

# UNDERSTANDING THE BROADER IMPACT OF INFLUENZA

Focusing on Adults  
65 Years of Age  
and Older



Influenza is a contagious infection that can have unexpected, severe consequences such as heart attacks and strokes.<sup>1</sup>



## INFLUENZA

# A Highly Contagious Respiratory Infection



Transmission occurs mainly by droplets made when someone with the flu coughs or sneezes.

- Flu can be spread to others up to about **6 feet away**<sup>1</sup>
- Flu virus can survive on inanimate object surfaces for **24-48 hours**<sup>2</sup>
- Prevent spreading the flu by **avoiding contact** and practicing **respiratory etiquette** and **hand hygiene**<sup>3</sup>
- People with the flu are contagious **1 day before symptoms develop** and **5-7 days after**<sup>1</sup>

## INFLUENZA

### More Than Just a 'Cold'

- Symptoms appear abruptly, about 2 days after infection<sup>1</sup>
- Systemic symptoms and fever typically last 2-3 days (rarely >5)<sup>1</sup>
- **Potential complications include pneumonia, chronic disease exacerbation, hospitalization and death<sup>2</sup>**

SYMPTOMS <sup>3</sup>	COLD	INFLUENZA
Headache, Runny Nose, Sneezing, Sore Throat, Coughing	✓	✓
Fever, Chills, Sweats		✓
Myalgia		✓
Malaise, Lassitude, Fatigue		✓
Potential Complications		✓

## INFLUENZA

# Influenza is the Leading Cause of Death Among Vaccine-preventable Diseases<sup>3</sup>

An  
estimated:



**175,000**

**EMERGENCY ROOM  
VISITS<sup>1</sup>**



**12,200**

**HOSPITAL  
ADMISSIONS<sup>2</sup>**



**3,500**

**DEATHS<sup>2</sup>**

are  
attributed  
to the flu  
annually.

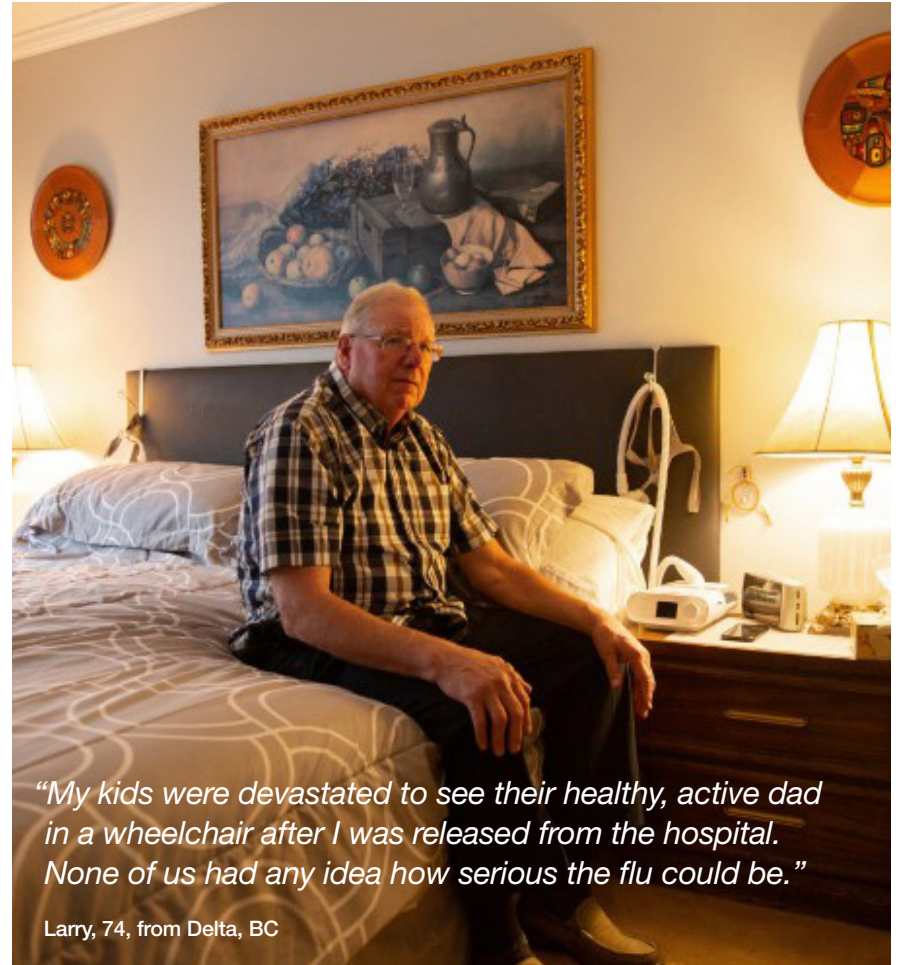
## PATIENT EXPERIENCE

### Meet Larry

- When 74-year-old Larry fell ill on a family vacation in Hawaii, he didn't know he would end up in the hospital.
- Larry was a picture of health before contracting the flu in March 2019.
- When he arrived at the hospital his blood oxygen level was 20%.
- Larry's family was lucky they didn't lose him that day.
- For Larry, life certainly wasn't normal for a long time. He had had no energy, and had lost a lot of muscle mass.



[Watch his story](#)



*“My kids were devastated to see their healthy, active dad in a wheelchair after I was released from the hospital. None of us had any idea how serious the flu could be.”*

Larry, 74, from Delta, BC

## INFLUENZA

# Older Adults are More at Risk of Being Seriously Affected<sup>1</sup>



While adults aged 65+ represent approximately 15% of the Canadian population, they account for:<sup>2</sup>

- **Up to 70%** of flu-related hospitalizations<sup>3-8</sup>
- **Up to 91%** of flu-related deaths<sup>3-8</sup>

Older adults are the most vulnerable to influenza, due to age-related factors that increase their susceptibility to infections and complications.<sup>9,10</sup>

**REFERENCES:** 1. Centers for Disease Control and Prevention (CDC). (2020a). Flu & People 65 Years and Older. 2. National Advisory Committee on Immunization (NACI), 2016. A Review of the Literature of High Dose Seasonal Influenza Vaccine for Adults 65 Years and Older. 3. PHAC. FluWatch. August 11-24, 2013. 4. PHAC. FluWatch. August 10-23, 2014. 5. PHAC. FluWatch. August 16-19, 2015. 6. PHAC. FluWatch. August 14-27, 2016. 7. PHAC. FluWatch. August 20-26, 2017. 8. PHAC. FluWatch. July 22-25, 2018. 9. Gavazzi G. & Krause K. (2002). *Ageing and infection*. *Lancet Infect Dis*, 2(11), 659-666. 10. Pera, A. et al. (2015). *Immunosenescence: Implications for response to infection and vaccination in older people*. *Maturitas*, 82(1), 50-55.

# THE BROADER IMPACT OF INFLUENZA

## Direct and Indirect Health Complications

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



### RESPIRATORY CONDITIONS

- Pneumonia
  - Primary viral<sup>1</sup>
  - Secondary bacterial<sup>2</sup>
- Asthma<sup>3</sup>
- COPD exacerbations<sup>4</sup>



### CARDIOVASCULAR DISEASE

- Acute MI<sup>5-8</sup>
- Heart failure<sup>9,10</sup>
- Myocarditis<sup>11</sup>
- Stroke<sup>12,13</sup>
- VTE<sup>14</sup>



### RENAL DISEASE

- Rhabdomyolysis<sup>15</sup>
- Acute kidney injury<sup>15</sup>



### DIABETES

- Impaired blood glucose control<sup>16</sup>
- Diabetic ketoacidosis<sup>16</sup>



### NEUROLOGICAL DISEASE

- Seizures<sup>17</sup>
- Guillain-Barre Syndrome<sup>17</sup>
- Encephalopathy<sup>17</sup>



### DECONDITIONING

- ADL decline<sup>18</sup>
- Weight loss<sup>18</sup>
- Pressure ulcers<sup>18</sup>

**REFERENCES:** 1. Murata, Y., et al. (2007). J Infect Dis, 195(7), 1029-1037. 2. McCullers, J. A. (2006). Clin Microbiol Rev, 19(3), 571-582. 3. Cates, C. J., et al. (2013). Cochrane Database Syst Rev(2), CD000364. 4. Kopsaftis, Z., et al. (2018). Cochrane Database Syst Rev, 6, CD002733. 5. Udell, J. A., et al. (2013). JAMA, 310(16), 1711-1720. 6. Udell, J. A., et al. (2015). Expert Rev Cardiovasc Ther, 13(6), 593-596. 7. Kwong, J. C., et al. (2018). N Engl J Med, 378(4), 345-353. 8. Siriwardena, A. N., et al. (2010). CMAJ, 182(15), 1617-1623. 9. Kytomaa, S., et al. (2019). JAMA Cardiol, 4(4), 363-369. 10. Panhwar, M. S., et al. (2019). JACC Heart Fail, 7(2), 112-117. 11. Rezkalla, S., et al. (2010). Wisconsin Medical Journal, 109(4), 209-213. 12. Warren-Gash, C., et al. (2018). Eur Respir J, 51(3). 13. Boehme, A. K., et al. (2018). Ann Clin Transl Neurol, 5(4), 456-463. 14. Zhu, T., et al. (2009). Thromb Haemost, 102(6), 1259-1264. 15. Watanabe, T. (2013). Eur J Pediatr, 172(1), 15-22. 16. Schaffner, W., et al. (2007). Clinical Diabetes, 25(4), 145-149. 17. Ekstrand, J. J. (2012). Semin Pediatr Neurol, 19(3), 96-100. 18. Gozalo, P. L., et al. (2012). J Am Geriatr Soc, 60(7), 1260-1267.



## THE BROADER IMPACT OF INFLUENZA

# Association with Increased Risk of Heart Attack and Stroke

Recent evidence has shown that influenza can trigger serious cardiovascular complications in the few days<sup>†</sup> following an influenza infection:



**10x**

the risk of suffering  
from a first  
heart attack<sup>1</sup>



**8x**

the risk of suffering  
from a first  
stroke<sup>1</sup>

<sup>†</sup>In the 3 days following a laboratory confirmed influenza infection vs unexposed or baseline time periods.

REFERENCE: 1. Warren-Gash, C. et al. Eur. Respir. J. 51(3). pii: 1701794 (2018).



## PATIENT EXPERIENCE

### Meet Art

- 79-year-old Art was admitted to the hospital after suffering from a persistent cough and shortness of breath. He was diagnosed with influenza.
- While in the hospital, Art experienced a major heart attack and spent the next two months fighting for his life. He also developed kidney failure after undergoing heart surgery. Today, he receives dialysis three times a week.
- Art's influenza diagnosis was the beginning of a cascade of illness that remains a part of his life to this day.



[Watch his story](#)



## THE BROADER IMPACT OF INFLUENZA

# Elevated Risk of Death Among Older Adults with Underlying Conditions

For Canadians aged 65+ admitted to hospital with a respiratory complication, the risk for **influenza-attributed death** was:



**5x**

greater among those with **chronic heart diseases**<sup>1</sup>



**12x**

greater among those with **chronic lung diseases**<sup>1</sup>



**20x**

greater among those with **both chronic heart and lung diseases**<sup>1</sup>

# THE BROADER IMPACT OF INFLUENZA

## Decreased Functional Status



- **Loss of independence** was the biggest fear of almost half of Canadian seniors polled<sup>1</sup>
- **Influenza can lead to long-lasting disability in seniors**<sup>2</sup>
- In one study, **25%** of nursing home residents with influenza experienced decline in at least one major function (bathing, dressing, and mobility) for at least 3-4 months post-infection<sup>3</sup>

## PATIENT EXPERIENCE

### Meet Mike

- In March 2017, Mike Leone's life changed forever. As he lay trembling on the floor, he shouted out for a neighbour to call 911.
- This decision may have saved his life. Upon hospitalization, Mike was diagnosed with influenza.
- He remained in the hospital for nine months with a cascade of complications: cardiovascular arrest, organ failure, and sepsis.
- He ultimately recovered but his life has changed forever.



[Watch his story](#)



Mike, 84, and his wife Conceitta, from Etobicoke, ON

## THE BROADER IMPACT OF INFLUENZA

# Adults 65+ are at High Risk of Influenza Complications

### IMMUNOSENESCENCE

A natural and progressive weakening of the immune system with age that can result in:

- **Higher incidence** and **severity** of infectious diseases, including influenza<sup>1,2</sup>
- **Lower strength** and **persistence** of antibody responses to vaccines<sup>1,2</sup>
- Influenza vaccine effectiveness is about half of that in healthy adults<sup>3</sup>

### CHRONIC CONDITIONS

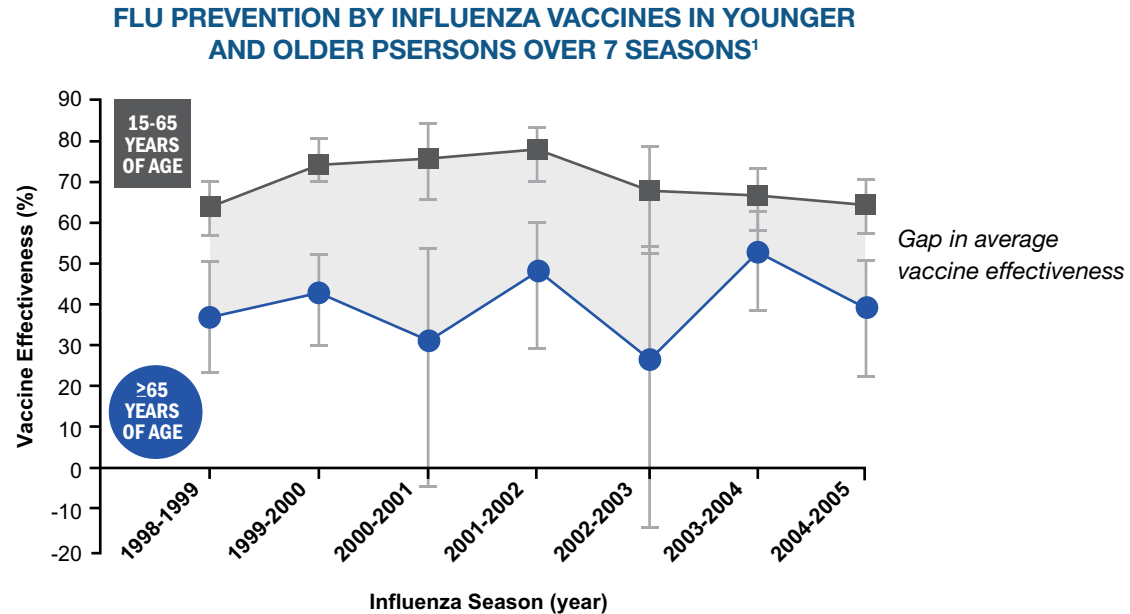
According to data from 2007, **74%** of Canadian seniors (65+) reported **at least one** of the following high-risk chronic conditions:<sup>4</sup>

- Asthma
- Cancer
- Emphysema or COPD
- Diabetes
- Heart disease
- Stroke

# IMMUNOSENESCENCE

## Flu Vaccine Efficacy Among Older Adults

Influenza vaccines are generally less effective among adults 65+, compared to younger adults.<sup>1</sup>



# INFLUENZA VACCINE EVALUATION AND RECOMMENDATIONS





## FLU VACCINE RECOMMENDATIONS

# The Most Effective Way to Prevent Influenza and its Complications

Public health bodies advise at-risk groups to get vaccinated against influenza each year.



*Annual influenza vaccination for people aged 65 and more, persons with pre-existing health conditions children aged 6 months to 5 years, pregnant women and healthcare workers.<sup>1</sup>*



*Influenza vaccination is especially important for people at higher risk of serious influenza complications.<sup>2</sup>*



*Vaccination is the most effective way to prevent influenza and its complications.<sup>3</sup>*



## AN AGING POPULATION

# Concerns and Priorities

- The aging of Canada's population is expected to have a major impact on Canada's healthcare system over the next 25-30 years<sup>1</sup>
- Compared to younger adults, **adults over 65 years of age** generally have:<sup>1</sup>
  - Disease prevention efforts, such as **flu vaccination programs**, may be particularly helpful in preserving good health in the elderly<sup>2</sup>



**MORE FAMILY  
PHYSICIAN  
VISITS**



**MORE  
HOSPITAL  
ADMISSIONS**



**LONGER  
HOSPITAL  
STAYS**

## 65 OR OLDER?

# Help Protect Yourself Against the Flu

- Influenza is a prevalent, infectious and contagious disease that is more complicated than people may realize. Influenza can **worsen chronic conditions** like heart disease, kidney disease, and diabetes – particularly in older Canadians.<sup>1</sup>

## WHO SHOULD BE VACCINATED?

- Canada's National Advisory Committee on Immunization (NACI) considers adults 65+ to be at high risk of influenza-related complications or hospitalization and recommends that all seniors get an influenza vaccine annually.<sup>1</sup>

[Click here to download the latest version of the Canadian Immunization Guide Chapter on Influenza and Statement on Seasonal Influenza Vaccine for 2021–2022](#)



# THANK YOU

A woman with short dark hair and glasses is sitting in a room filled with various green plants. She is wearing a white, textured, long-sleeved top and is holding a white mug with both hands. The background is dark, and the lighting is soft, highlighting the woman and the plants.

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