in Canada.

Many chicken flocks are infected with campylobacter but show no signs of illness. Human infection with campylobacter can be caused by eating raw or undercooked poultry, or foods that have been cross-contaminated by these items. (For example, by cutting raw poultry on a cutting board, and then using the unwashed board or knife to prepare vegetables or other raw or lightly cooked foods.) Human infection with campylobacter can also be caused by drinking unpasteurized milk from an infected cow or water that has been contaminated by infected livestock or birds.

Health Effects

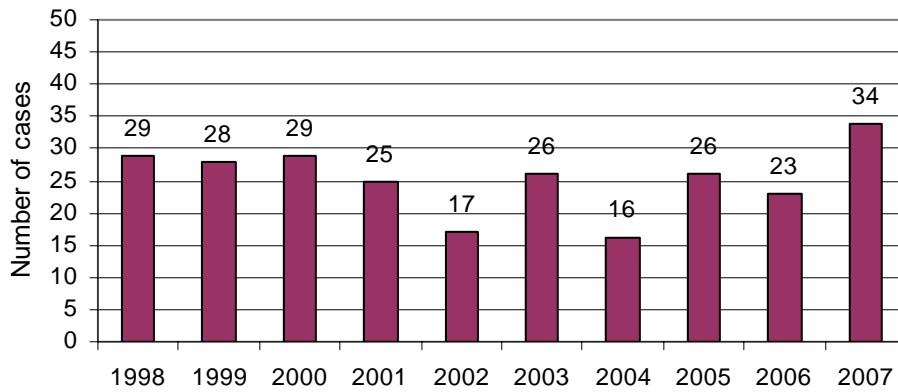
Some people who become infected with campylobacter do not have symptoms, but most people experience diarrhea, abdominal pain, and fever. The diarrhea can be bloody and can be accompanied by nausea and vomiting. Symptoms usually last about a week but can last longer. Rare complications of campylobacter enteritis are Guillain-Barré Syndrome, meningitis, septicemia, urinary tract infections and reactive arthritis (painful inflammation of the joints, which can last several months).

Incidence

Many different illnesses can cause diarrhea, abdominal pain and fever. Campylobacter is identified by a laboratory test that finds campylobacter in the stool of an infected person.

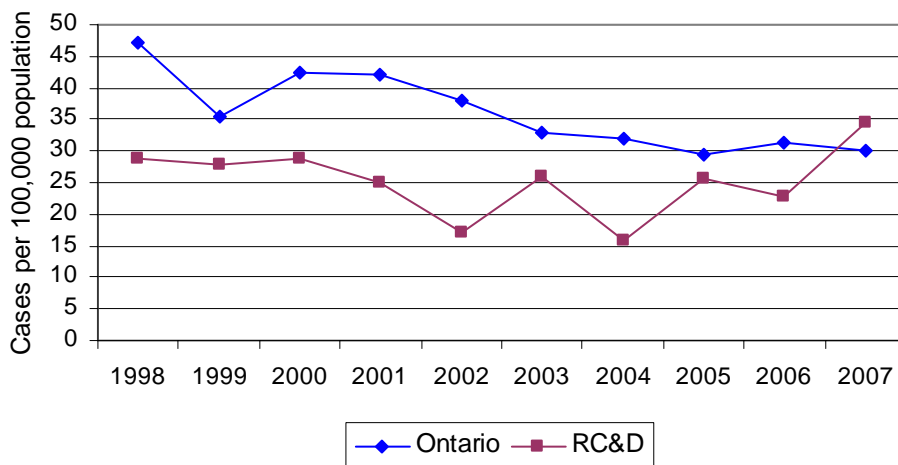
Campylobacter enteritis is the third most common reportable disease in RC&D, accounting for about 12% of reported disease cases (2000 – 2007). The number of cases reported annually in RC&D over the past ten years has fluctuated from 16 to 34. See Figure 9.

Figure 9: Annual number of reported campylobacter cases in RC&D, 1998 - 2007



Campylobacter enteritis incidence rates in RC&D have been below Ontario rates except in 2007. See Figure 10. The average annual incidence rate over the ten-year period shown was 25 cases/100,000 population in RC&D and 36 cases/100,000 in Ontario.

Figure 10: Campylobacter incidence rates, RC&D and Ontario, 1998 - 2007



Rates are crude

Salmonellosis

Salmonellosis is a type of food poisoning caused by a group of bacteria called salmonella. Salmonella bacteria live in the intestinal tract of humans, birds, reptiles and other animals. People usually get salmonellosis by eating foods contaminated with animal feces (often beef, poultry, milk or eggs). Food may also become contaminated through an infected food handler with improper hand washing practices or dirty attire. Salmonella bacteria can be destroyed by proper cooking. People can also get salmonellosis by not washing their hands after handling infected pets or farm animals.

Health Effects

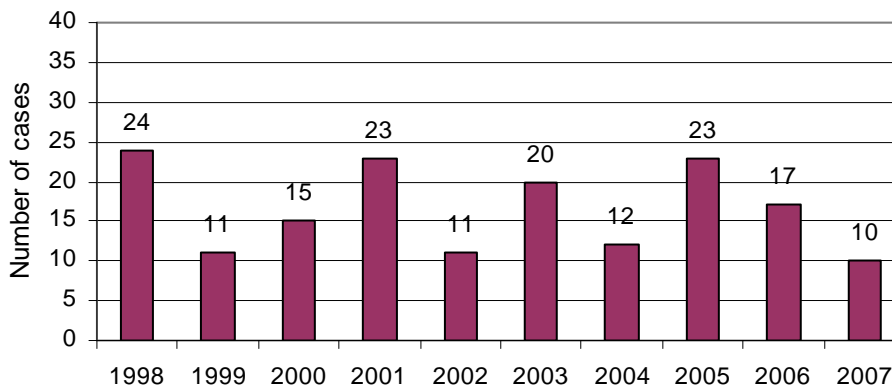
Salmonellosis causes diarrhea, fever and abdominal cramps. The illness usually lasts 4 to 7 days, although it may be several months before bowel habits return to normal. Most people recover without treatment. A small number of people who have been infected with salmonella develop pain in their joints, irritation of the eyes, and painful urination. This is called Reiter's syndrome. It can last for months or years and can lead to chronic arthritis, which is difficult to treat.

Incidence

Many different illnesses can cause diarrhea, fever and abdominal cramps. Salmonellosis is identified by a laboratory test that finds salmonella in the stool of an infected person.

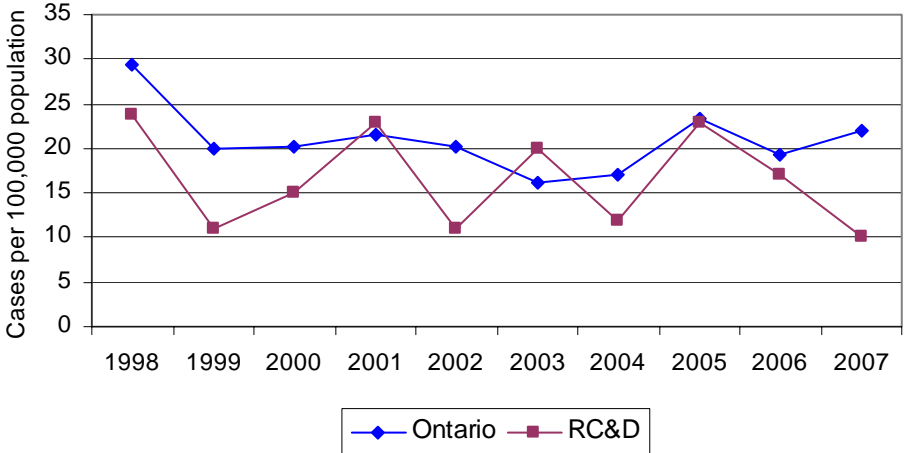
Salmonellosis is the fifth most common reportable disease in RC&D, accounting for about 8% of reported disease cases (2000 – 2007). The number of cases reported annually over the past ten years has fluctuated from 10 to 24. See Figure 11.

Figure 11: Annual number of reported salmonellosis cases in RC&D, 1998 - 2007



Salmonellosis incidence rates in RC&D have been close to or below Ontario rates. See Figure 12. The average annual incidence rate over the ten-year period shown was 17 cases/100,000 population in RC&D and 21 cases/100,000 in Ontario.

Figure 12: Salmonellosis incidence rates, RC&D and Ontario, 1998 - 2007



Rates are crude

Diseases Preventable by Vaccination in RC&D

Introduction

Diseases that are preventable by vaccination are a group of diseases caused by bacteria and viruses. The use of publicly funded vaccinations in Ontario has reduced the burden of many infectious diseases and has eliminated some diseases.

The Immunization of School Pupils Act requires that children attending school be vaccinated against diphtheria, polio, tetanus, measles, mumps and rubella. These vaccines are part of routine childhood vaccinations. Other publicly funded childhood vaccines protect against pertussis, *Haemophilus influenzae* type b (Hib), invasive meningococcal disease, chicken pox and streptococcus pneumoniae.

Hepatitis B vaccine is offered to all grade 7 students and those who meet high risk criteria. HPV (human papillomavirus) vaccine is offered to grade 8 females. Tetanus boosters are recommended every ten years throughout adulthood. Influenza vaccination is offered to all residents and people who work or attend school in Ontario and provides protection for the current influenza season, so is required each year. All of these vaccines are provided free of charge to Ontario residents.

Highlights

Figure 13: Total number of reported cases of diseases preventable by vaccination in RC&D from 2000 to 2007, and RC&D and Ontario incidence rates ^a

Disease	Number of confirmed cases in RC&D	RC&D incidence rate/100,000	Ontario incidence rate/100,000
Influenza	144	18.7	22.9
Hepatitis B	14	1.74	1.24
Pertussis (whooping cough)	13	1.62	5.58
Meningococcal disease, invasive	8	1.0	0.54

^a Average annual crude incidence rate for the 2000 – 2007 period, per 100,000 people in the population.

Influenza

Influenza, or “the flu,” is a common respiratory illness that is caused by a virus. Influenza is highly contagious, and is usually transmitted from one person to another through droplets from the respiratory tract. The time of year when influenza is most prevalent is usually October to April. The seasonal influenza described in this report is different from pandemic influenza.

Health Effects

About 30 to 50 percent of those who are infected with an influenza virus experience no symptoms. The rest experience mild to severe symptoms. First symptoms are usually fever, headache, chills, muscle aches, physical exhaustion, and a dry cough. Children can also get earaches, nausea, vomiting, and diarrhea. Symptoms usually last from three to five days but can last longer. Coughing and fatigue can last for several weeks, making it difficult to carry out normal daily activities.

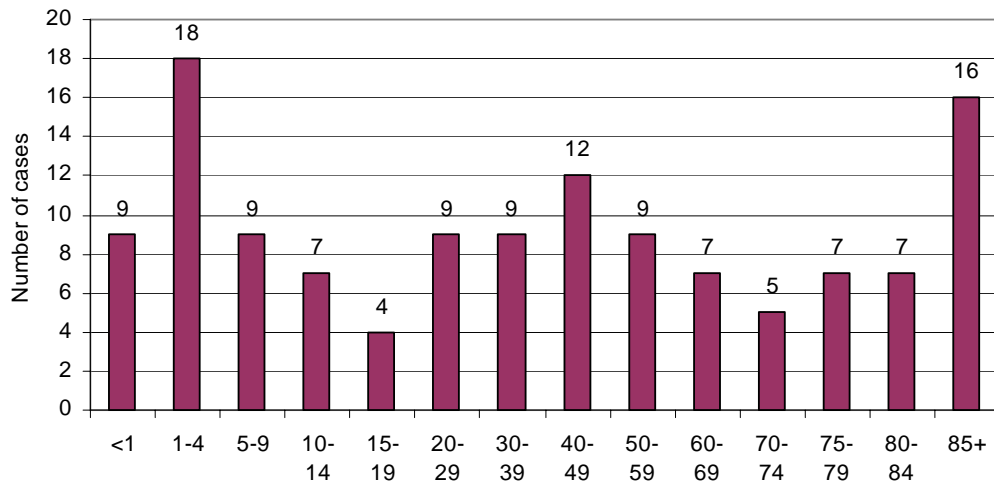
For most people, seasonal influenza is not life threatening. The most seriously affected are people over age 65, people with chronic medical conditions, and children less than two years old. For these people, influenza may lead to complications such as pneumonia or bronchitis, which can be fatal. In addition, influenza can worsen a current medical condition such as diabetes, lung disease, heart disease, kidney disease or cancer.

Incidence

The symptoms caused by influenza are similar to those caused by other viruses and bacteria. Diagnosis of influenza depends on laboratory testing. Cases confirmed by lab testing are reportable, but relatively few people who seek medical attention are tested. Residents of long-term care facilities and the elderly are more likely to get tested, so reported cases usually over-represent these individuals. In institutional settings, once a case is confirmed through a lab test, other cases with similar symptoms are assumed to be influenza and not tested. For these reasons, the reported incidence of influenza vastly under-represents the actual incidence.

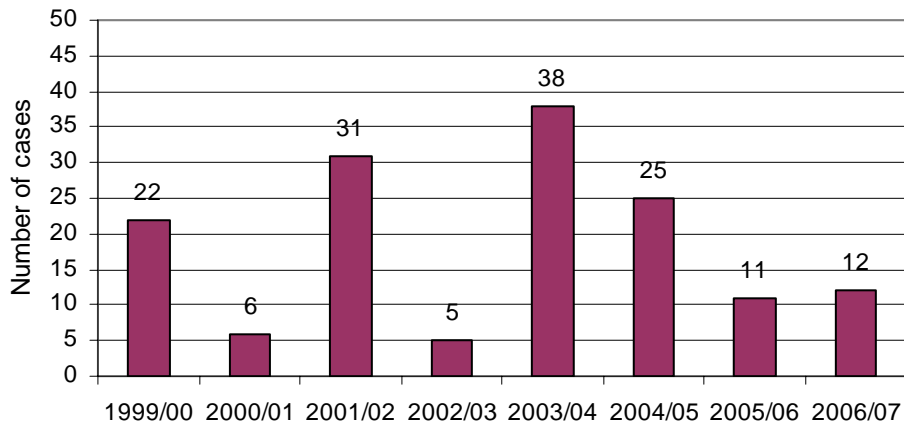
See Figure 14 for a summary of reported cases of influenza by age group in RC&D. Only one third of the reported cases from 1999/00 to 2006/07 were people age 60 and over.

Figure 14: Total number of reported cases of influenza by age group in RC&D, 1999/00 - 2006/07



Influenza is the fourth most common reportable disease in RC&D, accounting for about 9% of reported disease cases (2000 – 2007). The number of reported cases in an influenza seasonal year (defined as September 1st to August 31st) in RC&D ranged from five in 2002/03 to 38 in 2003/04. See Figure 15.

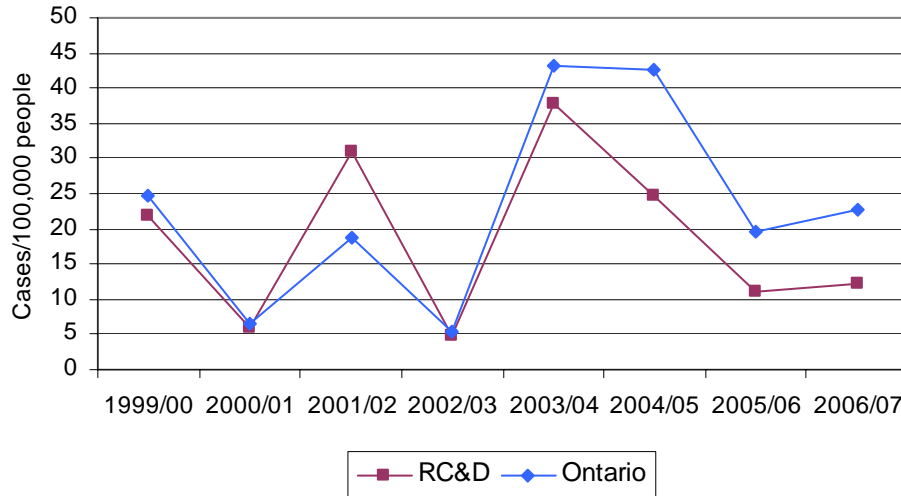
Figure 15: Annual number of reported cases of influenza by seasonal year^a in RC&D, 1999/00 - 2006/07



^a September 1 to August 31

Annual fluctuations in reported influenza incidence rates in RC&D have been similar to fluctuations in Ontario. See Figure 16. The average annual incidence rate for 1999/2000 to 2006/07 was 15 cases/100,000 population in RC&D and 18 cases/100,000 in Ontario.

Figure 16: Influenza incidence rates by seasonal year, RC&D and Ontario, 1999/00 - 2006/07



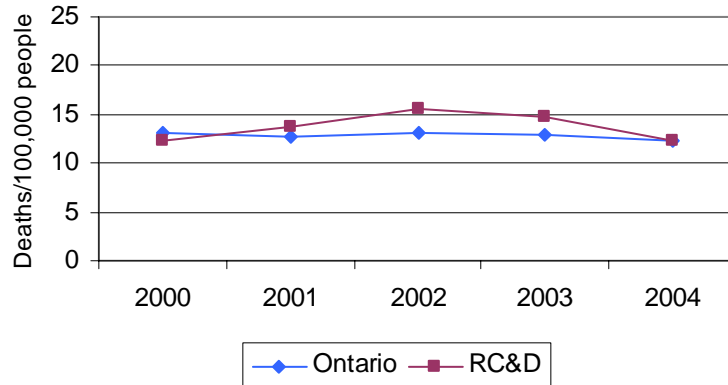
Rates are crude

Mortality

In Canada, the annual number of deaths directly caused by influenza ranges from 500 to 1500. However, there are many more deaths due to complications of influenza such as pneumonia.⁸ Looking at deaths due to pneumonia and influenza combined gives a better picture of influenza-related deaths, although pneumonia can also be due to other causes.

Age-standardized mortality rates for influenza and pneumonia in RC&D and Ontario are shown in Figure 17. Mortality rates in RC&D were not significantly different from provincial rates between 2000 and 2004. A provincial objective is to reduce the age-standardized mortality rate for pneumonia and influenza.

Figure 17: Influenza and pneumonia age-standardized mortality rates, RC&D and Ontario, 2000 - 2004



Sources: Ontario mortality data (2000 – 2004), Provincial Public Health Planning Database (PHPDB), Ontario Ministry of Health and Long-Term Care, extracted June 23, 2008. Population Estimates from PHPDB, extracted May 12, 2008.

Vaccination Coverage

Since 2000, influenza vaccinations have been available at no charge to all who live, work or attend school in Ontario and are over six months of age. The Ontario government states that “unless there is a medical reason not to, everyone aged 6 months or older can benefit from getting the flu shot.”⁹

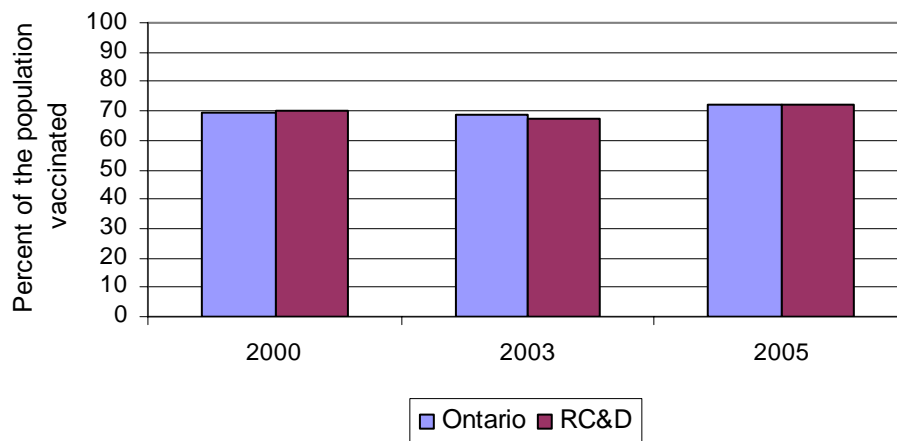
Ontario’s universal influenza immunization program is the first large-scale program of its kind in the world, and the benefits of providing free influenza vaccination to the entire population have not yet been fully evaluated. A project by the Institute for Clinical Evaluative Sciences is studying the benefits of universal versus targeted influenza vaccination programs to help answer the question of whether the rest of Canada should adopt universal influenza vaccination.¹⁰

Vaccination coverage rates in RC&D and Ontario are shown in Figures 18 through 21. Comments in this report refer to provincial objectives for influenza vaccination coverage. Note that these objectives were written before Ontario established its universal influenza immunization program. At the time, the priority groups that received provincially funded influenza vaccine were:

- People age 65 and older and people with high-risk conditions
- Residents of long-term care facilities
- Staff of long-term care facilities
- Health care workers

About 70 percent of *people age 65 and over* reported that they received a flu shot less than one year ago, in both Renfrew County and District (RC&D) and Ontario. See Figure 18. Self-reported vaccination rates are close to the provincial objective of 70 percent coverage for annual influenza vaccination for persons aged 65 years and older.

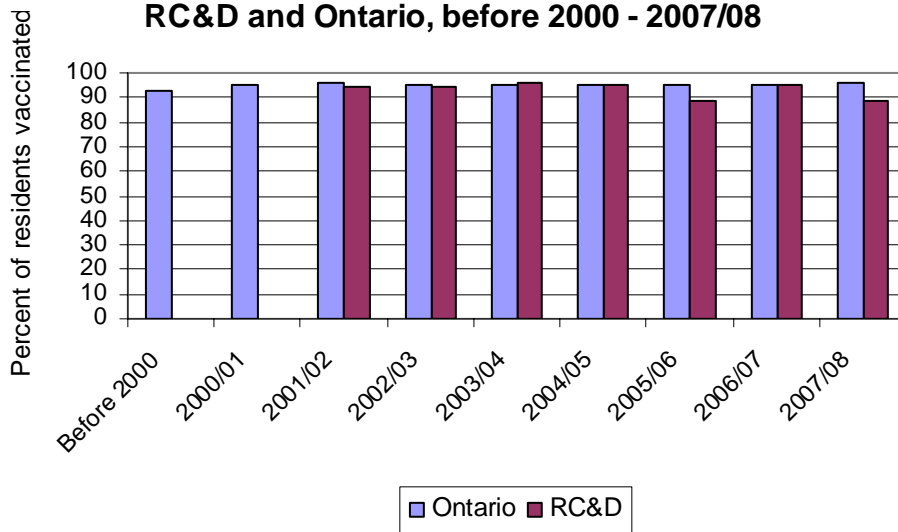
Figure 18: Self-reported influenza vaccination (flu shot) less than one year ago, age 65 and older, RC&D and Ontario



Sources: Statistics Canada, Canadian Community Health Survey 2000: CANSIM table 105-0045; 2003: CANSIM table 105-0245; 2005: CANSIM table 105-0045

Annual influenza vaccination coverage for *residents of long-term care facilities* in RC&D has been between 89 and 96 percent over the past five years. See Figure 19. The provincial objective is 95 percent vaccination coverage for this group.

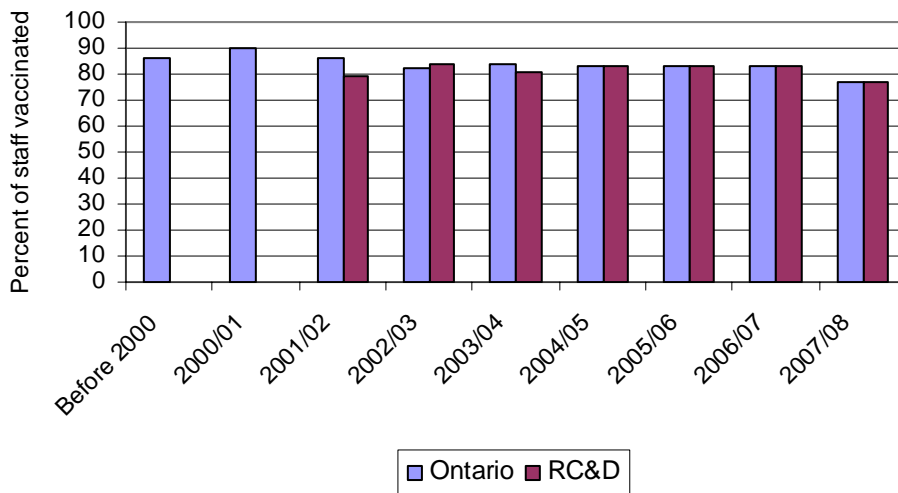
Figure 19: Influenza vaccination coverage for residents of long-term care facilities, RC&D and Ontario, before 2000 - 2007/08



Sources: See Appendix B

Annual influenza vaccination coverage for *staff of long-term care facilities* in RC&D has been over 80 percent since 2002/03 except in the 2007/08 season, when coverage was down to 77 percent. See Figure 20. The provincial objective is 70 percent coverage for health care workers in contact with high-risk individuals.

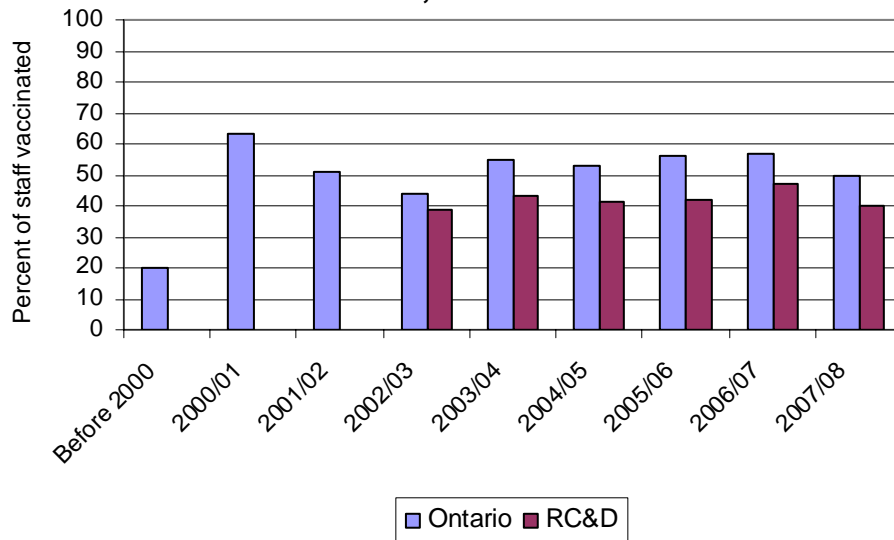
Figure 20: Influenza vaccination coverage for staff of long-term care facilities, RC&D and Ontario, before 2000 - 2007/08



Sources: See Appendix B

Annual influenza vaccination coverage for *hospital staff* in RC&D has been under 50 percent, and consistently lower than in Ontario as a whole. See Figure 21. The provincial objective is 70 percent coverage for health care workers in contact with high-risk individuals.

Figure 21: Influenza vaccination coverage for hospital staff, RC&D and Ontario, before 2000 - 2007/08



Sources: See Appendix B

Hepatitis B

Hepatitis B is an infection of the liver caused by the hepatitis B virus. It is spread through the blood and other body fluids of an infected person. It is primarily a sexually transmitted disease, but it can also be transmitted through dirty needles during intravenous drug use, body and ear piercing, and tattooing. Infected mothers can transmit the disease to their infants.

Health Effects

Many people who are infected with Hepatitis B do not have symptoms. For those who do, symptoms include loss of appetite, nausea and vomiting, stomach pain, fatigue and a yellowing of the skin and eyes (jaundice). Some people who are infected carry the virus for the rest of their lives. These people may develop cirrhosis (scarring) of the liver, liver failure or liver cancer.

Incidence

Globally, it is estimated that about 2 billion people have been infected with hepatitis B, and over 350 million are carriers who may develop serious complications. Three quarters of the world's population live in areas where there are high levels of infection.¹¹ The annual incidence of hepatitis B in Ontario has decreased from over six cases per 100,000 people in 1990 to just over one case per 100,000.¹²

There were 14 reported cases of hepatitis B in RC&D during the eight-year period, 2000 – 2007. Eleven cases occurred in 2000 and there were no cases from 2001 to 2005.

The average annual incidence rate for 2000 – 2007 was 1.74 cases/100,000 population in RC&D and 1.24 cases/100,000 in Ontario. The provincial objective is to reduce the annual incidence rate of acute hepatitis B to 1.5 cases/100,000 population.

Immunization

Two doses of hepatitis B vaccine are offered to all students in grade seven. Between the 2002/03 and 2006/07 school years, the immunization rate in RC&D ranged from 84 to 96 percent. The average immunization rate over this time period was 92 percent.¹³ We are close to achieving the provincial objective of 95 percent coverage for hepatitis B vaccination by the end of grade 7. (Hepatitis B vaccine is also available to high-risk individuals.)

Pertussis

Pertussis, also called whooping cough, is a highly contagious infection of the respiratory tract caused by the *Bordetella pertussis* bacterium.

Health Effects

Symptoms of pertussis include sneezing, fatigue, loss of appetite, fever and a dry, hacking cough. The cough can develop into severe coughing spells - half a dozen or more rapid coughs follow each other in quick succession, followed by a "whooping" sound as the person inhales deeply and quickly. Frequent coughing and mucus can cause vomiting, and choking is a risk in infants.

The risk of complications is highest in infants under one year. There is also potential risk to seniors and those with chronic ill health. The most common complication in children is otitis media, a middle ear infection. Other complications include pneumonia, encephalitis (inflammation of the brain), seizures, apnea (brief periods when breathing stops), and hemorrhages (bleeding) in the eye.

Incidence

There was an average of 534 reported pertussis cases/year in Ontario from 2000 to 2004.¹⁴ There were about 1000 cases/year in 2006 and 2007.¹⁵ Possible reasons for the increase are changes in the testing technology (more positive test results) and better recognition by physicians.¹⁶

There were 13 reported cases of pertussis in RC&D during the 2000 – 2007 period. Seven cases were reported in 2002 and there were no reported cases from 2005 to 2007.

The average annual incidence rate for 2000 – 2007 was 1.62 cases/100,000 population in RC&D and 5.58 cases/100,000 in Ontario. The provincial objective is to reduce the annual incidence rate of pertussis to 2.5 cases/100,000 population.

Immunization

The DPT (diphtheria-pertussis-tetanus) vaccine is provided at two months, four months, six months, 18 months, four to six years and 14 – 16 years of age. Coverage for up-to-date vaccination against diphtheria, pertussis and tetanus at age seven was over 96 percent in Renfrew County and District (RC&D) from 2002 to 2007. Between 1 and 1.6 percent of students had an exemption (12 to 23 students/year).¹⁷

We are achieving the provincial objective of 95 percent coverage for up-to-date vaccination against diphtheria, pertussis, polio and tetanus by the seventh birthday.

Meningococcal disease, invasive

Invasive meningococcal disease is a serious illness caused by bacteria called *Neisseria meningitidis*. There are several serogroups (strains) of this bacteria: A, B, C, W-135 and Y are the most common. Some people carry this bacteria in their throat or nose without getting sick. The bacteria spread through contact with secretions from the nose or throat (kissing, sharing eating utensils, cigarettes and toothbrushes, coughing and sneezing). Most people exposed to the bacteria do not become infected, and most who are infected do not become ill. However, in rare instances, meningococcal disease occurs.

Health Effects

The symptoms of invasive meningococcal disease include the sudden onset of intense headache, fever, nausea, vomiting, photophobia (aversion to light) and stiff neck. Neurological symptoms include lethargy, delirium, coma and/or convulsions. Without treatment, about 50% of people who get invasive meningococcal disease will die. With prompt treatment, five to ten percent do not survive and about ten percent of those who recover experience long-term complications.

Incidence

The annual number of cases in Ontario over the past eight years has fluctuated from a low of 47 to a high of 105 (in 2001).

There were eight reported cases of invasive meningococcal disease in RC&D during the eight-year period, 2000 – 2007. They were spread out over this time period. The average annual incidence rate for 2000 – 2007 was 1 case/100,000 population in RC&D and 0.54 cases/100,000 in Ontario.

Immunization

The meningococcal C-conjugate vaccine protects against illness due to serogroup C of *Neisseria meningitidis* bacteria. This vaccine became available to children at one year of age in January 2005. The vaccine is also available to children age 12 to 19 (generally in grade 7) and will be available until those who have already been vaccinated at age one reach 12 years of age. About 92 percent of grade seven students in RC&D have been vaccinated in recent years.¹⁴

Conclusions and Recommendations

In most cases, local incidence rates for diseases examined in this report are below those in Ontario as a whole. It is not known if this is due to under-reporting or to a real difference in incidence.

Although chlamydia incidence rates in RC&D are well below those in Ontario as a whole, they have been increasing along with an increasing trend in Ontario.

The incidence rates for hepatitis C and campylobacter in RC&D have been consistently below Ontario rates since 1998 except for sharp increases in 2007, when the local incidence rates were above those for Ontario as a whole.

The salmonellosis incidence rate in RC&D has been close to or below the Ontario rate from 1998 to 2007.

Annual fluctuations in reported influenza incidence rates in RC&D have been similar to fluctuations in Ontario. Mortality rates in RC&D were not significantly different from provincial rates from 2000 to 2004.

Influenza immunization coverage rates for hospital staff have been under 50 percent, well below the provincial objective of 70 percent coverage for health care workers in contact with high-risk individuals. Vaccination coverage for hospital staff in Ontario as a whole has been consistently above that in RC&D, but also below the provincial objective. Influenza vaccination coverage among other groups (people age 65 and over, residents of long-term care facilities, and staff of long-term care facilities) is close to provincial objectives.

At the end of 2008, Health Units across Ontario are preparing to implement new Ontario Public Health Standards¹⁸. The Standards establish requirements for fundamental public health programs and services and outline the expectations for boards of health. They update previous standards that were released in 1997.

The new standards require epidemiological analysis of surveillance data including monitoring of trends over time, emerging issues and priority populations. There is an emphasis on using the best available evidence in the planning and evaluation of public health policies, programs and services.

Reportable Diseases in Renfrew County and District will be used by Health Unit staff when planning to implement requirements related to the Infectious Diseases standards. Based on this report, we should pay particular attention to:

- promotion of healthy sexuality and the prevention of sexually transmitted infections,
- ensuring access to sterile needles and syringes and other harm reduction strategies,

- awareness of food-borne illnesses and safe food handling practices and principles,
- influenza immunization coverage, especially among hospital staff.

It is important to continue with activities directed at the surveillance, prevention, diagnosis, treatment and control of infectious diseases. Future challenges with infectious diseases could include dealing with pandemic influenza,¹⁹ and emerging infectious agents including antibiotic-resistant organisms.

References

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- ² Population Estimates, Provincial Health Planning Database (PHPDB), Ontario Ministry of Health and Long-Term Care. Extracted September 2008.
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- ⁴ Centre for Infectious Disease Prevention and Control, Public Health Agency of Canada, 2005. Notifiable Diseases On-Line, available at: http://dsol-smed.phac-aspc.gc.ca/dsol-smed/ndis/c_age_e.html (Accessed July 30, 2008).
- ⁵ World Health Organization. Hepatitis C: Fact Sheet #164, revised October 2000.
- ⁶ Canadian Hepatitis C Information Centre. Responding to the Epidemic: Recommendations for a Canadian Hepatitis C Strategy. Ottawa, ON: 2005.
- ⁷ Remis R S. The Epidemiology of Hepatitis C Infection in Ontario, 2007. Department of Public Health Sciences, University of Toronto. Presented to the HCV Task Force, Ontario Advisory Committee on HIV/AIDS, Toronto Ontario, May 26, 2008.
- ⁸ Public Health Agency of Canada. Statement on Travel, Influenza, and Prevention. *Canada Communicable Disease Report* March 15, 2005;31(ACS-2): page 1.
- ⁹ Public Health Division, Government of Ontario. Flu Fact: The flu can spread to others with just one sneeze. Catalogue # CIB-2146927, November 2006.
- ¹⁰ Institute for Clinical Evaluative Sciences. Synopsis available online at: http://www.ices.on.ca/webpage.cfm?site_id=1&org_id=2&morg_id=0&gsec_id=4019&item_id=4019&category_id=41 (Accessed July 21, 2008).
- ¹¹ Previsani N, Lavanchy D. Hepatitis B World Health Organization CDS/CSR/LYO:2002.2 Available online at: <http://www.who.int/csr/disease/hepatitis/whocdscsrlyo20022/en/> (Accessed October 23, 2008).
- ¹² Centre for Infectious Disease Prevention and Control, Public Health Agency of Canada, 2005. Available at Notifiable Diseases On-Line: http://dsol-smed.phac-aspc.gc.ca/dsol-smed/ndis/c_time_e.html (Accessed July 3, 2008).
- ¹³ From "Ministry of Health Summary Report of Coverage Hepatitis B School Immunization Summary Record" completed by RCDHU staff and faxed to the Public Health Division by the end of July each year, 2002/03 to 2006/07 school years.

- ¹⁴ Centre for Infectious Disease Prevention and Control, Public Health Agency of Canada, 2005. Available at Notifiable Diseases On-Line: http://dsol-smed.phac-aspc.gc.ca/dsol-smed/ndis/c_time_e.html (Accessed July 3, 2008).
- ¹⁵ Infectious Disease Reports at www.publichealthontario.ca.
- ¹⁶ Fisman D. Pertussis: The Cough (and Public Health Issue) that Won't Go Away. Presentation at the Ontario Communicable Disease Surveillance Network 1st Annual Networking Day, Toronto, Ontario, Canada March 28, 2008.
- ¹⁷ Renfrew County and District Health Unit, Immunization Record Information System, Coverage Report generated April 23, 2008 at RCDHU.
- ¹⁸ Ontario Public Health Standards 2008. Available online at: http://www.health.gov.on.ca/english/providers/program/pubhealth/oph_standards/ophs/index.html (accessed November 24, 2008).
- ¹⁹ Renfrew County and District Health Unit. Renfrew County and District Pandemic Influenza Plan. March 2007.

Appendix A: List of Reportable Diseases

Under the Ontario *Health Protection and Promotion Act*, physicians, hospital operators, laboratory operators, school principals and child care facilities must report to the local Medical Officer of Health any person who, in his or her opinion, is or may be infected with an agent of one of the communicable diseases listed below. Your co-operation in reporting will help to ensure prompt and complete follow-up of cases.

Note: Diseases marked with “>” and respiratory infection outbreaks in institutions should be reported **immediately** by telephone at (613) 735-8653 during office hours. During evenings and weekends call (613) 735-9926. Other diseases can be reported the next working day.

<ul style="list-style-type: none"> AIDS (Acquired Immunodeficiency Syndrome) Amebiasis > Anthrax > Botulism > Brucellosis Campylobacter enteritis Chancroid Chickenpox (Varicella) Chlamydia trachomatis infections Cholera > Cryptosporidiosis > Cyclosporiasis Cytomegalovirus infection, congenital > Diphtheria > Encephalitis, including: > 1. Primary, viral including West Nile virus 2. Post-infectious 3. Vaccine-related 4. Subacute sclerosing panencephalitis 5. Unspecified > Food poisoning, all causes > Gastroenteritis, institutional outbreaks > Giardiasis Gonorrhea > Haemophilus influenzae b disease, invasive > Hantavirus Pulmonary Syndrome > Hemorrhagic fevers, including: > Ebola virus disease > Lassa Fever > Marburg virus disease > Other viral causes > Hepatitis A Hepatitis B Hepatitis C Hepatitis D (Delta hepatitis) Herpes, neonatal HIV infection Influenza, Types A, B, & C > Legionellosis Leprosy > Listeriosis Lyme Disease Malaria > Measles 	<ul style="list-style-type: none"> > Meningitis, acute > 1. bacterial 2. viral 3. other > Meningococcal disease, invasive Mumps Ophthalmia neonatorum Paratyphoid Fever Pertussis (Whooping Cough) > Plague > Poliomyelitis, acute Psittacosis/Ornithosis > Q Fever > Rabies > Respiratory Infection Outbreaks in institutions Rubella Rubella, congenital syndrome Salmonellosis > Severe Acute Respiratory Syndrome (SARS) > Shigellosis > Smallpox > Streptococcal infections, Group A invasive Streptococcal infections, Group B neonatal Streptococcal pneumoniae, invasive Syphilis Tetanus Transmittable Spongiform Encephalopathy, including: a. Creutzfeldt-Jakob Disease, all types; b. Gerstmann-Strassler-Scheinker Syndrome; c. Fatal Familial Insomnia; and d. Kuru Trichinosis Tuberculosis > Tularemia Typhoid Fever > Verotoxin-producing E. coli infections and indicator conditions including Hemolytic Uremic Syndrome (HUS) > West Nile Virus, probable or confirmed with encephalitis, viral meningitis, meningoencephalitis, acute flaccid paralysis or Guillain-Barre Syndrome > Yellow Fever Yersiniosis
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Appendix B: Data Sources

All disease counts for Renfrew County and District (RC&D) are from the integrated Public Health Information System (iPHIS), Ontario Ministry of Health and Long-Term Care. Data were extracted between April 14 and August 28, 2008.

Disease counts for Ontario are mainly from infectious disease reports on “Ontario’s public health information exchange” web site: <https://www.publichealthontario.ca/portal/server.pt>

Some Ontario disease counts are from the Centre for Infectious Disease Prevention and Control, Public Health Agency of Canada, viewed at Notifiable Diseases Online: http://dsol-smed.phac-aspc.gc.ca/dsol-smed/ndis/index_e.html (campylobacter 1998 - 2004, hepatitis B and pertussis 2000 – 2004)

Ontario influenza counts are from Surveillance Report(s) for (each) Influenza and Respiratory Infection Outbreak Surveillance Season, Infectious Diseases Branch, Ontario Ministry of Health and Long-Term Care.

Crude and age-standardized disease incidence rates for 1998 – 2006 are calculated using population estimates from the Provincial Health Planning Database (PHPDB), Ontario Ministry of Health and Long-Term Care, extracted May 12, 2008. Population estimates for 2007 were extracted October 8, 2008.

Figure 16: Influenza incidence rates by seasonal year in RC&D and Ontario, 1999/00 to 2006/07:

- Ontario data was sourced as follows:
 - Surveillance Report of the 2005/06 Ontario Influenza and Respiratory Infection Outbreak Surveillance Season by Yelena Katsaga, Anne-Luise Winter, Michael Whelan and Karen Hay, Infectious Disease Branch, Public Health Division, Ministry of Health and Long-Term Care, page 1 (seasonal year Sept 1 to August 31)
 - Surveillance Report of the 2004/05 Ontario Influenza and Respiratory Infection Outbreak Surveillance Season by Agnes Tong, Anne-Luise Winter and Erika Bontovics, Infectious Disease Branch, Public Health Division, Ministry of Health and Long-Term Care, page 1 (seasonal year October 1 to April 30)
 - Surveillance Report of the 2003/04 Ontario Influenza and Respiratory Infection Outbreak Surveillance Season by Agnes Tong, Anne-Luise Winter and Erika Bontovics, Infectious Disease Branch, Public Health Division, Ministry of Health and Long-Term Care, page 1 (seasonal year October 1 to April 30)
 - The number of influenza cases in Ontario for the 1999/2000, 2000/01, 2001/02, 2002/03 and 2006/07 influenza seasons was received in response to a request to the iPHIS help desk.

Figure 19: Influenza vaccination coverage for residents of long-term care facilities, Figure 20:

Influenza vaccination coverage for staff of long-term care facilities and

Figure 21: Influenza vaccination coverage for hospital staff:

- RC&D data for residents and staff of long-term care facilities is from completed “Reporting Form on Influenza Immunization Rates at Ontario Long-Term Care Homes,”

submitted to RCDHU. This form required information as of December 1, 2001; as of unknown dates in 2002 and 2003, as of November 15 in 2004, 2005 and 2007; and as of December 15, 2006.

- RC&D data for hospital staff is from completed “Reporting Form on Influenza Immunization Rates at Ontario Public Hospitals,” submitted to RCDHU. This form required information as of December 1, 2001; as of unknown dates in 2002 and 2003, as of November 15 in 2004, 2005 and 2007; and as of December 15, 2006.
- Ontario data for 2005 – 2007 is from Ontario Influenza Bulletins, Public Health Division, Ministry of Health and Long-Term Care.
 - Coverage as of November 15, 2007 is from Ontario Influenza Bulletin 2007-2008 Season: Surveillance Week 10 (March 2 - 8, 2008) page 1;
 - Coverage as of December 15, 2006 is from Ontario Influenza Bulletin 2006-2007 Season: Surveillance Week 9 (February 25 – March 3, 2007) page 1;
 - Coverage as of November 15, 2005 is from Ontario Influenza Bulletin 2005-2006 Season: Surveillance Week 7 (February 12 – 18, 2006) page 1.
- Ontario data for “before 2000” – 2003/04 is from a presentation by Dr. Karim Kurji, Associate Chief Medical Officer of Health, Ontario Ministry of Health and Long-Term Care at the National Influenza Vaccine Summit, Atlanta, USA, April 2004.