## YOUR HOST: DISCLOSURE



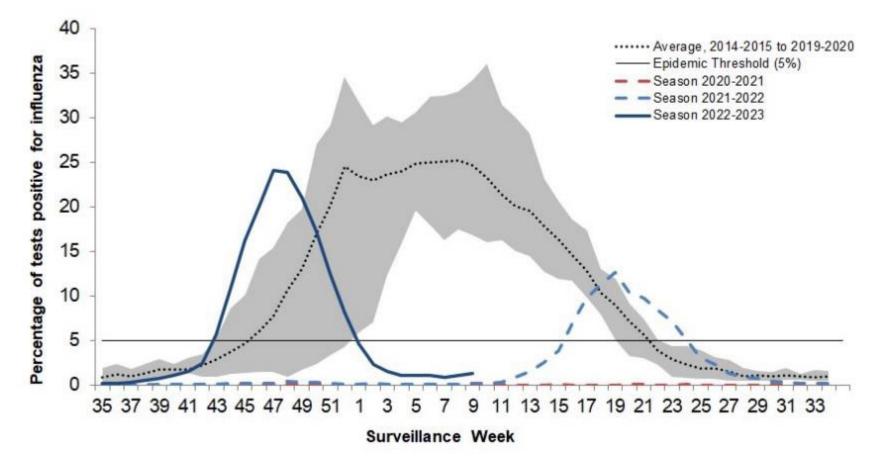
#### Jia Hu

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#### Disclosures

• I have received research/operational funding and other honoraria from the following pharmaceutical companies: GSK, Pfizer, Merck Moderna, Sanofi, Novavax, and Seqirus

# A snapshot of last influenza season – early & fast – that combined with RSV & COVID-19 led to a 'tripledemic'

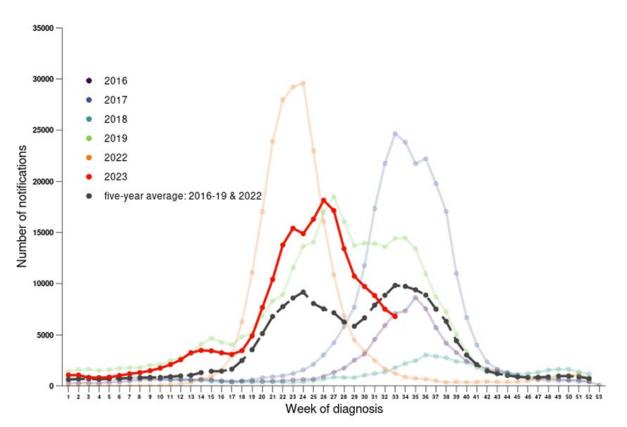


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#### We look to the Southern Hemisphere to predict what will happen for our respiratory seasons • Australia's winter occurs during

Notifications of laboratory-confirmed influenza, Australia, January 2016 – August 2023, by month and week of diagnosis<sup>1</sup>



- Australia's winter occurs during June/July/August and is often used to predict what will happen during our winter months
- In 2020/2021, there were virtually no cases of influenza – indicating that COVID-19 lockdowns were highly effective at stopping nearly all transmission of the less infectious influenza virus
- In the 2023 Australia season (it is currently winter there) – they appear to have had an early start to the season which has since tapered down
- It is a bit early to draw conclusions about what we will see in our fall/winter 2023, but we know immunization will always be the best way to protect oneself

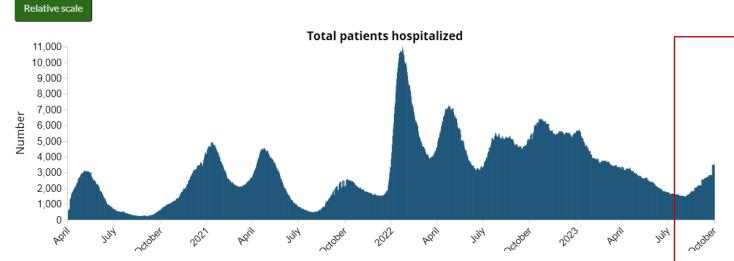
Source: Australian Government National Notifiable Diseases Surveillance System, Australian Influenza Surveillance Report and Activity Updates (2023)

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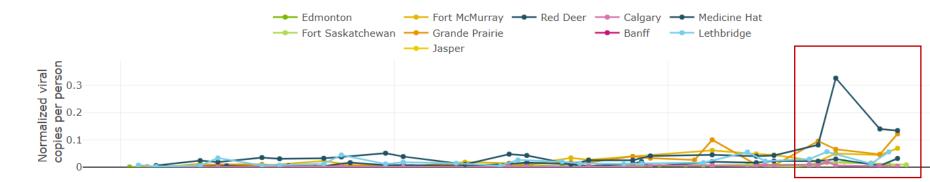
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#### **COVID-19 levels have been on the rise through September**

Figure 5. Daily number of hospital beds and ICU beds occupied by COVID-19 patients as of October 3, 2023



Population normalized quantity of SARS CoV-2 virus over time



 COVID-19 hospitalizations across Canada are increasing this fall (from nadir of ~1,500 to current levels of ~3,500)

> And there is also a trend of increasing COVID-19
>  levels per wastewater
>  surveillance in Alberta

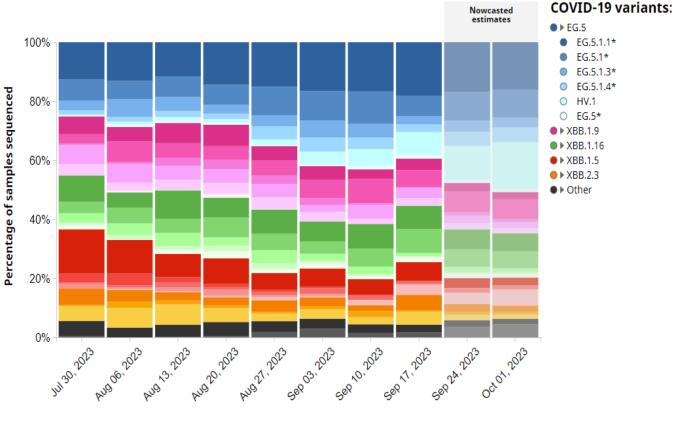
Other

## VACCINATION: FALL/WINTER RESPIRATORY SEASON

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### New variants have been circulating, but all XBB family

- On August 9, the WHO declared **EG.5** (or • Eris) a "variant of interest", but said it did not seem to most more of a threat to public health than others
- EG.5 is a descendant of the XBB.1.9.2 lineage (the XBB family has been the dominant circulating variants in 2023)
- Another variant, BA.2.86 (from the BA.2) lineage) has been circulating recently and is known to have 30+ mutations – its clinical significant is not yet known
- Currently, virtually all COVID-19 in • Canada is either XBB or EG.5



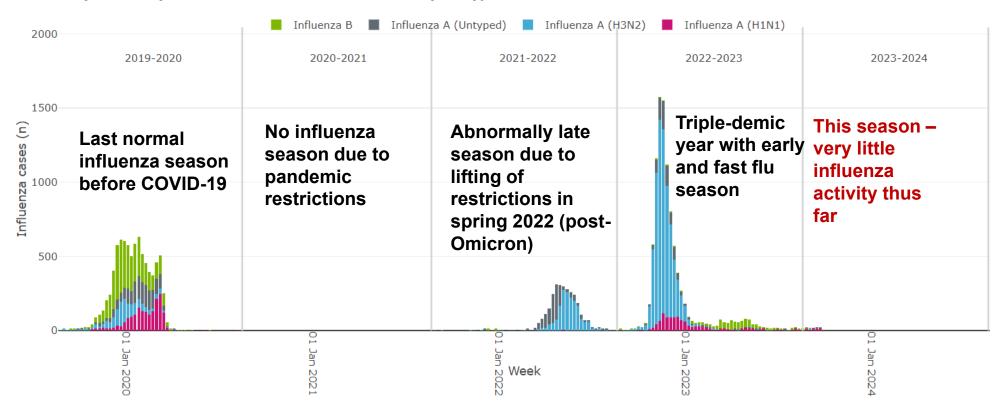
Week of sample collection

Source: Globe and Mail EG.5 Explainer (https://www.theglobeandmail.com/canada/article-new-covid-variant-eg5/); What to know about COVID Pirola (https://www.usatoday.com/story/news/health/2023/08/21/pirola-covid-lineage-not-omicron-variant/70644689007/); Canada Health Infobase (https://health-infobase.canada.ca/covid-19/);

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#### ... but influenza levels are pretty low

Total weekly laboratory-confirmed seasonal influenza cases by subtype in Alberta, 2019-2020 to 2023-2024



Source: Canada Health Infobase (<u>https://health-infobase.canada.ca/covid-19/</u>); Alberta respiratory virus surveillance dashboard (https://www.alberta.ca/stats/dashboard/respiratory-virus-dashboard.htm)

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### Vaccinations for the fall respiratory season

Publicly funded

- COVID-19 recommended for everyone 6 months and older
  - XBB monovalent formulation this year from Pfizer/Moderna/Novavax
- Influenza recommended for everyone 6 months and older
  - Standard dose quadrivalent for 65 and under, high-dose quadrivalent for 65 and higher

Not publicly funded

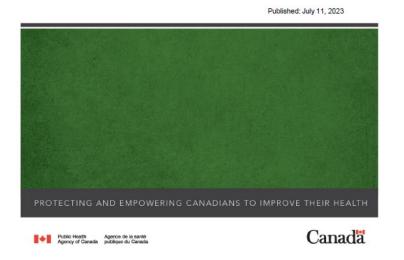
- RSV new vaccine (Arexvy), recently approved by Health Canada for 60+, no NACI statement yet; also, Nirsevimab for infants (very limited supply this year, hospital only for now)
- Pneumococcal new(ish) vaccine PCV20 recommended for everyone 65+ and younger with certain medical conditions

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#### **Respiratory Season Vaccinations: COVID-19**

An Advisory Committee Statement (ACS) National Advisory Committee on Immunization (NACI)

Guidance on the use of COVID-19 vaccines in the fall of 2023



Beginning in the fall of 2023 for those previously vaccinated against COVID-19, NACI recommends a dose of the <u>NEW</u> <u>FORMULATION OF COVID-19 VACCINE (XBB MONOVALENT)</u> for individuals in the authorized age group <u>if it has been at least 6</u> <u>months from the previous COVID-19 vaccine or known SARS-</u> <u>CoV-2 infection (whichever is later)</u>

## Immunization is particularly important for those at increased risk of COVID-19 infection / severe disease, including:

- Adults 65 and older
- Residents of LTC / congregate living settings
- Individuals with underlying medical conditions that place them at higher risk of severe COVID-19
- Individuals who are pregnant
- Individuals in or from First Nations, Metis, and Inuit Communities
- Members of racialized and other equity-deserving communities
  - People who provide essential community services

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### **Respiratory Season Vaccinations: Influenza**

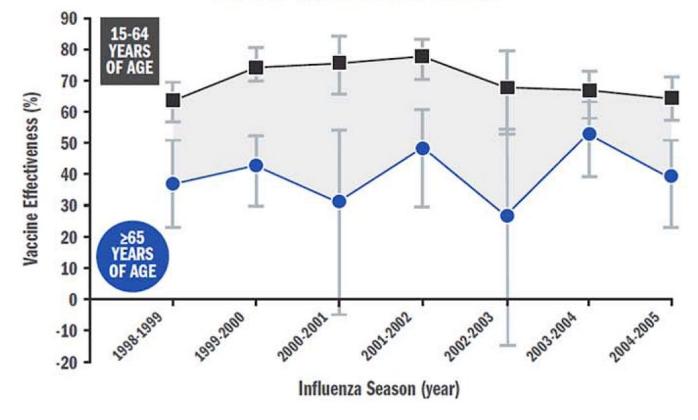
Recipien t by age group	Vaccine types available for use <sup>**</sup>	Recommendations on choice of influenza vaccine	
	<ul> <li>IIV3-SD – trivalent standard dose</li> <li>IIV3-Adj – trivalent</li> </ul>	Individual-level Decision-making	Public health program-level Decision-making
65 years and older	<ul> <li>IIV3-Adj – trivalent adjuvanted</li> <li>IIV4-SD - quadrivalent standard dose</li> <li>IIV4-HD – quadrivalent high dose</li> <li>IIV4-cc – quadrivalent cell culture</li> <li>RIV4 – quadrivalent recombinant</li> </ul>	<ul> <li><u>IIV-HD should be used over IIV-SD,</u> given the burden of influenza A(H3N2) disease and the good evidence of IIV3-HD providing better protection compared to IIV3- SD in adults 65 years of age and older.</li> <li>Other than a recommendation for using IIV-HD over IIV-SD formulations, NACI has not made comparative individual-level recommendations on the use of the other available vaccines in this age group. In the absence of a specific product, any of the available age-appropriate influenza vaccines should be used.</li> </ul>	Any of the available influenza vaccines should be used. There is insufficient evidence on the incremental value of different influenza vaccines (i.e. cost-effectiveness assessments have not been performed by NACI) to make comparative public health program-level recommendations on the use of the available vaccines.

Source: An Advisory Committee Statement (ACS) National Advisory Committee on Immunization (NACI) Canadian Immunization Guide Chapter on Influenza and Statement on Seasonal Influenza Vaccine for 2022–2023.

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#### **Respiratory Season Vaccinations: Influenza**

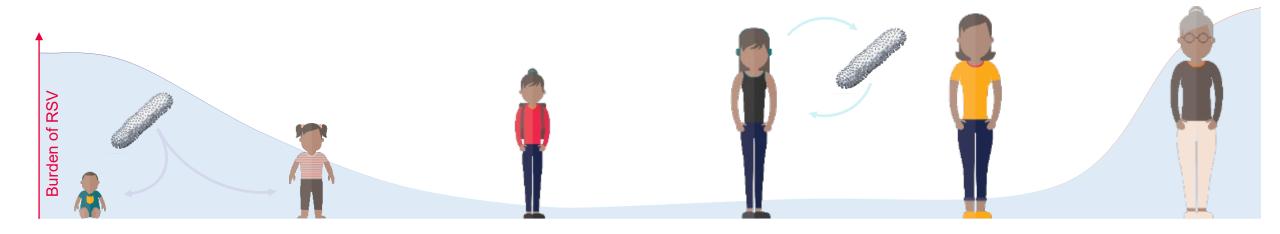
Flu prevention by influenza vaccines in younger and older persons over 7 seasons<sup>1</sup>



Average vaccine effectiveness by age from the French Sentinel Network, 1998-2005. Adapted from Legrand, J., et al. (2006).<sup>1</sup>

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#### **Respiratory Season Vaccinations: RSV**



Virtually all children will have been infected with RSV by age 2 years<sup>1</sup> Immune response after natural infection is incomplete and is short-lived<sup>2,3</sup>. RSV reinfections occur throughout life<sup>3</sup> Older adults are at high risk of severe RSV infection. Those with underlying medical conditions are at even greater risk<sup>4,5</sup>

Source: Centers for Disease Control and Prevention (CDC), 2020. Respiratory syncytial virus infection (RSV): symptoms and care. <u>http://www.cdc.gov/rsv/about/symptoms.html</u> (accessed October 2022); Openshaw PJM *et al. Annu Rev Immunol* 2017;35:501–532;; Walsh E *et al. Clin Chest* Med 2017;38(1):29–36; 4. Branche AR *et al. Clin Infect Dis* 2022;74(6):1004-1011; Centers for Disease Control and Prevention (CDC), 2020. RSV in older adults and adults with chronic medical conditions. <u>https://www.cdc.gov/rsv/high-risk/older-adults.html</u> (accessed October 2022)

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### **Respiratory Season Vaccinations: RSV (burden of disease)**

RSV is the **leading cause of hospitalization** in infants

In children aged <5 years:

~58,000 hospitalizations,

~1.5 million outpatient visits~520,000 ED visits

100-500 deaths

RSV is a **major cause of hospitalization and mortality** in older adults

#### In older adults, ≥65 years:

~177,000 hospitalizations

Outpatient and ED visits in adults underestimated due to lack of surveillance and underreporting

~14,000 deaths



Source: National Foundation for Infectious Diseases (NFID), 2022. Call to action: reducing the burden of RSV across the lifespan. https://www.nfid.org/wp-content/uploads/2022/04/

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### **Respiratory Season Vaccinations: RSV**

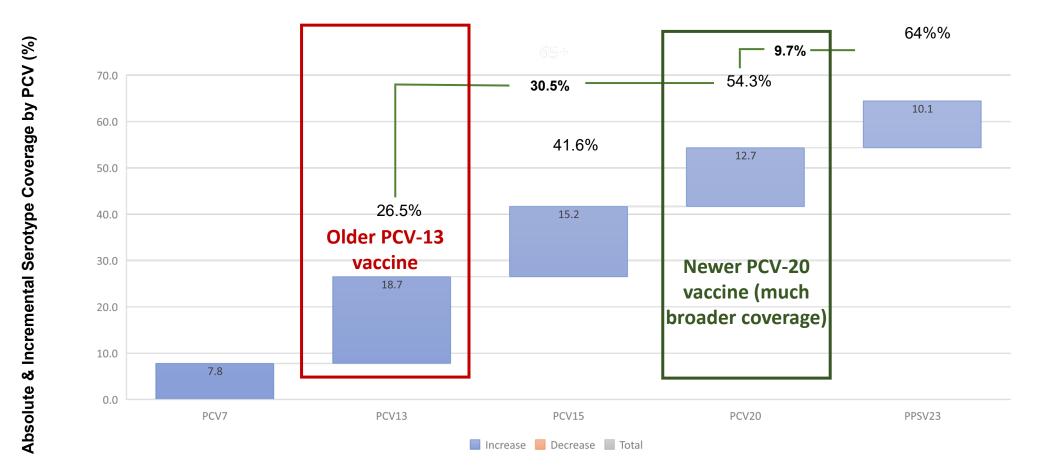
- GSK's Prefusion F protein-based candidate vaccine with AS01<sub>E</sub> adjuvant studied in ~24,966 participants
- NEJM publication released February 2023
- Vaccine efficacy against <u>PCR-confirmed RSV-related lower</u> respiratory tract disease was 82.6% overall, and 94.1% against severe RSV-related lower respiratory tract disease
- This vaccine was approved in Canada earlier this year for adults 60 and older
- No current NACI recommendation on its use (expected early 2024)
- List Price ~\$230, Total Price ~\$300
- Not publicly funded (only public funding in Canada is a LTC program in Ontario)

	ARCH SUMMARY
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INVERSING AND REMAINING DESTINAT	
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The trial had limited ability to detect rare side of- facts.	Bithell Rooks ISSNell Rooks Bithell Rooks
Public health measures to limit Covid-19 transmis- sion induced the spread of KSV and also of the RSV season.	CONCLUSIONS A single dose of an AMD, adjunanted RSV preliation T
Additional RNV seasons need to be studied to better	protein-board candidate meetine (ESWherFT OA) given

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#### **Respiratory Season Vaccinations: Pnuemococcal disease**

Invasive pneumococcal disease serotype coverage for PCVs in Canadian Adults ≥ 65 Years of Age from NML 2019 (N=1476)



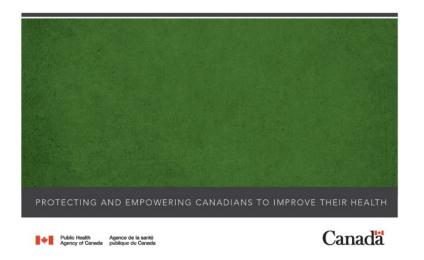
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#### **Respiratory Season Vaccinations: Pneumococcal disease**

An Advisory Committee Statement (ACS)

National Advisory Committee on Immunization (NACI)

Public health level recommendations on the use of pneumococcal vaccines in adults, including the use of 15-valent and 20-valent conjugate vaccines



NACI recommends that pneumococcal conjugate vaccine PNEU-C-20 should be offered to pneumococcal vaccine naïve adults or adults whose vaccination status is unknown and who are

- 65 years of age and older,
- 50 to 64 years of age living with risk factors placing them at higher risk of pneumococcal disease,
- **18 to 49 years of age living** with immunocompromising conditions. (Strong NACI recommendation)

**It's also a very cost-effective vaccine:** "The base-case analysis, supported by scenario analyses, indicated that PNEU-C-20 used alone is likely a cost-effective strategy at age 65 or 75, with ICERs ranging from \$6,500 to \$17,400 per QALY gained."

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### **Respiratory Season Vaccinations: Pneumococcal disease**

#### An Advisory Committee Statement (ACS)

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Public health level recommendations on the use of pneumococcal vaccines in adults, including the use of 15-valent and 20-valent conjugate vaccines

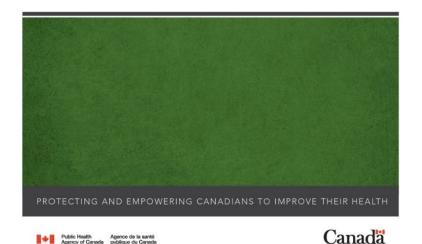


Table 1. Medical conditions and other biological and/or social risk factors resulting in high risk of IPD

Non-immunocompromising conditions	Immunocompromising conditions	Other risk factors
<ul> <li>Chronic cerebrospinal fluid (CSF) leak</li> <li>Chronic neurologic condition that may impair clearance of oral secretions</li> <li>Cochlear implants, including children and adults who are to receive implants</li> <li>Chronic heart disease</li> <li>Diabetes mellitus</li> <li>Chronic kidney disease a</li> <li>Chronic liver disease, including hepatic cirrhosis due to any cause a</li> <li>Chronic lung disease, including asthma requiring medical care in the preceding 12 months</li> </ul>	<ul> <li>Sickle cell disease, congenital or acquired asplenia, or splenic dysfunction</li> <li>Congenital immunodeficiencies involving any part of the immune system, including B-lymphocyte (humoral) immunity, T-lymphocyte (cell) mediated immunity, complement system (properdin, or factor D deficiencies), or phagocytic functions</li> <li>Immunocompromising therapy, including use of long-term corticosteroids, chemotherapy, radiation therapy, and post-organ transplant therapy</li> <li>HIV infection</li> <li>Hematopoietic stem cell transplant (recipient)</li> <li>Malignant neoplasms, including leukemia and lymphoma</li> <li>Nephrotic syndrome</li> <li>Solid organ or islet transplant (candidate or recipient)</li> </ul>	<ul> <li>Individuals</li> <li>who smoke</li> <li>who use illicit drugs</li> <li>with alcohol use disorder</li> <li>who are experiencing homelessness</li> <li>who live in communities or settings d experiencing sustained high IPD rates.</li> </ul>

Note – fairly broad set of conditions put you at high-risk for IPD (invasive pneumococcal disease) for the Age 50-64 indication

Q&A

