Burden of Influenza

Influenza at a Glance

Influenza is a respiratory infection caused primarily by influenza A and B viruses

It occurs **globally** with an annual attack rate estimated at:[1]

5–10% in adults

20–30% in children

Most people will recover within a week to 10 days, but some people are at greater risk of severe complications such as pneumonia or death.

Direct and Indirect Health Complications

Influenza infection has **DIRECT** and **INDIRECT** impacts on multi-organ systems.

Respiratory Conditions

- Pneumonia
  Primary viral[2]
  Secondary bacterial[3]
- Asthma[4]
- COPD exacerbations[5]

Cardiovascular Disease

- Acute MI[6–9]
- Heart failure[10,11]
- Myocarditis[12]
- Stroke[13,14]
- VTE[15]

Renal Disease

- Rhabdomyolysis[16]
- Acute kidney injury[16]

Diabetes

- Impaired blood glucose control[17]
- Diabetic ketoacidosis[17]

Neurological Disease

- Seizures[18]
- Guillain-Barre Syndrome[18]
- Encephalopathy[18]

Deconditioning

- ADL decline[19]
- Weight loss[19]
- Pressure ulcers[19]

Impact of Influenza

Impact on the Canadian healthcare system

An estimated:

175,000 emergency room visits[20]

12,200 hospital admissions[1]

3,500 deaths[1]

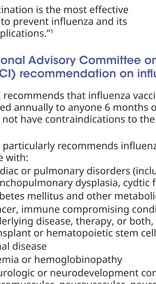
are attributed to the flu annually.

Highest economic burden among vaccine-preventable diseases in the U.S. (excluding COVID-19)

Influenza accounts for an estimated **~65% of the annual economic burden** of the top 10 vaccine-preventable diseases in the U.S.[21]

1. Influenza: $5.79 billion (65%)
2. Pneumococcal disease: $1.86 billion (21%)
3. Herpes zoster: $782 million (9%)

Estimated annual economic burden of vaccine-preventable diseases in the United States (in USD), by pathogen, 2015[21]



Hospitalization and mortality

- The burden of influenza-related hospitalization and mortality **occurs predominantly, and disproportionately, in adults 65+**[20,22–27]
- While adults 65+ represent approximately **18%** of the Canadian population[28], they account for up to **70%** of flu-related hospitalizations and up to **91%** of flu-related deaths[22–27]



Based on Public Health Agency of Canada's FluWatch influenza surveillance data, 2013-2018[22–27]

Flu Vaccine Recommendations

Statements from trusted health authorities

PHAC

"The national goal of the annual influenza immunization programs in Canada is to prevent serious illness caused by influenza and its complications, including death."[1]

"Vaccination is the most effective way to prevent influenza and its complications."[1]

WHO

"The most effective way to prevent influenza and/or severe outcomes from influenza is vaccination."[29]

National Advisory Committee on Immunization (NACI) recommendation on influenza vaccination[1]

NACI recommends that influenza vaccination should be offered annually to anyone 6 months of age and older who does not have contraindications to the vaccine.

NACI particularly recommends influenza vaccination for those with:

- Cardiac or pulmonary disorders (including bronchopulmonary dysplasia, cystic fibrosis, and asthma)
- Diabetes mellitus and other metabolic diseases
- Cancer, immune compromising conditions (due to underlying disease, therapy, or both, such as solid organ transplant or hematopoietic stem cell transplant recipients)
- Renal disease
- Anemia or hemoglobinopathy
- Neurologic or neurodevelopment conditions (includes neuromuscular, neurovascular, neurodegenerative, neurodevelopmental conditions, and seizure disorders [and, for children, includes febrile seizures and isolated developmental delay], but excludes migraines and psychiatric conditions without neurological conditions)
- Morbid obesity (BMI of 40 or over)
- Children 6 months to 18 years of age undergoing treatment for long periods with acetylsalicylic acid, because of the potential increase of Reye's syndrome associated with influenza

PHAC=Public Health Agency of Canada; WHO=World Health Organization.

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MAT-CA-2100267-v2.0-04/2036

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