

For Information

DATE: April 4, 2011

REPORT TITLE: **RESULTS OF THE ONTARIO BURDEN OF INFECTIOUS DISEASE STUDY**FROM: Janette Smith, Commissioner of Health Services  
David L. Mowat, MBChB, MPH, FRCPC, Medical Officer of Health**OBJECTIVE**

To inform Regional Council of the results of the Ontario Burden of Infectious Disease Study and its relevance to the Region of Peel.

**REPORT HIGHLIGHTS**

- There are nearly 4900 deaths due to infectious diseases in Ontario every year, and the burden due to infectious diseases is approximately as great as 25 per cent of the burden of all cancers.
- The three infectious agents with the greatest burden of death and disease in Ontario are Hepatitis C virus, *Streptococcus pneumoniae*, and Human papilloma virus (HPV).
- Peel Public Health is working to reduce the burden of these, and other infections, through the promotion of effective measures such as vaccination, hand washing and safer sex.
- The considerable death and disability caused by childhood diseases such as measles, mumps, and polio have been largely eliminated through ongoing efforts to maintain high vaccine coverage rates, including enforcement of immunization requirements.

**DISCUSSION****1. Background**

During the past century, vaccination and improved sanitation have contributed to marked reductions in the burden of infectious diseases in our society. In order to quantify the death and disease caused by infections, the Ontario Agency for Health Protection and Promotion and the Institute for Clinical and Evaluative Sciences recently published the Ontario Burden of Infectious Disease Study.

The purpose of this study was:

- To determine the relative contributions of select infectious diseases to the overall burden of infectious disease in Ontario;
- To inform priority setting, planning and decision-making;
- To establish a baseline for future evaluations of public health interventions; and,
- To identify strengths and weaknesses of existing infectious disease data in Ontario.

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The study focused on the health status impact of infectious diseases; that is, mortality and reduced functioning. It did not take into account the cost of treatment or economic impact.

### 2. Findings

The main findings of the Ontario Burden of Infectious Disease Study included the following:

- There are nearly 4900 deaths due to infectious diseases in Ontario every year.
- The total burden of infectious disease in Ontario is equivalent to roughly 25 per cent of the burden of all cancers.
- The 10 infectious agents with the greatest burden were:
  - Hepatitis C virus
  - *Streptococcus pneumoniae*
  - Human papilloma virus (HPV)
  - Hepatitis B virus
  - *Escherichia coli* (*E. coli*)
  - Human immunodeficiency virus (HIV/AIDS)
  - *Staphylococcus aureus*
  - Influenza virus
  - *Clostridium difficile*
  - Rhinovirus
- There are highly effective methods to prevent a large proportion of these infections, such as vaccines, hand washing, clean needles, and condom use. The future burden of these illnesses might be greatly reduced with greater uptake of these known interventions.
- The death and disability caused by diseases prevented by routine childhood immunization have been largely eliminated (measles, mumps, rubella, tetanus, polio, and diphtheria). Immunization efforts must remain a priority to ensure that this continues.

### 3. Peel Public Health

Peel Public Health's efforts to control communicable disease are well matched to the priority diseases found in this report. In addition to performing ongoing surveillance to understand the epidemiology of these diseases in our community, Peel Public Health provides education and promotes effective measures such as vaccination, hand washing and safer sex. Public Health works closely with local physicians, hospitals, long term care homes, and community partners to reduce and prevent illness due to infectious diseases.

- **Hepatitis C:** The hepatitis C virus attacks the liver and is mostly spread by blood. No vaccine is available and most new cases are due to sharing needles for drugs. The number of new cases of Hepatitis C in Peel has been steadily declining. Public Health operates a needle exchange programme, offers free testing at clinics, connects infected clients with community and medical supports, and provides education about how to reduce or prevent the spread of Hepatitis C.
- ***Streptococcus pneumoniae*:** *S. pneumoniae* bacteria most commonly cause pneumonia, but can also cause ear and blood infections and meningitis. Infants, the elderly, and people with certain medical conditions are at higher risk of these infections. Peel Public Health provides free vaccine against *S. pneumoniae* for these groups through their physicians.
- **Human papilloma virus (HPV):** HPV infects the skin and genitals and is transmitted through sexual contact. It can cause genital warts and cervical cancer, as well as cancer of the head and neck, anus, and penis. Public Health provides free vaccination in school for Grade 8 girls. Pap testing, which detects the early changes that can lead to

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cervical cancer, is offered at Peel Sexual Health clinics as a component of screening for sexually transmitted infections.

- **Hepatitis B:** The hepatitis B virus attacks the liver and is mostly spread through blood. Public Health provides free vaccination for all Grade 7 students and others who may be at risk of contacting hepatitis B, as per the Ministry of Health and Long-Term Care guidelines.
- ***E. coli:*** *E. coli* bacteria are an important cause of food and water-borne illness. Public Health helps to reduce the chance of illness for Peel's residents through regular food safety inspections of restaurants, the food handler training programme, and education about home food safety. Public Health works closely with the Water division of Public Works and homeowners who use wells to ensure the safety of the Region's drinking water.
- **HIV/AIDS:** The rate of HIV in Peel has remained stable since 2003. Heterosexual transmission and coming from a country where HIV is endemic have become increasingly important risk factors for HIV infection in Peel. In addition to the needle exchange, Public Health offers free condoms and point-of-care testing at our Sexual Health Clinics and connects HIV positive clients and their families with medical and community supports.
- **Influenza:** Every year Peel Public Health offers free vaccination clinics and provides vaccine to physicians in the community as part of Ontario's universal influenza vaccination programme. Public Health also monitors and provides support for outbreaks of influenza and other respiratory diseases in the Region's health care facilities and retirement homes.
- ***Staphylococcus aureus and Clostridium difficile:*** No vaccine exists for these bacterial infections, which are both important causes of hospital-acquired infection. Peel Public Health infection control practitioners work closely with their colleagues in hospitals and long-term care homes to implement effective measures to prevent infection and disease transmission, and to manage any outbreaks of disease when they occur.
- **Rhinovirus:** Rhinoviruses are the main cause of the common cold. Although most people have mild symptoms, those with chronic diseases or weakened immune systems can become very sick if they are infected. Public Health works to educate the Region's residents about how they can reduce the spread of rhinovirus and other similar viruses through simple, highly effective measures such as hand washing, staying home when they are sick, and covering their mouth and nose when they cough or sneeze.

Finally, as noted in the Ontario Burden of Infectious Disease Study report, the death and disease caused by the infections that are prevented by childhood immunization is low in the Region of Peel. Peel Public Health's Accelerated Immunization Risk Mitigation Strategy resulted in an increase in completed vaccination records for diphtheria, pertussis, and tetanus from 47.7 per cent to 90.3 per cent, and in measles, mumps, and rubella from 68.5 per cent to 93.7 per cent during the 2008-2009 school year in the Region's two major school boards. A total of 44,150 doses of required vaccine were administered during this time. Coverage rates have increased and remained high in subsequent years with ongoing enforcement of immunization requirements for school-aged children.

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**CONCLUSION**

Infections cause nearly 5000 deaths and the equivalent of a quarter of the burden of disease caused by cancer each year in Ontario. Many of the infections that cause the greatest burden of disease can be prevented by simple interventions such as vaccination, hand washing, clean needles, and condom use. The prevention and control of infectious diseases remains a priority for Peel Public Health.



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**Approved for Submission:**



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