

# Understanding Current Immunization Funding, Decision-making, and Gaps in Vaccine Access and Coverage in Canada

## *Final Report*

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Real World Solutions, IQVIA Canada

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# This report identified gaps in funding and decision-making, access, and coverage for routine vaccines in Canada

## Funding and Decision-Making

- Routine vaccine procurement accounted for **0.15-0.21%** (\$302-426 million) of **total public sector health spending** between 2017-2021 (\$171-241 billion)
- Stakeholders believe that routine vaccines are currently **insufficiently funded** and **not prioritized**
- Current immunization-related **decision-making** mechanisms are **complex**, involving multiple levels of government and other stakeholders
- Fundings required for **functional immunization programs** at the provincial/territorial-level are managed by **different units and divisions**

## Gaps in Vaccine Access

- A non-exhaustive number of vaccines were selected as case studies based on the existence of key quantifiable gaps in access
- An estimated **14 million doses** of RZV, Tdap vaccine, and Pneu-C-13 vaccine may be required to **bridge current gaps in access** for **existing patients** for the above 3 case study vaccines
- To provide universal access to **influenza vaccine** across Canada, an **additional 1.4 million doses** are required **annually**
- **Additional investments** may be required to ensure **equitable access** to **existing** and **pipeline vaccines, such as RSV**

## Gaps in Vaccine Coverage

- Current coverage for influenza, adult, and childhood vaccines are **below the Vaccination Coverage Goals** set out by the National Immunization Strategy
- Current **access channels**, such as pharmacies, are **underutilized**
- The **lack of an automated** and **harmonized** way to report uptake has resulted in challenges in estimating coverage rates
- **Learnings** and **innovations** from the COVID-19 pandemic response can be leveraged to bridge gaps in coverage



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# This project aimed to better understand current investments in immunization, gaps in vaccine access and gaps in vaccine coverage

## Report Objectives

- 1 Estimate the current investments in public immunization programs. Understand the key decision-making and funding mechanisms for immunization programs
- 2 Define the gaps in Canada related to public vaccine access. Estimate the incremental doses/cost of vaccines needed to bridge the gaps in access
- 3 Identify issues and gaps in vaccine coverage, and summarize learnings from COVID-19 pandemic response

## Secondary Research





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# Only 0.15% of total public sector health spending were on routine vaccine procurement (\$333M) in 2020

## Total Public Sector Health Spending, 2020 (\$226 Billion)

Including all health-related expenditures, such as hospital spendings, physicians, public drugs plans, public health, etc.

## Public Health Spending (\$16 Billion, 7% of public sector health spending)

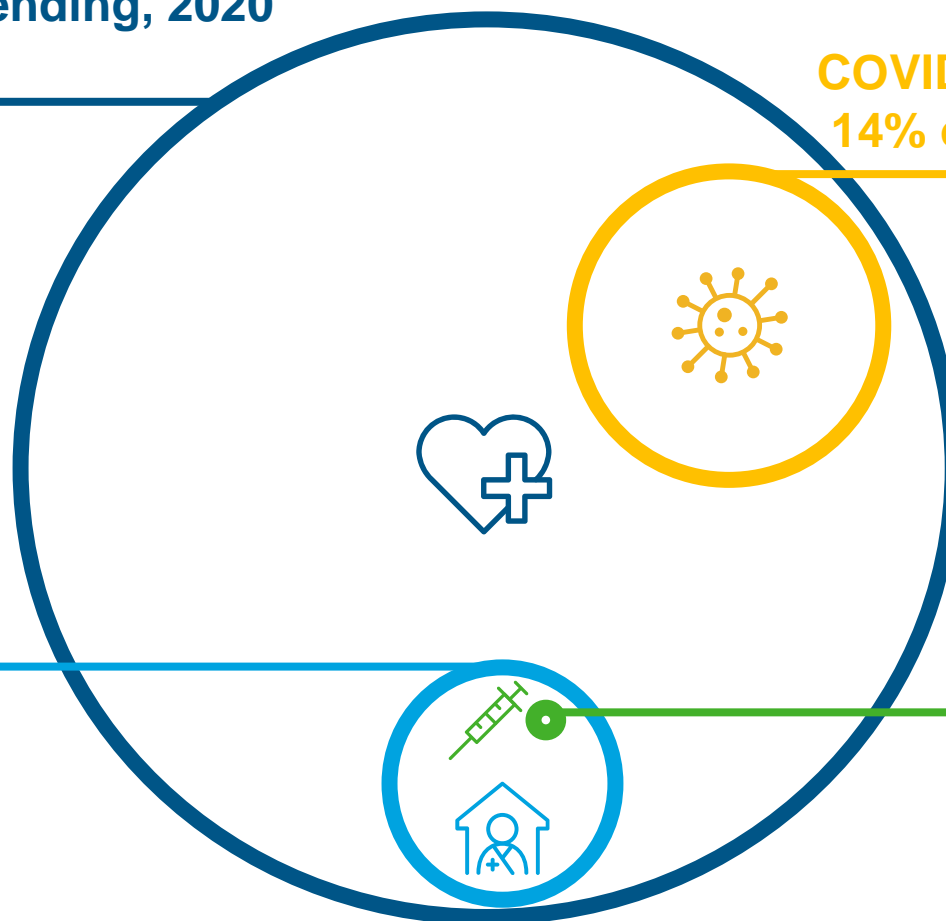
Funds expenditures including food and drug safety, health inspection, health promotion, mental health, **disease prevention (including immunization)**

## COVID-19 Response Fund (\$31 Billion, 14% of public sector health spending)

Funds all expenditures for health related activities, **including vaccine and programs in response to the COVID-19 pandemic**

## Vaccine Procurement (\$333 Million, 0.15% of public sector health spending)

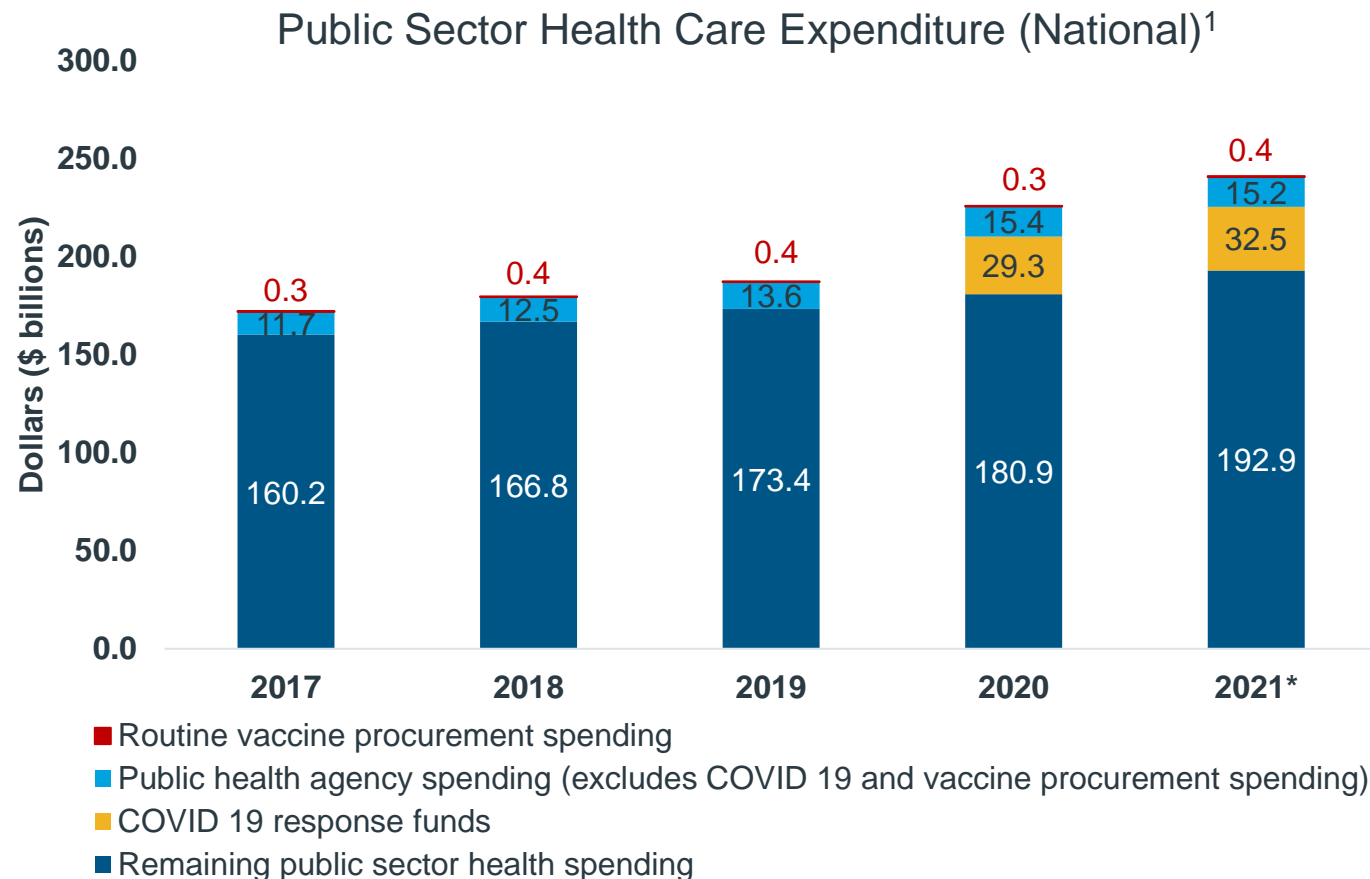
**Public funding dedicated for routine vaccine procurement**, and distribution to local government hubs



### Sources:

1. National Health Expenditure Database, 2021, [Canadian Institute for Health Information](#).
2. Available information from PSPC tender notices and contracts listed on [buyandsell.gc.ca](#) between 2012 -2021, Accessed Aug 31, 2022
3. Faivre et al. *Expert Review of Vaccines*. 2021 20(6): 639-647

# Routine vaccine procurement spending consistently accounted for a small fraction of total public sector health spending between 2017-2021



Note:

\* Actual expenditure for 2017-2020 and forecasted spending for 2021. Actual health expenditures for 2021 will be available in fall 2023

Public Health Spending Includes expenditures for items such as food and drug safety, health inspections, health promotion activities, community mental health programs, public health nursing, measures to prevent the spread of communicable disease and occupational health to promote and enhance health and safety at the workplace.

COVID-19 Response Funding includes government-budgeted funding for health-related activities as a time-limited emergency response to the COVID-19 pandemic. Due to the uncertainties brought about by the pandemic, forecasts may experience larger variance than usual when they become actual figures.

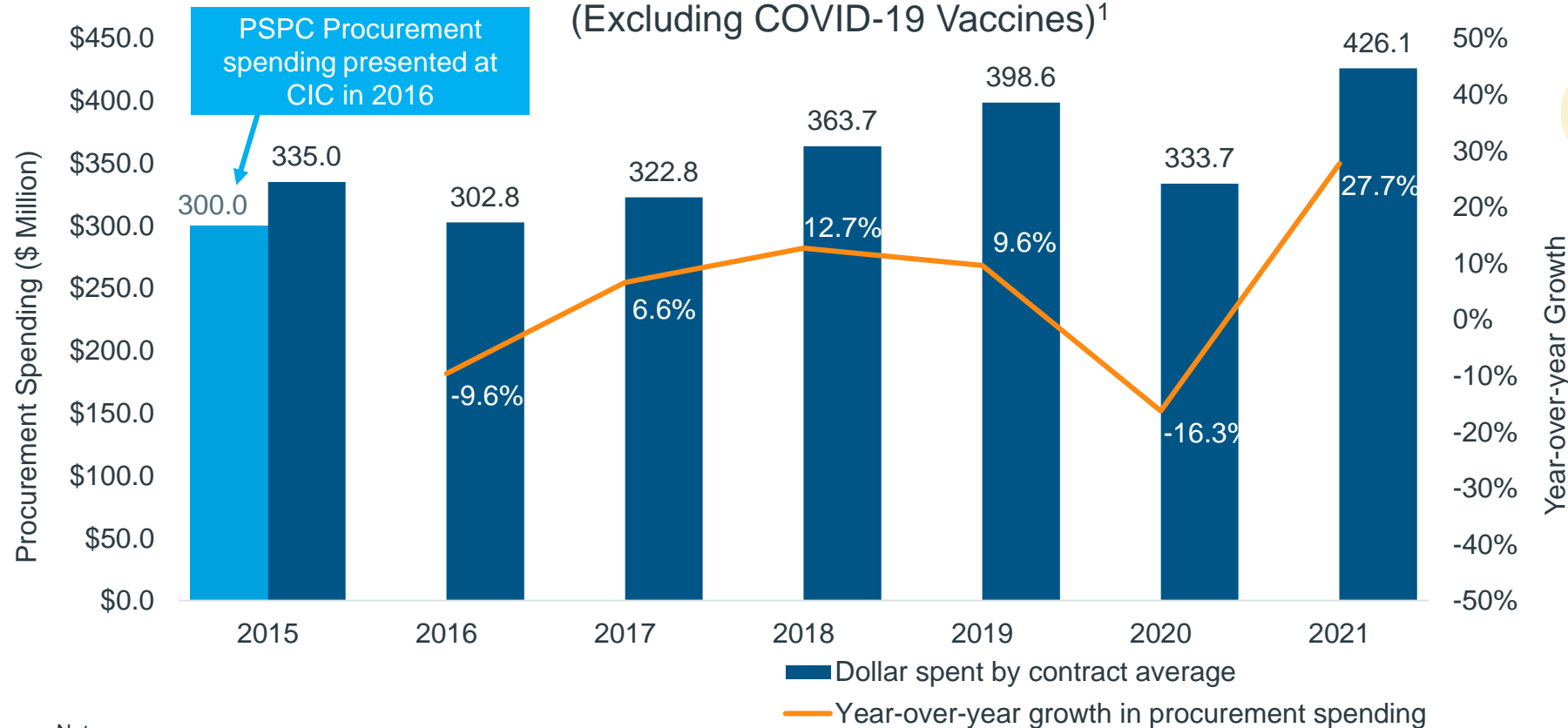
Source: 1. National Health Expenditure Database, 2021. [Canadian Institute for Health Information](#).



- Total public sector healthcare spending in Canada is estimated to hit a new high of **\$241 billion** in 2021
- In 2020, total public sector health spending surged by ~20% as a result of **COVID-19 pandemic response fund**. Prior to pandemic, annual growth in total health care spending was around 4%.
- Routine vaccine procurement spending consistently accounted for only **0.15-0.21%** of the total health spending between 2017-2021

# Routine vaccine procurement spending experienced incremental increases until 2019, COVID-19 pandemic disrupted this trend in 2020

Estimated National Vaccine Procurement Spending  
(Excluding COVID-19 Vaccines)<sup>1</sup>



- Vaccine procurement spending experienced consistent year-over-year increase between 2015-2019
- Vaccine procurement appeared to have a dip in 2020, which was likely a result of the disruption caused by the COVID-19 pandemic

## Note:

- For contracts spanning multiple years, average value of total contract is used for calculation.
- Estimations may be within a -10%/+20% deviation from actual spend
- Estimations include 10-year flu contract from 2011 worth \$425.9M over 10 years (<https://www.canada.ca/en/news/archive/2011/03/government-canada-awards-contracts-supply-influenza-vaccine.html>)
- Tender notices and contract history for known vaccine or referenceable solicitation number are used in estimation
- Estimate does not include procurement from Centre d'acquisition gouvernementales (CAG) which procures vaccines for Quebec only

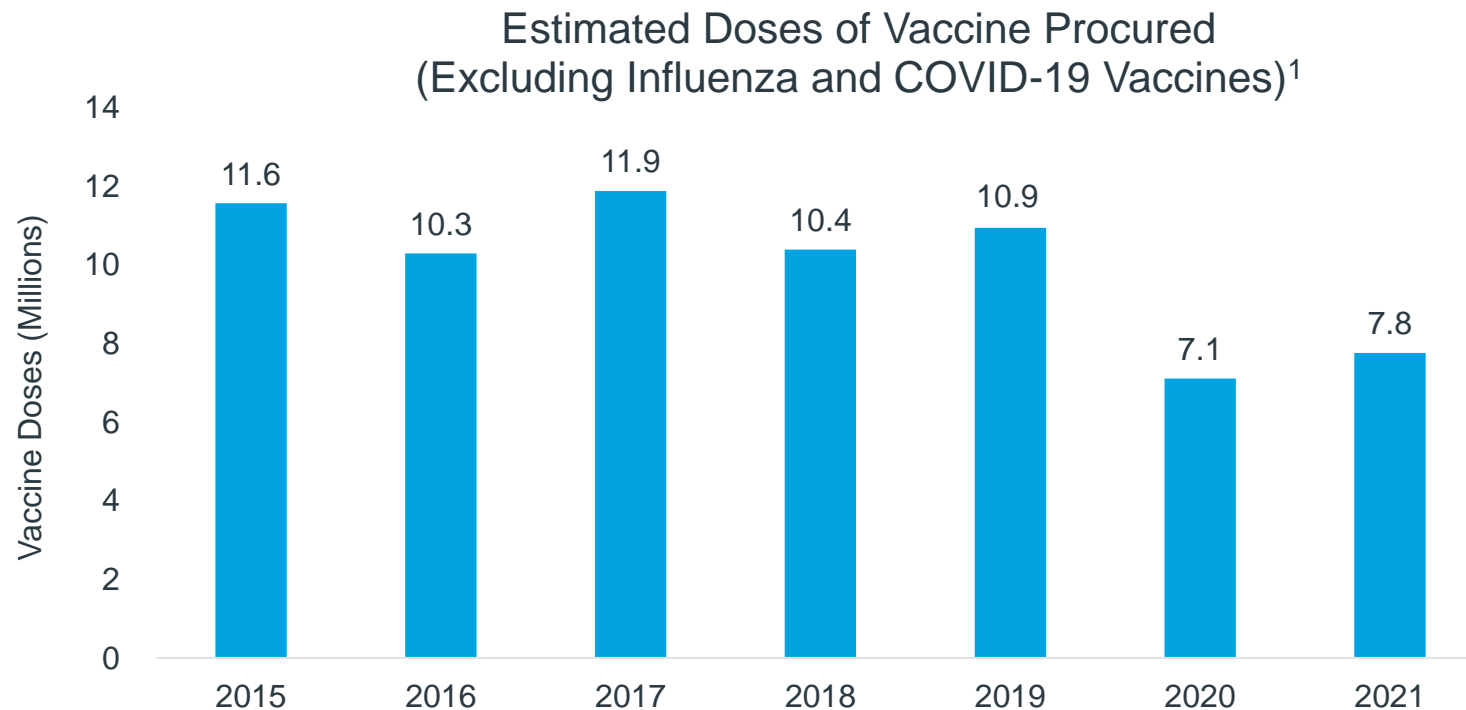
## Sources:

1. Available information from PSPC tender notices and contracts listed on buyandsell.gc.ca between 2012 -2021, data captured as of Aug 31, 2022

Abbreviations: CIC: Canadian Immunization Conference; PSPC: Public Services Procurement Canada

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# Vaccine procurement remained relatively stable until 2019, when the COVID-19 pandemic led to a significant reduction in vaccine procurement in 2021-22



- Excluding flu and COVID-19 vaccines, the total doses of routine vaccines procured has remained relatively stable between 2015-2019
- There was a dip in procured doses in 2020, which was likely a result of the disruption caused by the COVID-19 pandemic

#### Note:

- Public Services and Procurement Canada (PSPC) data estimated are based on listed dose information on available tender notices
- For contracts spanning multiple years, it is assumed that same dose of vaccines are purchased for each year
- For tender notices that are missing dose information, contracts for the same vaccines for a different year are used
- Tender notices and contract history for known vaccine or referenceable solicitation number are used in estimation

#### Sources:

1. Available information from PSPC tender notices and contracts listed on buyandsell.gc.ca between 2012 -2021, accessed Aug 31, 2022

# Vaccine procurement spending was a small fraction of total public sector health spending

## Section Summary

1

### Public Sector Health Spending

Public health spending accounted for **7%** of total public sector health spending in 2020

2

### Vaccine Procurement Spending

Vaccines procured through Public Services and Procurement Canada (PSPC), excluding COVID-19, accounted for **0.15-0.21%** of total public sector health spending between **2017-2021**

3

### Doses of vaccines procured

An **estimated 7-11 million doses of vaccines**, excluding COVID-19 and influenza vaccines, were procured annually between 2015-2021



# Agenda

## + Executive Summary

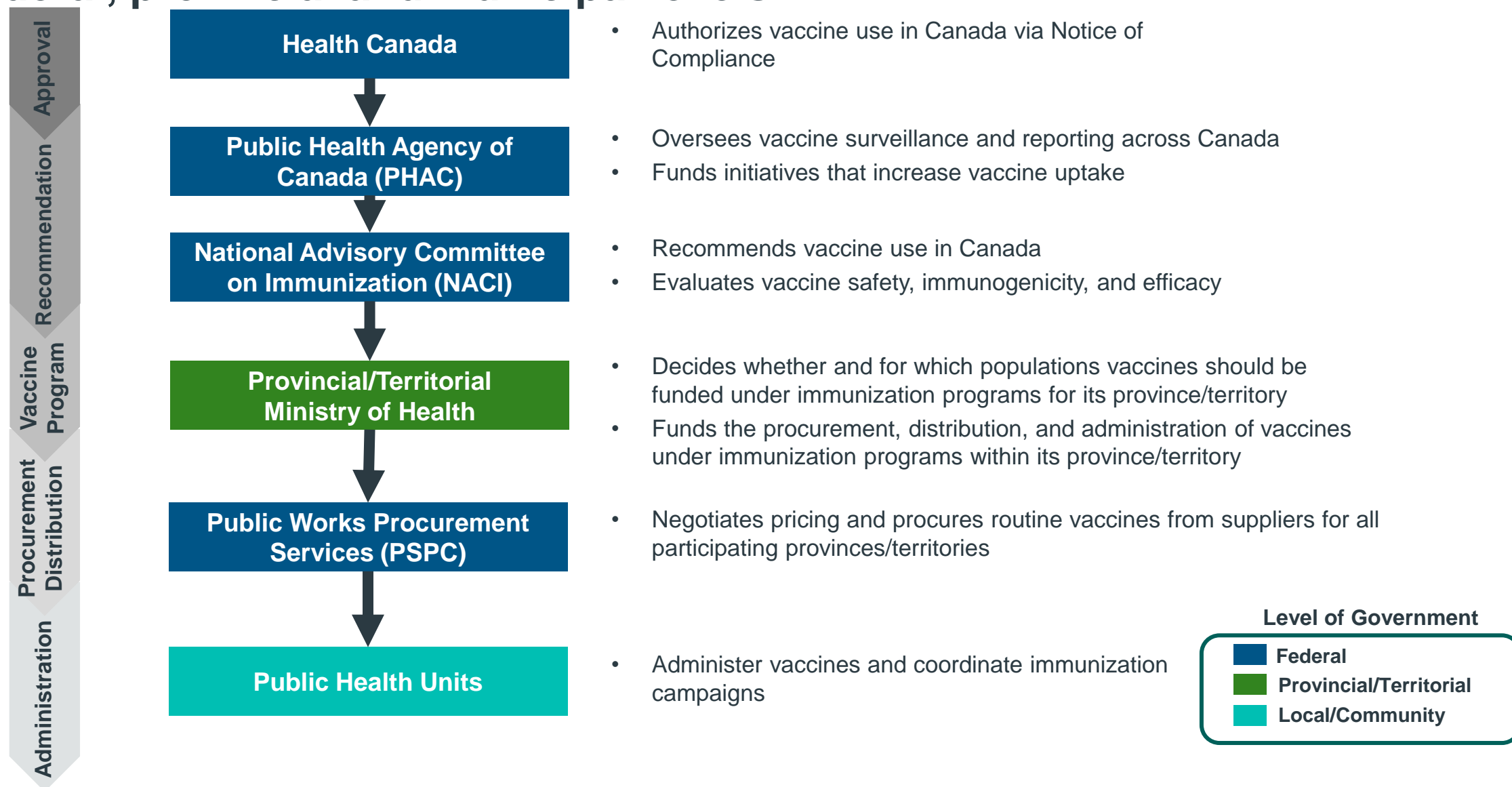
## + Objectives and Methodology

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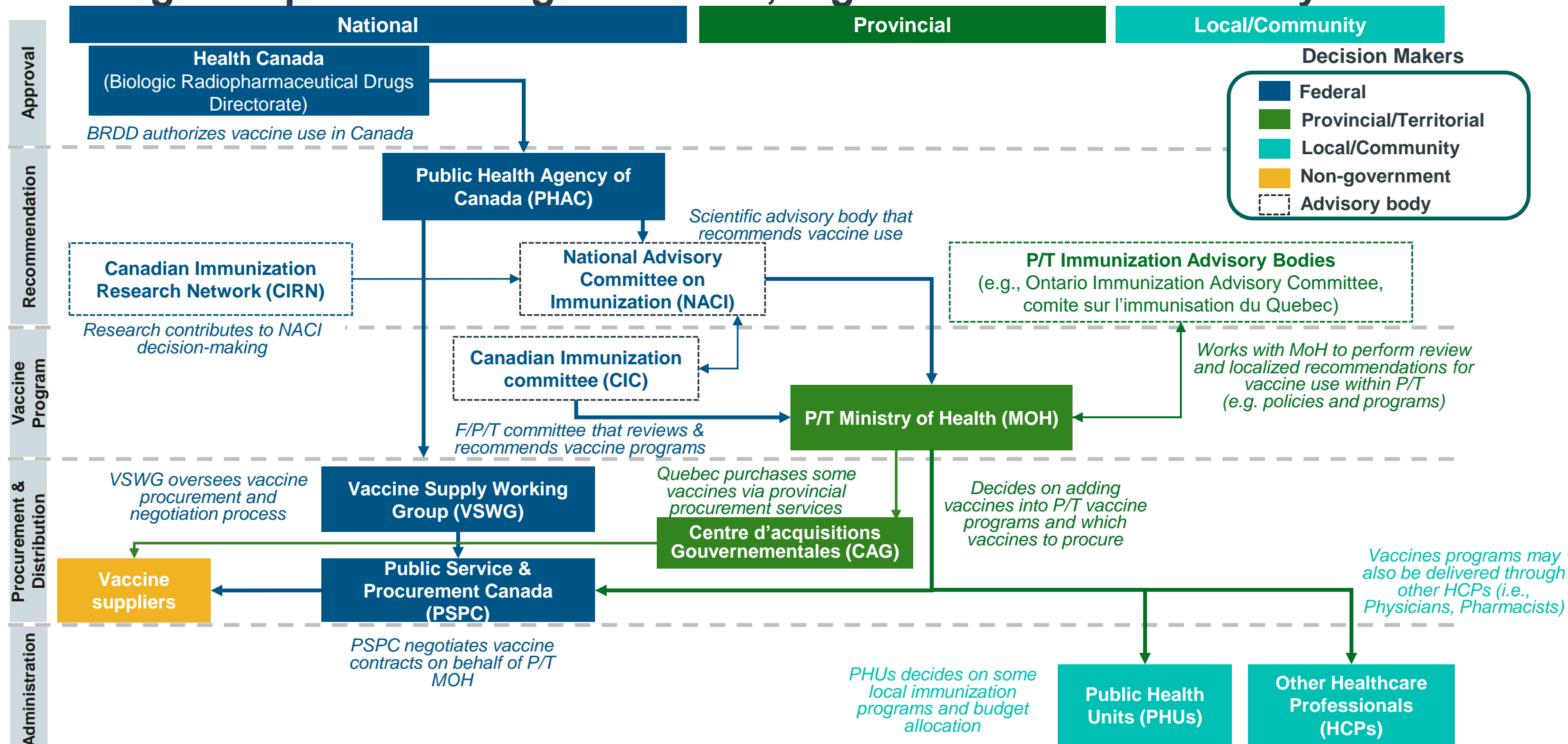
- **Vaccine funding and decision making**
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    - » Vaccine funding mechanism
    - » Expert opinions on vaccine funding and decision making
- Gaps in vaccine access
- Gaps in vaccine coverage

## + Summary of Findings and Gaps

# Vaccine decision-making requires coordinated involvement of stakeholders at federal, provincial and municipal levels

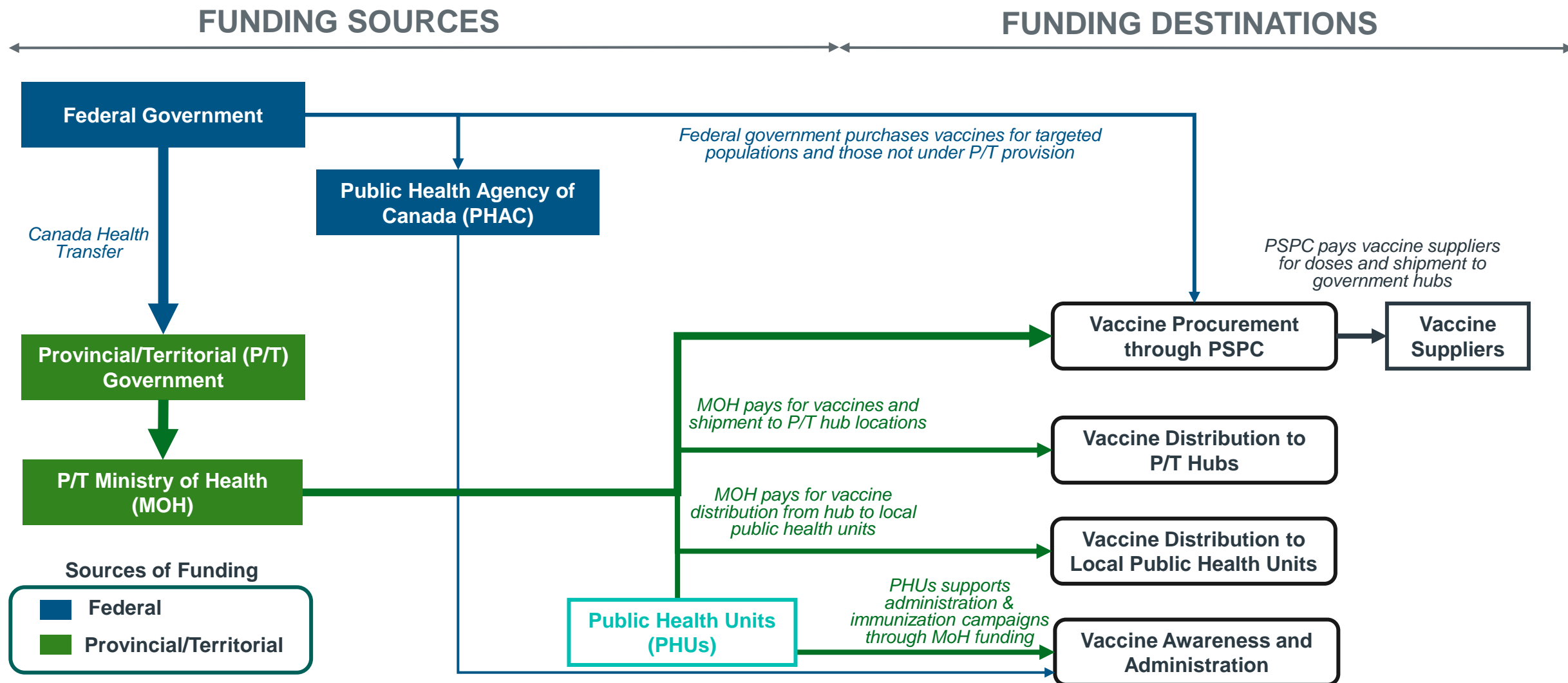


# Decision-making for public immunization programs is highly complex, involving multiple levels of government, organizations and advisory bodies

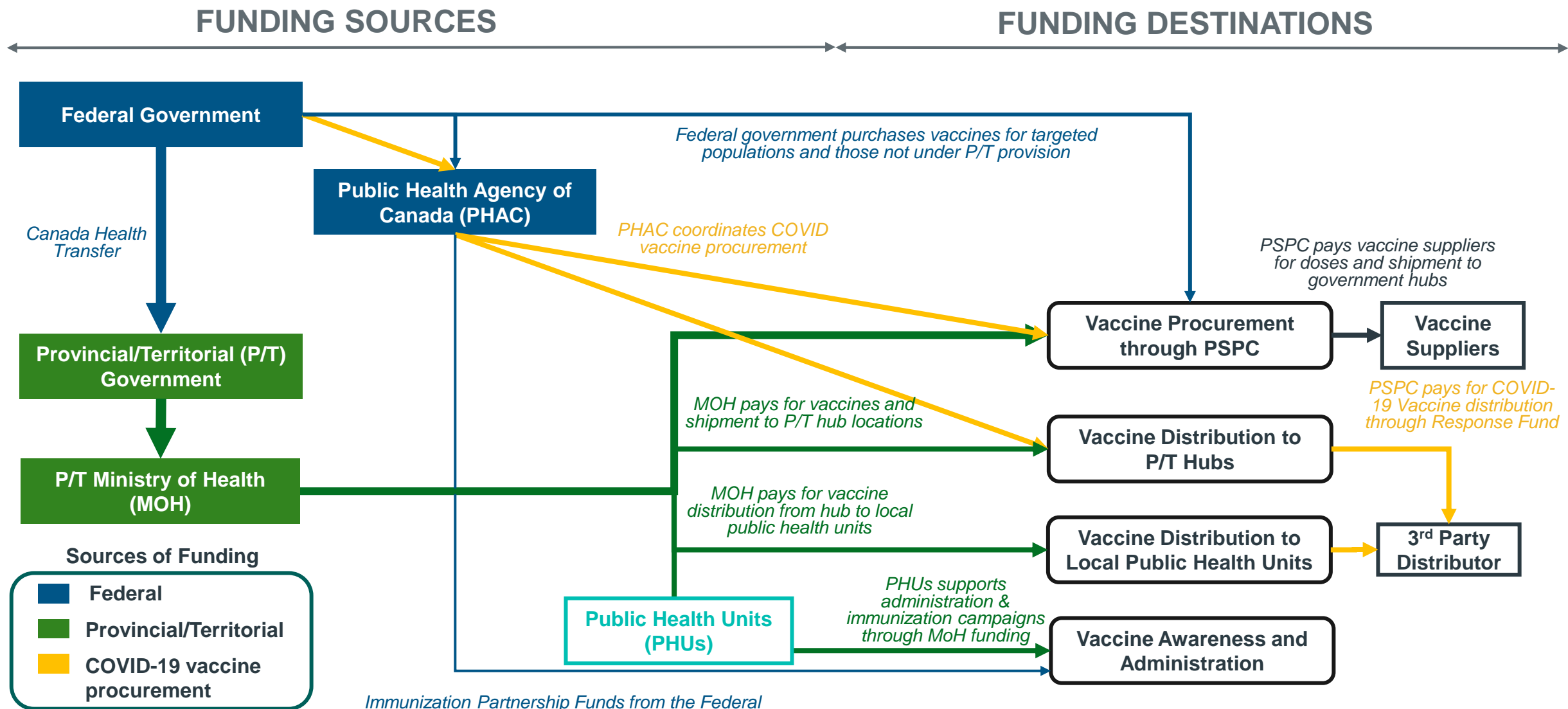




# While the Federal government provides overall health care funding, funding for immunization programs is managed at the provincial/territorial level



# COVID-19 vaccine procurement was funded and managed at the Federal level by Public Health Agency of Canada



PSPC: Public Services Procurement Canada

Immunization Partnership Funds from the Federal government support vaccine awareness & uptake

# Provincial fundings for immunization programs are fragmented and funding allocations are not always reported

## Vaccine Procurement Funding (The only dedicated immunization funding)

The budget for vaccine procurement is managed **by the immunization policy and program unit** under health protection and surveillance policy and programs branch in the Ministry of Health

## Communications Funding

Ministry of Health's communication division manages ministry media, digital communications, which also includes **vaccine market research, surveillance, and reporting**

## Medical Supply Distribution Services Funding

Distribution services, such as Ontario Government Pharmaceutical and Medical Supply Services (OGPMSS), distributes medical supplies, **including vaccines** to local public health units

## Public Health Units Operating Funding

Includes salary for public health staff that **runs vaccination campaigns** and **administers vaccines**, and **manages equipment for vaccine storage**

Immunization  
Funding  
(e.g., Ontario)

- While the Minister of Health owns all of the immunization budget, it's unclear how fundings for each piece of functional immunization programs are allocated
- Immunization fundings are also rarely reported, with only reported in 3 of the 13 provinces/territories (AB, SK, MB) reporting in financial statements/annual reports

"... let's say Public Health Ontario makes a recommendation that shingles should be funded. **This goes up to somewhere in the Ministry of Health and somewhere in finance where a decision is made** to whether or not to put money to it. **That's the part that is really more opaque.** I'm sure it's probably different for every province, but it's there that the final funding decision or lack thereof, is made at the provincial territorial level."

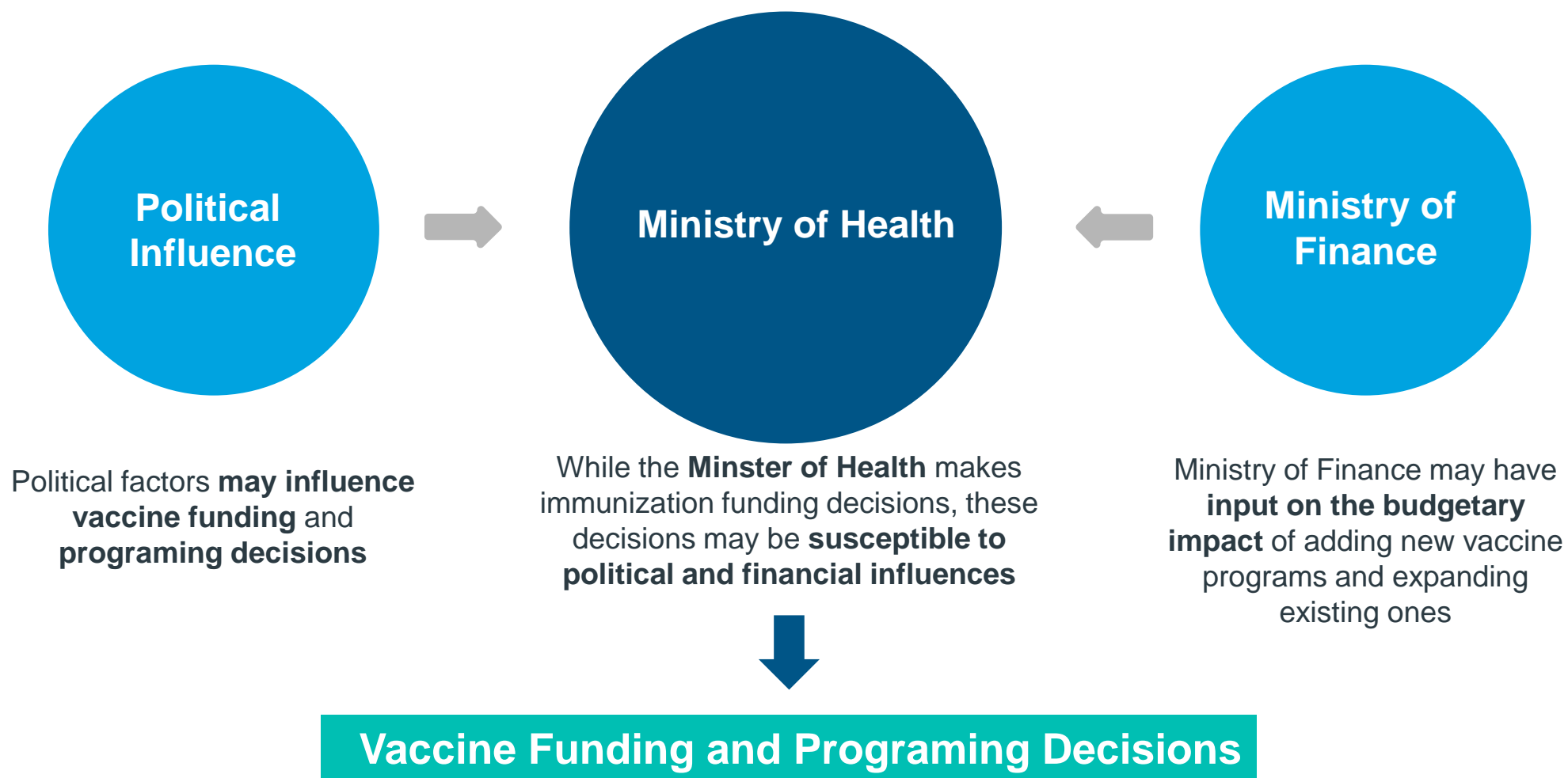
- Public Health and Immunization Expert

Note: Budgets for each function may not be to scale

Sources: 1. Alberta Treasury Board and Finance. Budget 2022: Fiscal Plan Moving Forward 2022-25. 2. Government of Saskatchewan. Saskatchewan Provincial Budget 22-23 3. Government of Manitoba. 2022 Manitoba estimates of expenditure.

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## Political and financial considerations may also influence vaccine funding and decision-making at the provincial level



# Stakeholders interviewed believe immunization programs receive insufficient funding, not regarded as a priority, and lack formalized, transparent process

## Insufficient funding allocated to immunization

- Budgets for vaccines are low, and not sufficient to allow highly effective and cost-effective vaccines to be funded

“... I think a big reason vaccines, especially some of the newer ones, aren't covered, despite NACI recommendations around effectiveness and cost effectiveness, is that the budget impact is seen as relatively high. **Because the budget envelope for vaccines is quite low.**”

- Public health and immunization expert

“... **you're just leaving almost a whole therapeutic class at the doorstep.** And I think that's a problem that will only get worse because there's just **a lot of stuff coming down the pipelines in the vaccine world ...**”

- Public health and immunization expert

## A lack of a formalized, transparent funding process

- Current system lacks a structured pathway for newly approved vaccines to be publicly funded
- Funding decisions for vaccines are often made on an ad-hoc basis

*CADTH received over \$33 million total funding from Federal and Provincial Governments in 2021<sup>1</sup>, while PHAC received \$8.5 million total funding from the Federal Government<sup>2</sup>*

## Vaccines are not regarded as a priority

- Despite the high effectiveness and cost-effectiveness, vaccines do not receive the same attention as some other medications
- Vaccines are not seen as a priority for funding

“...as new vaccines that are very effective and cost effective come to the table, **they're often not going to be funded.** Whereas if there was a new cost-effective cancer drug that emerged, I think it will almost automatically get funded.”

- Public health and immunization expert

“... The decision to expand HPV vaccines to boys were **always on the table for years, we always had them on the pipeline ... we just never acted on it.**”

- Immunization policy expert



### Sources:

- CADTH, Financial Statement of Canadian Agency for Drugs and Technologies in Health Year ended March 31, 2022
- PHAC. Public Health Agency of Canada – 2021-2022 Financial Statements.

# Immunization-related fundings are low, decision-making mechanisms are complex, and fundings for immunization at P/T level are fragmented

## Section Summary

1

### Vaccines are currently under funded

- Interviewed stakeholders believe that immunization programs are **underfunded** due to **insufficient funding allocation, lack of prioritization, and a lack of formal, transparent funding process**

2

### Current immunization-related decision mechanisms are complex

- **Multiple levels of governments**, with different advisory bodies, are involved in making immunization-related decisions
- Immunization-related decisions may be **susceptible to political and budgetary influences**

3

### Different pieces of the immunization budgets are owned by different divisions within the government

- Different pieces of funding required for functional immunization programs are managed by different divisions & units within the provincial government, highlighting the complexity and fragmentation in immunization funding



# Agenda

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## + Objectives and Methodology

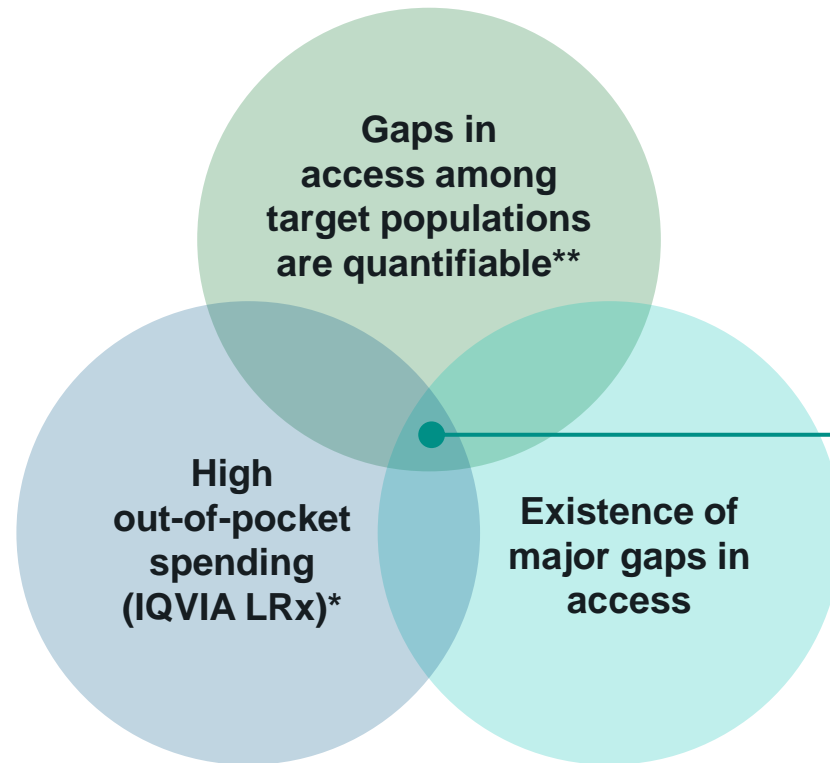
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- **Gaps in vaccine access**
  - › **Gaps in access for current and pipeline vaccines**
    - » Gaps in access for Selected Vaccines
    - » Estimation of incremental doses and funding required to bridge the gap
    - » Estimation on doses needed for pipeline vaccines, such as RSV
- Gaps in vaccine coverage

## + Summary of Findings and Gaps

# Several vaccines were selected as case studies based on out-of-pocket spending, existing gaps in access, and quantifiability of these gaps

While there are multiple vaccines with gaps in access (i.e., current immunization programs do not cover all populations recommended by the Canadian Immunization Guide), a sample of 4 vaccines were selected as case studies based on the 3 criteria below



## Vaccines selected as case studies based on selection criteria\*\*\*

- Influenza vaccine
- Recombinant zoster vaccine (RZV)
- Tetanus, diphtheria, and pertussis vaccine (Tdap)
- Pneumococcal 13-valent conjugate vaccine (Pneu-C-13)

*The list of vaccines selected as case studies is **non-exhaustive**. There are also access gaps for vaccines that are not included, such as Hepatitis B vaccines, human papillomavirus vaccines, and meningococcal vaccines. The gaps for these vaccines are difficult to quantify.*

\* Based on data from the IQVIA Longitudinal Prescription Data dataset (2017-2022)

\*\* Quantifiable is defined as the target populations can be identified and quantified through sources in the literature or official Statistics and Census Data

\*\*\* Vaccine selected based on these 3 criteria is non-exhaustive



# When compared to recommendations from the CIG, several gaps in access were identified for selected vaccines across all provinces and territories

Canadian Immunization Guide (CIG) Recommendation		AB	BC	MB	ON	QC	PE	NB	NL	NS	SK	YT	NT	NU
Influenza	<ul style="list-style-type: none"><li>6 months of age and older, 1 or 2 doses, Annually</li></ul>					A								
Recombinant zoster vaccine (RZV)	<ul style="list-style-type: none"><li>For adults ≥ 50 years of age; 2 doses</li></ul>	B			C		D					C		
Tetanus, diphtheria, and pertussis (Tdap)	Child: (Age, 2 year – 17 year) <ul style="list-style-type: none"><li>DTaP-IPV/ Tdap-IPV: 1 dose at 4 – 6 year</li><li>Tdap: 1 dose (childhood booster) at 14-16 year</li></ul>					F								
	Adult: (Age, 18 year and above) <ul style="list-style-type: none"><li>Tdap: 1 adulthood dose and 1 dose every pregnancy</li><li>Td: 1 booster dose at every 10 years</li></ul>		G			H								
Pneumococcal conjugate 13-valent (Pneu-C-13)	<ul style="list-style-type: none"><li>Healthy Child (Age 2 M- 17 Y) : 3-4 doses (at 2, 4, 12/ 15 m)</li><li>Child at risk of IPD: 4 doses (at 2, 4, 6, 12 m)</li><li>Adult (18Y +) at risk of IPD: 1 dose followed by Pneu-P-23</li></ul>	I				J						K	L	L
	Publicly funded for all individuals recommended by NACI					Publicly funded for selective individuals recommended by NACI				Publicly not funded				

**Influenza** : **A: Flu/QC**: No universal coverage. Vaccine is not funded for individuals of age 24 m to 59 years except for some high-risk populations and pregnant women (2<sup>nd</sup> and 3<sup>rd</sup> trimester). Flu vaccine was universally funded for the 2022/23 season; **Herpes Zoster**: **B: RZV/AB**: Not covered except patient of age 18+ going to organ transplant ; **C: RZV/ON and YT**: Only individual of age 65Y to 70 Y are covered in ON and only individual of age 65Y to 79 Y are covered in YT ; **D: RZV/PE** : Only individual of age 60 Y and above are covered; **Tdap**: **F: Tdap/QC**: Td is covered at grade 9 instead of Tdap at 14-16 year; **G: Tdap/BC**: Adulthood dose is not publicly funded; **H: Tdap/QC** – Only 1 dose of Td at age 50 and Tdap for every pregnancy are covered. **Pneu-C-13** : **I: Pneu-C-13/AB,NU,NT**: Adult (18Y+) at risk of IPD are not covered; **J: Pneu-C-13/QC**: For children, Pneu-C-10 is covered at 2 and 4 month and Pneu-C-13 is covered at 12-month **K: Pneu-C-13/YT**: Children and adult (18Y+) at risk of IPD are not covered

# Gaps indicate that there are various patient populations that do not have publicly-funded access to a vaccine that is recommended by the CIG

## Pneumococcal 13-valent conjugate vaccine (Pneu-C-13)

**Children and adults at risk of invasive pneumococcal disease (IPD)** are not offered an additional dose of Pneu-C-13 vaccine in Yukon

Alberta, Nunavut, and the Northwest Territories do not offer this vaccine for adults at risk of IPD

## Influenza Vaccine

Outside of some high-risk populations, influenza vaccine is not publicly-funded in Quebec for healthy individuals between 23 months and 59 years of age, as recommended by the CIG\*



## Recombinant Zoster Vaccine (RZV)

The CIG recommends RZV for all adults age  $\geq 50$ . However, 9 out of 13 P/T **offer no coverage** for this vaccine.

Alberta only offers RZV to adult organ transplant recipients. Ontario, Yukon, and PEI only offer RZV for specific age segments

## Tetanus, diphtheria, and pertussis vaccine (Tdap)

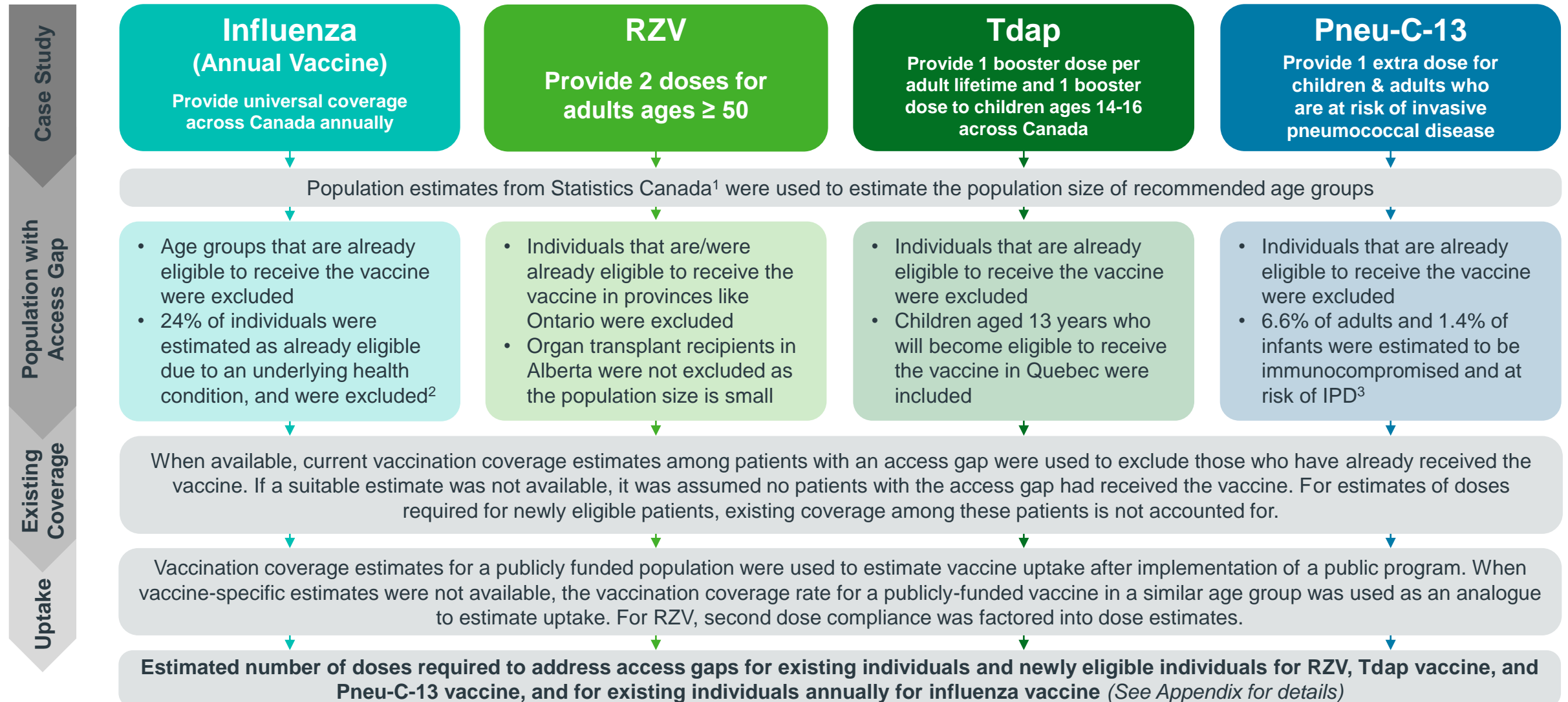
One dose of **Tdap** vaccine for adults is not publicly funded in British Columbia or Quebec

Quebec provides 1 dose of Td rather than Tdap, as recommended by the CIG, for grade 9 students

Abbreviations: CIG: Canadian Immunization Guide; IPD: Invasive pneumococcal disease; Pneu-C-13: Pneumococcal 13-valent conjugate; Tdap: Tetanus, diphtheria, and pertussis; RZV: Recombinant zoster vaccine.

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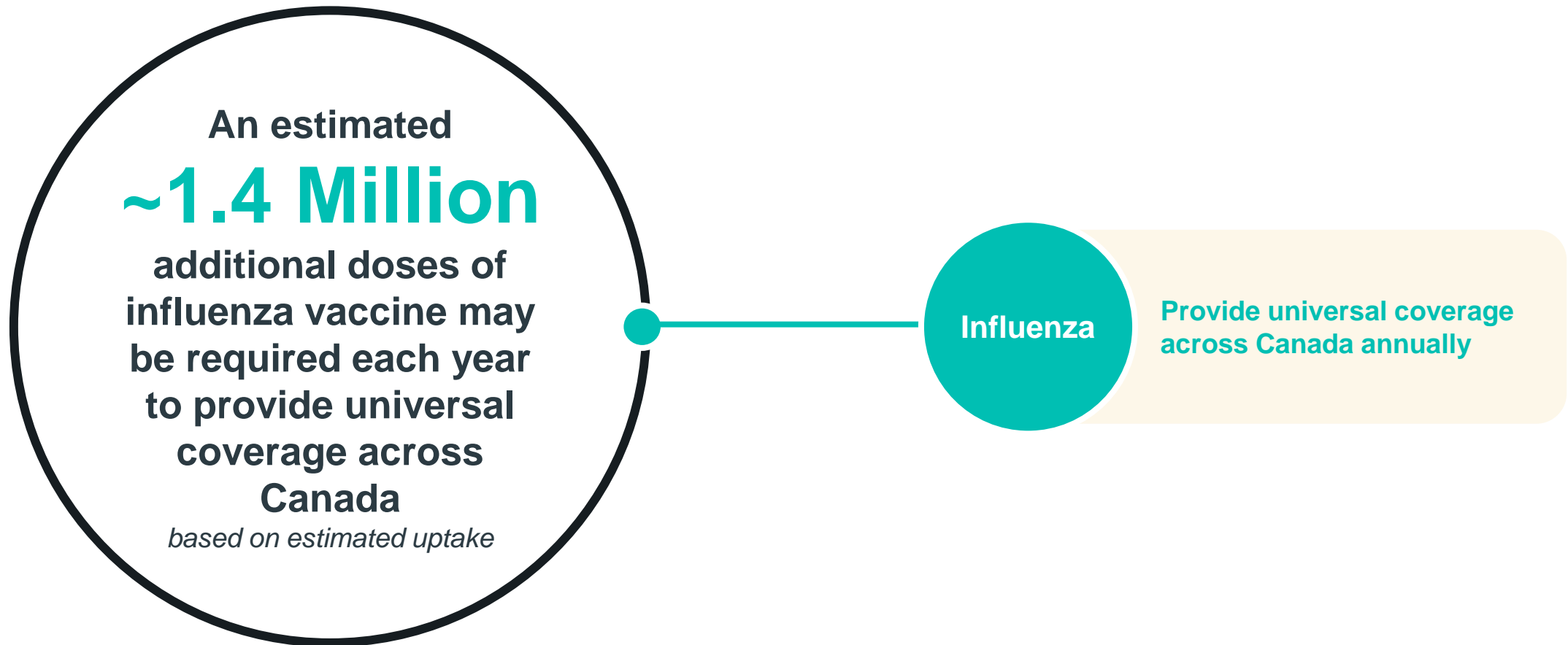
# The size of patient groups that have a gap in access and the count of doses required for these groups were estimated for the case study vaccines



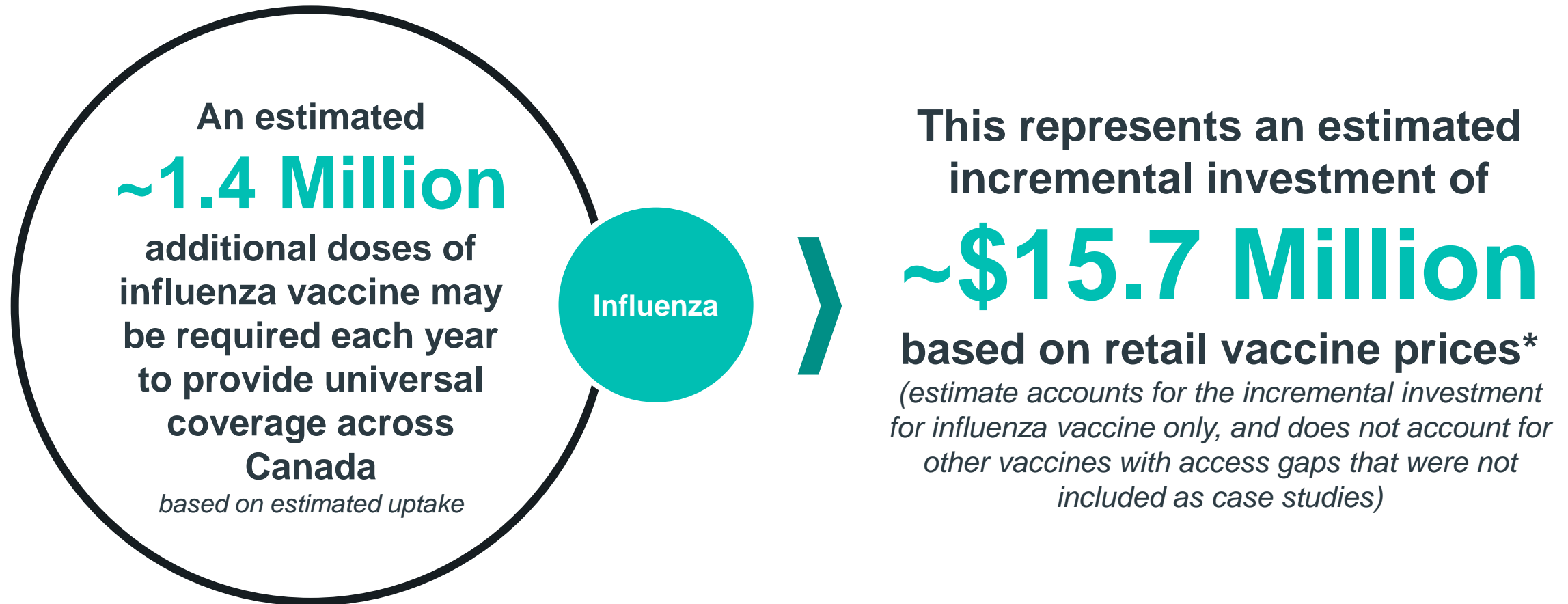
Abbreviations: RZV: Recombinant Zoster Vaccine ; Tdap: Tetanus, diphtheria, and pertussis; Pneu-C-13: Pneumococcal conjugate 13-valent.

Sources: 1. Statistics Canada. [Population estimates on July 1st, by age and sex](#). 2. Patel M et al. *Emerg Infect Dis*. 2020 Aug;26(8):1720-1730. 3. Ramage-Morin et al. *Health Rep*. 2020 Jul 2;31(5):3-8.

Approximately 1.4 million additional doses of influenza vaccine may be required yearly in order to fulfill the access gap

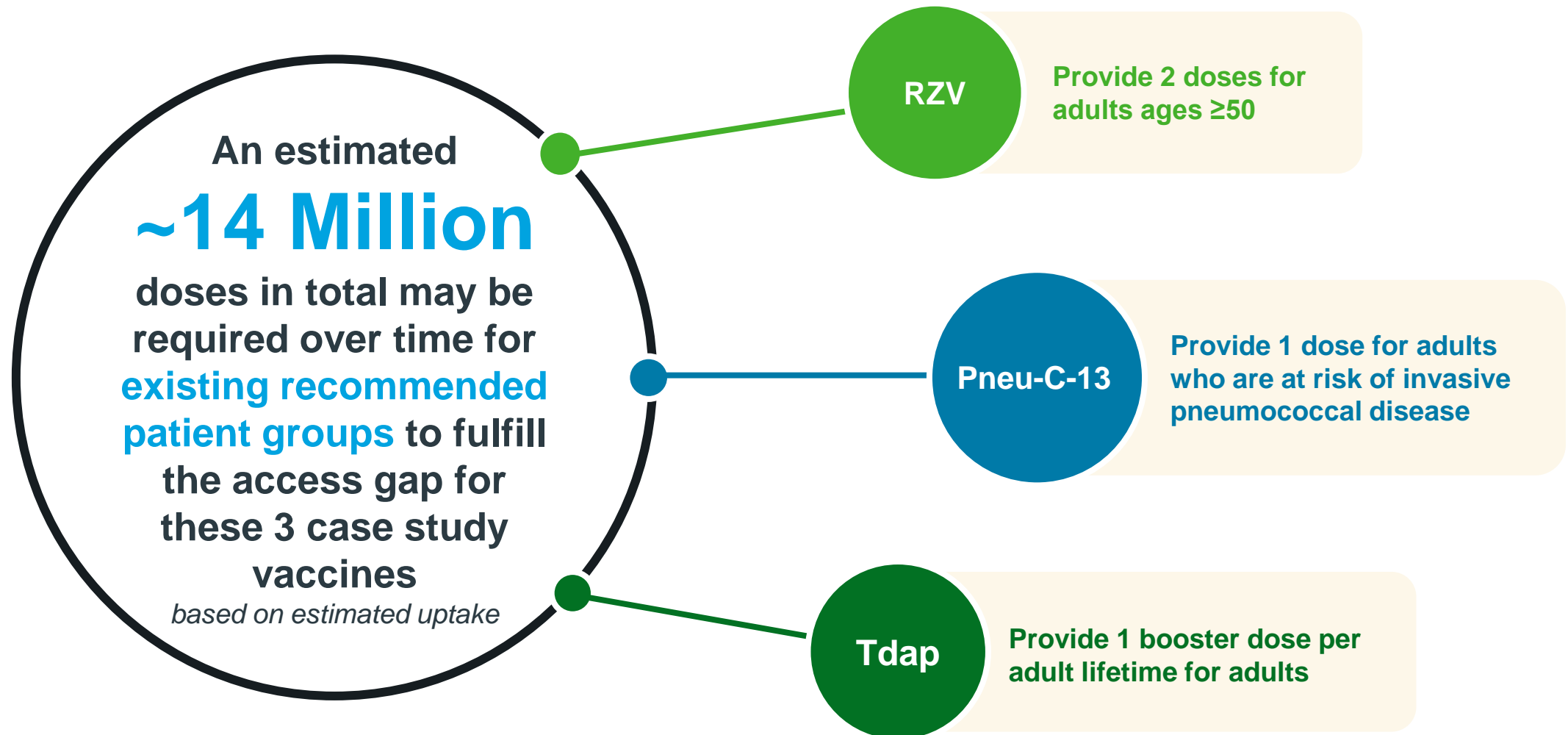


An estimated incremental investment of ~\$15.7 million may be required yearly to provide universal coverage across Canada against influenza



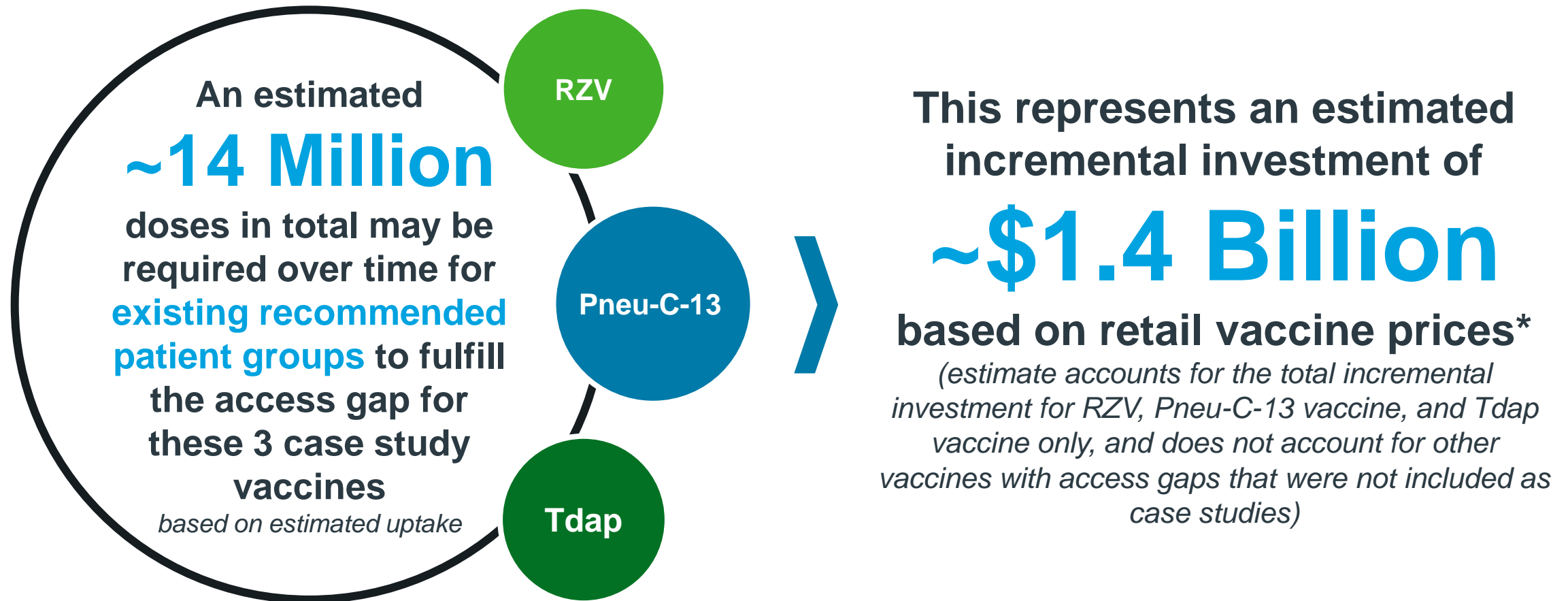
\*Estimates are calculated using list prices from IQVIA DeltaPA.

# Roughly 14 million doses in total of RZV, Tdap vaccine, and Pneu-C-13 vaccine may be needed for existing individuals to fulfill the access gap



Abbreviations: RZV: Recombinant Zoster Vaccine ; Tdap: Tetanus, diphtheria, and pertussis; Pneu-C-13: Pneumococcal conjugate 13-valent.

An estimated investment of ~\$1.4 billion in total may be required in order to procure the estimated doses of RZV, Tdap vaccine, and Pneu-C-13 vaccine

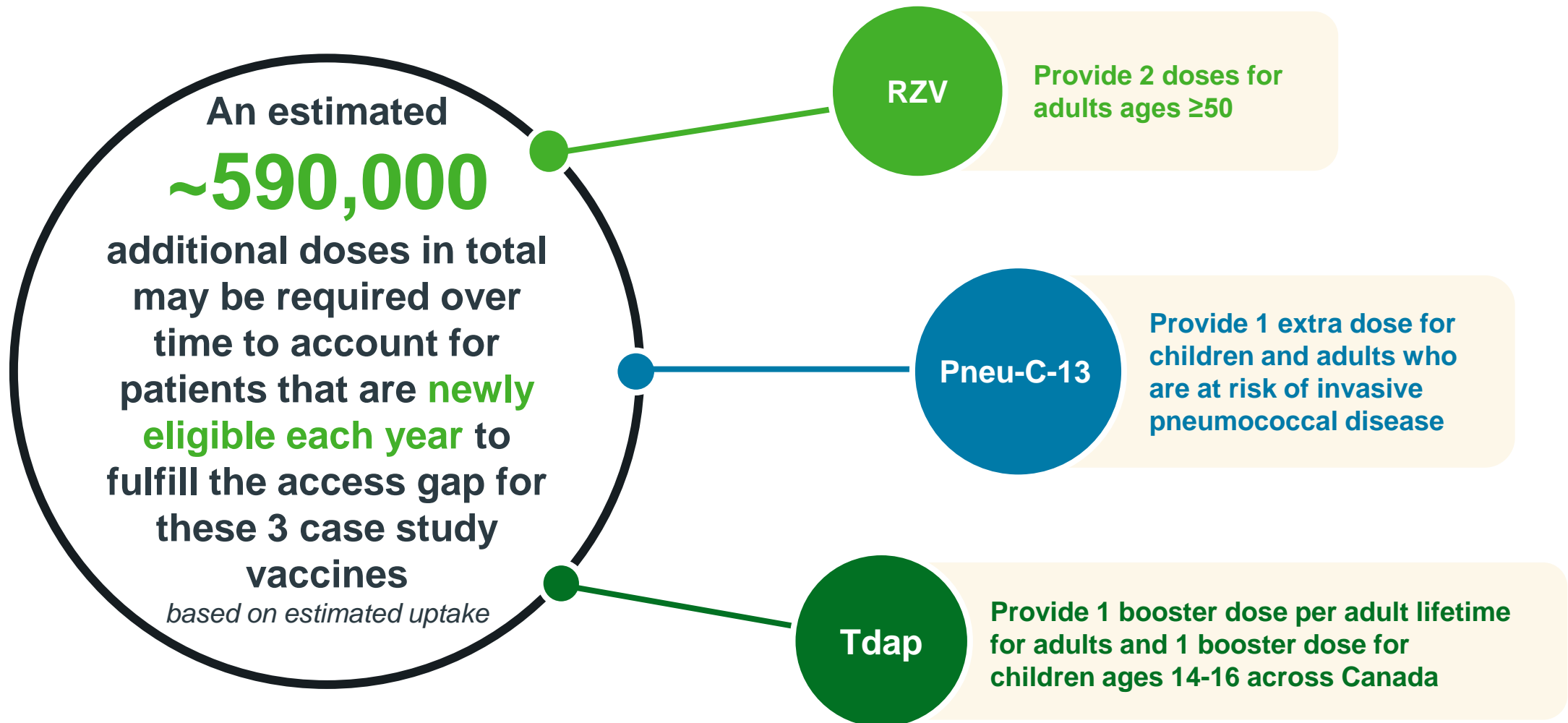


\*Estimates are calculated using list prices from IQVIA DeltaPA.

Abbreviations: RZV: Recombinant Zoster Vaccine ; Tdap: Tetanus, diphtheria, and pertussis; Pneu-C-13: Pneumococcal conjugate 13-valent.



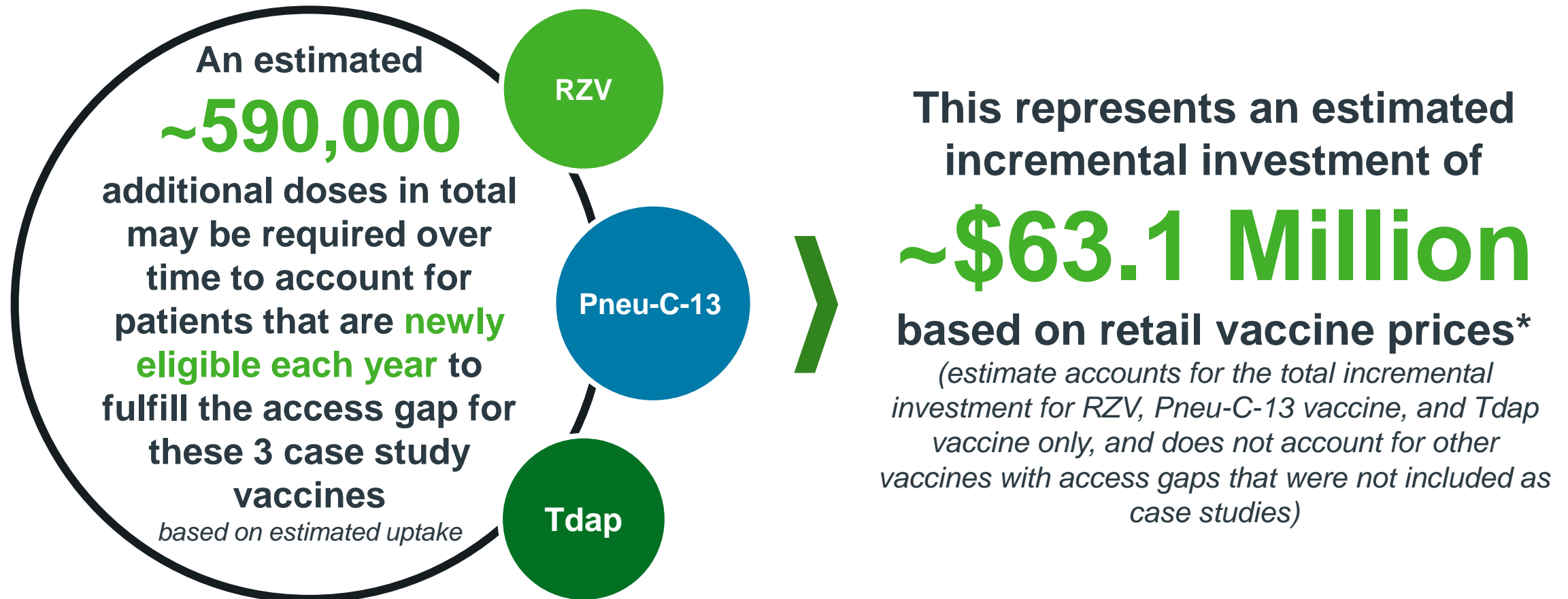
Each year, newly eligible patients require an estimated total of ~590,000 additional doses of RZV, Tdap vaccine, and Pneu-C-13 vaccine



Abbreviations: RZV: Recombinant Zoster Vaccine ; Tdap: Tetanus, diphtheria, and pertussis; Pneu-C-13: Pneumococcal conjugate 13-valent



To procure the estimated doses needed for newly eligible patients each year, an incremental investment of roughly \$63 million may be required



\*Estimates are calculated using list prices from IQVIA DeltaPA.

Abbreviations: RZV: Recombinant Zoster Vaccine ; Tdap: Tetanus, diphtheria, and pertussis; Pneu-C-13: Pneumococcal conjugate 13-valent.

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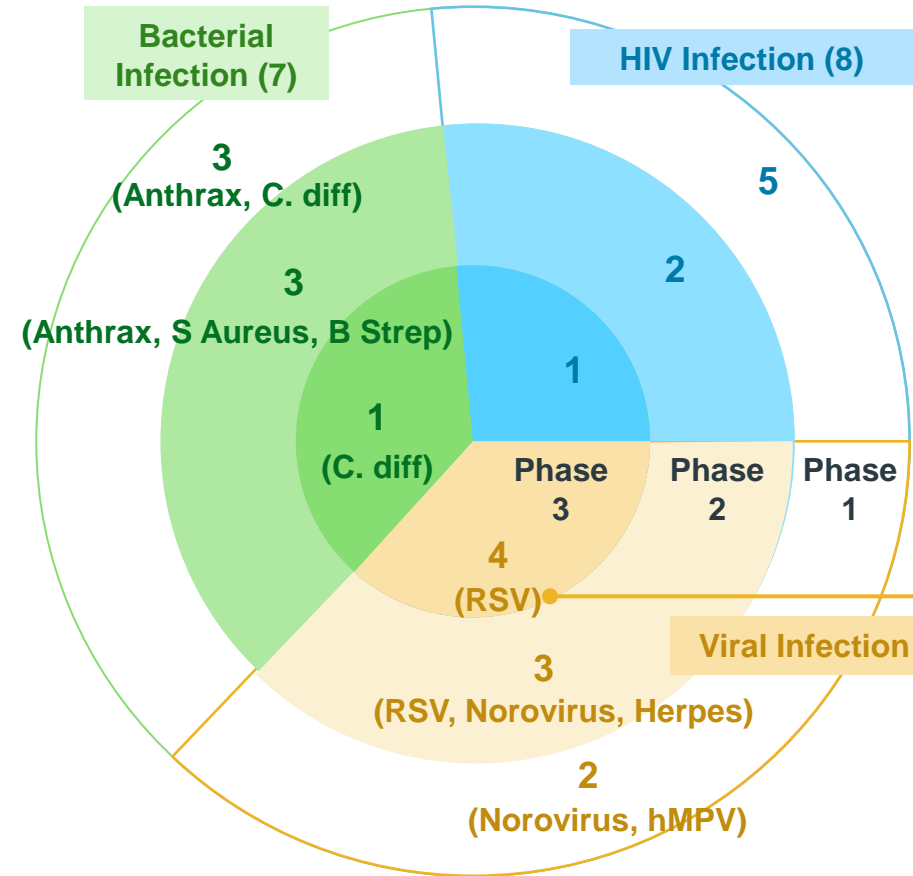
# Equitable access for promising and highly impactful pipeline candidates could require significant additional public funding



Excluding influenza virus, there are **119 candidates in the pipeline for infectious diseases**. ~42% of these candidates are for diseases without existing vaccines<sup>1</sup>

Vaccine Europe from 2022 also indicated **100 vaccine candidates** from **15 member companies** are in the pipeline. 46% of these candidates are for disease without existing vaccines<sup>2</sup>

Selected Pipeline Vaccine Candidates for Infectious Diseases without Existing Vaccine Programs<sup>1</sup>



**Respiratory syncytial virus (RSV)**

- **Older adults** have been increasingly identified as being at **high-risk** for **severe RSV infections**<sup>3</sup>
- The costs attributable to **lab-confirmed RSV cases** have been estimated to **\$40,028 per case** (CAD; 2020) over the year following an infection<sup>3</sup>

**Patient population potentially eligible for RSV vaccines (adults ≥50 years of age)<sup>4</sup>:**

**15,028,683**

Sources: 1. IQIVA Pipeline Intelligence, clinicaltrials.gov, accessed of Aug 31, 2022 2. Vaccines Europe pipeline review 2022: Innovating for tomorrow, today. Vaccine Europe, 2022. 3. Rafferty et al. 2022. Pharmacoconomics. 40(6): 633-645 4. Statistics Canada. Table 17-10-0009-01 Population estimates, quarterly

Abbreviations: HIV: human immunodeficiency virus; hMPV: human metapneumovirus; RSV: Respiratory syncytial virus; S. Aureus: Staphylococcus aureus; B. Strep: Group B Streptococcus; C. diff: clostridioides difficile

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# Additional fundings may be required to ensure equitable access for current and pipeline vaccines

## Section Summary

1

### Gaps in access were examined in detail for several case study vaccines including influenza vaccine, RZV, Tdap vaccine, and Pneu-C-13 vaccine

- In order to provide universal access to influenza vaccine across Canada, an estimated **~1.4 million additional doses of influenza vaccine** is required yearly, which translates to an incremental investment of **\$15.7 million**
- **Fulfilling the gaps in access** for RZV, Tdap vaccine, and Pneu-C-13 vaccine in existing patients is estimated to **require roughly 14 million doses of vaccines** over time which translates to an incremental investment of **~\$1.4 billion** based on retail vaccine prices
- Each year, newly eligible individuals represent an estimated **~590,000 additional doses** of RZV, Tdap vaccine, and Pneu-C-13 vaccine **required over time to fulfill the gaps in access**; based on retail prices, this represents an incremental investment of **~\$63.1 million**

2

### Significant investments may be needed to ensure equitable access for pipeline vaccines

- Excluding influenza, an **estimated 119 vaccine candidates** are in the pipeline for infectious disease, and nearly half are for diseases without vaccines
- **An estimated 15 million Canadians** could be eligible for the upcoming RSV vaccines



# Agenda

## + Executive Summary

## + Objectives and Methodology

## + Research Findings

- Vaccine funding and decision making
- Gaps in vaccine access
- **Gaps in vaccine coverage**
  - › **Gaps in coverage for influenza, adult and childhood vaccines**
  - › **Vaccine surveillance and learnings from COVID-19 pandemic response**

## + Summary of Findings and Gaps

# Achieving high coverage rates for influenza, adult, and childhood vaccines is a key component of the National Immunization Strategy

## National Immunization Strategy Vaccination Coverage Goals by 2025<sup>1</sup>

### Influenza

- Achieve **80%** vaccination coverage among **adults 65 years of age or older**<sup>1</sup>
- Achieve **80%** coverage among **high-risk adults aged 18-64 years**<sup>1</sup>

### Adults

- Achieve **80%** vaccination coverage of a **pneumococcal** vaccine among **adults 65 years of age or older**<sup>1</sup>

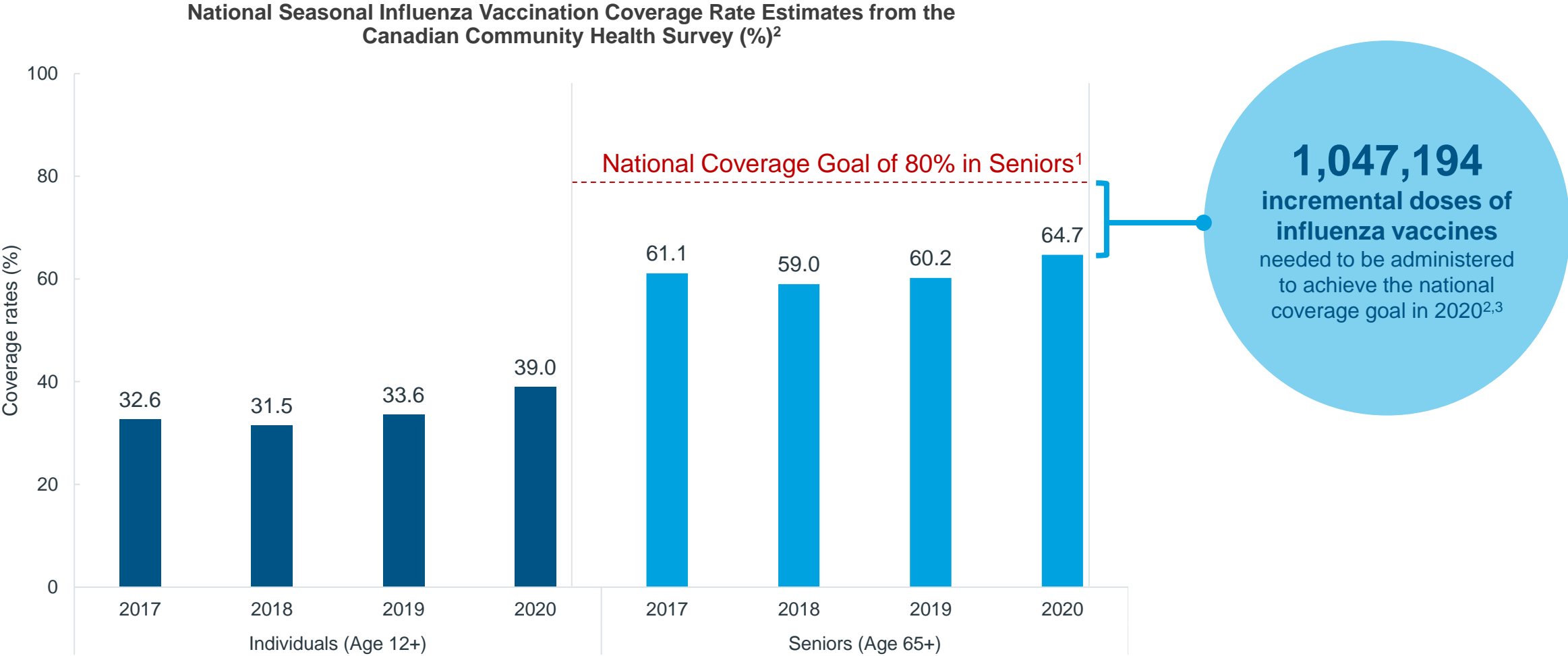
### Infants and Children

- Achieve a high vaccination coverage goal of **95%** for **all childhood vaccines** by two and seven years of age<sup>1</sup>

Source: 1. Canada.ca. [Vaccination Coverage Goals and Vaccine Preventable Disease Reduction Targets by 2025](#)

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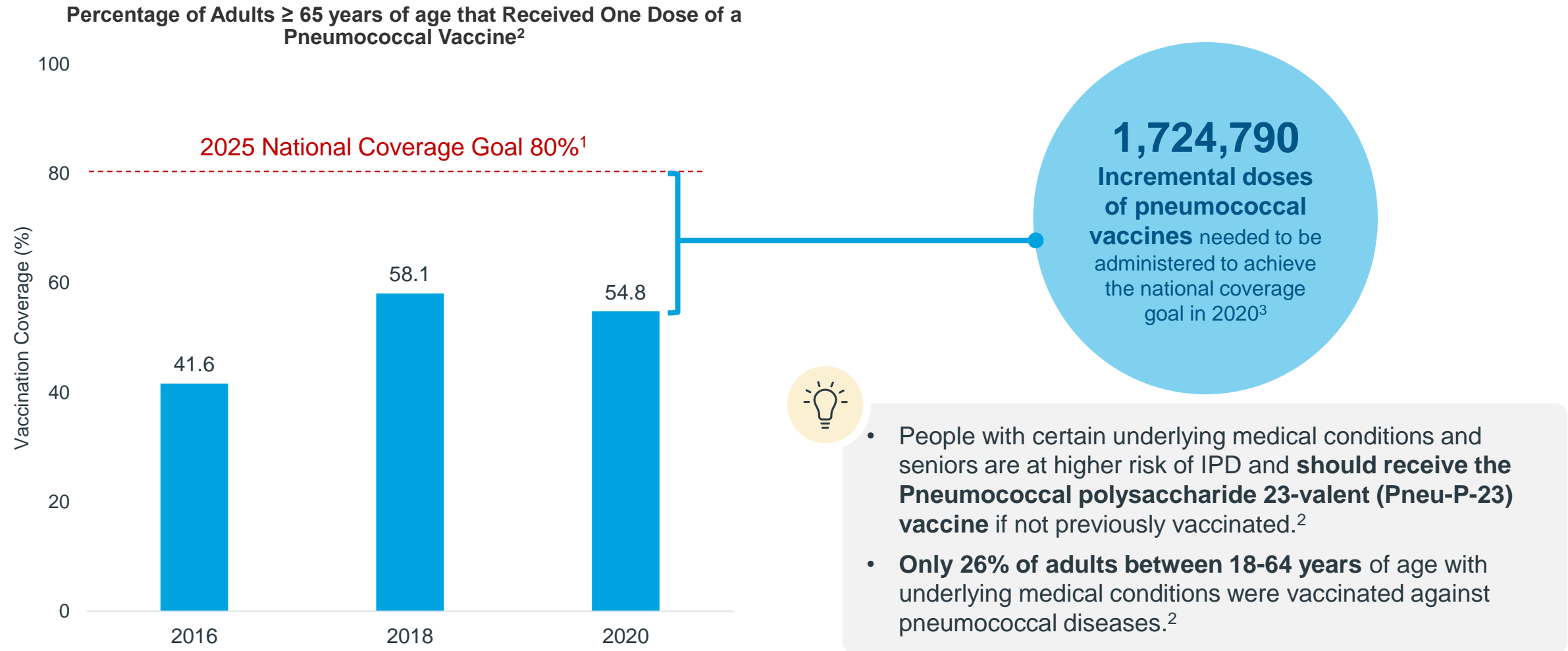
# National vaccination coverage rates for the seasonal influenza vaccine in seniors have consistently been lower than the national coverage goal of 80%



Note: 2017-2020 data excludes territories. Estimates for the territories were not available.

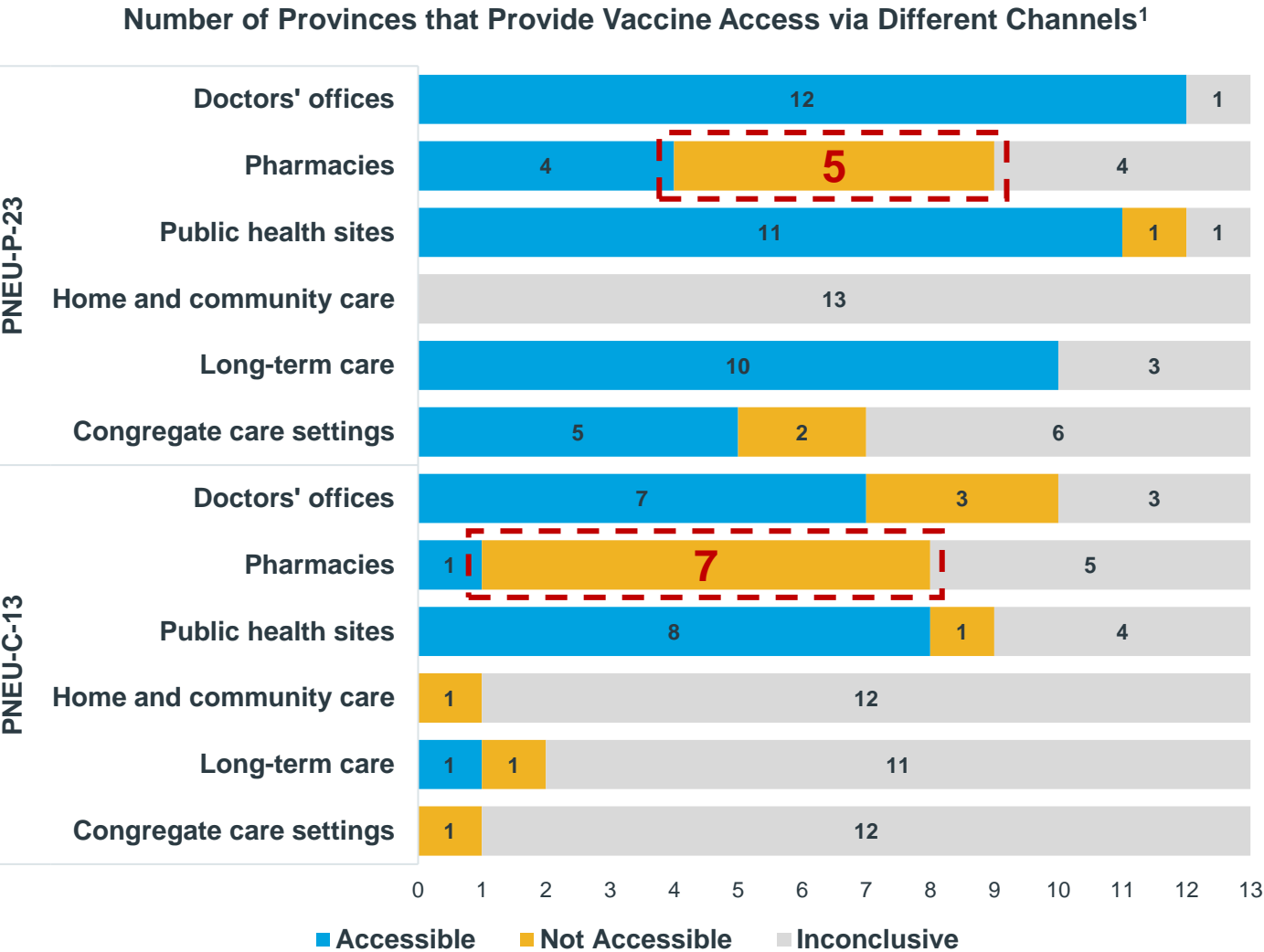
Sources: 1. Canada.ca. [Vaccination Coverage Goals and Vaccine Preventable Disease Reduction Targets by 2025](#) 2. Statistics Canada. [Table: 13-100-0096-25](#). 3. Statistics Canada. [Table 17-10-0005-01 Population estimates on July 1st, by age and sex](#).

# Only 55% of seniors reported having received a pneumococcal vaccine in 2020, a rate that remains below the national coverage goal of 80%



Sources: 1. Canada.ca. [Vaccination Coverage Goals and Vaccine Preventable Disease Reduction Targets by 2025](#) 2. Canada.ca. [Vaccine uptake in Canadian adults: Highlights from the 2020-2021 Seasonal Influenza Vaccination Coverage Survey](#). 3. Statistics Canada. [Table 17-10-0005-01 Population estimates on July 1st, by age and sex](#).

# Access channels for vaccines recommended for use in high-risk adult, such as Pneu-P-23 and Pneu-C-13, are underutilized across Canada



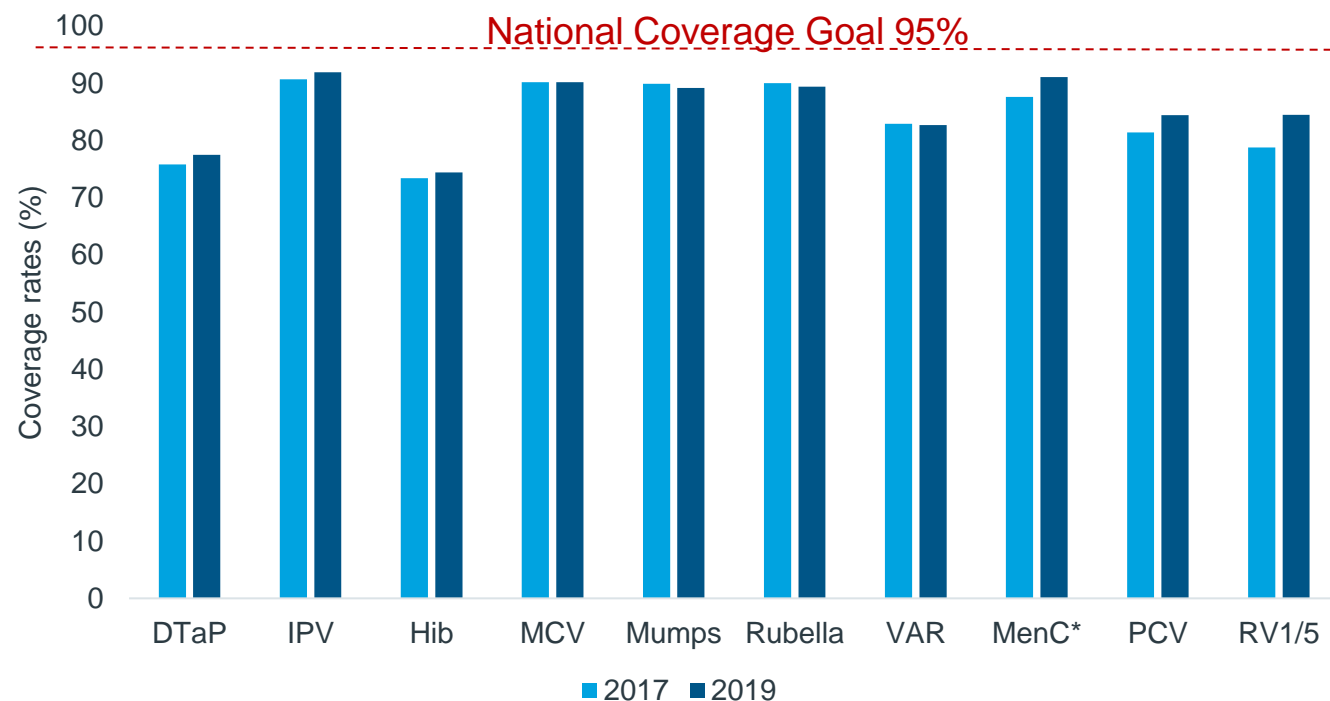
- Access to CIG recommends vaccines such as **Pneu-P-23 vaccine** (for all adults ≥ 65 years) and **Pneu-C-13 vaccine** are **restricted to specific channels**, and these channels **differ amongst the provinces & territories**
- While there is evidence to suggest that **enabling access to vaccination at pharmacies** can have a positive impact on vaccine uptake<sup>2-4</sup>, **5 provinces** do not provide **Pneu-P-23 vaccination** at pharmacies, and **7 provinces** do not provide **Pneu-C-13 vaccination** at pharmacies

Source: 1. Vaccine Report 2022 (CanAge, 2022). 2. Pharmacy-based interventions to increase vaccine uptake: report of a multidisciplinary stakeholders meeting (Ecarnot et al., 2019). 3. Impact of pharmacists as immunizers on influenza vaccination coverage in Nova Scotia, Canada (Isenor et al. 2016). 4. Impact of pharmacist administration of influenza vaccines on uptake in Canada (Buchan et al., 2017).  
Abbreviations: CIG: Canadian Immunization Guide; Pneumococcal polysaccharide 23-valent (Pneu-P-23); Pneu-C-13: Pneumococcal conjugate 13-valent  
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# Coverage rates for childhood vaccines have not met the national vaccination coverage goal of 95%

Canadian Childhood Vaccination Coverage  
Rate Estimates (%) in Children Aged 2 Years<sup>1</sup>



- Childhood vaccination was below national coverage rate goal of 95% for all vaccines<sup>1</sup>
- Coverage rates for **DTaP** and **Hib** have remained far below the national coverage rate goal
- Coverage rates for **most childhood vaccines largely remained at the same level** from 2017 to 2019

Notes: \* indicates a significant difference from the reference category ( $p < 0.05$ ).

1. Based on combining reports of vaccination from parents and guardians, health care providers, and provincial registries (MB and PEI only).

2. Coverage indicates four doses for NT, NV, and three doses for the other provinces and territories.

3. Coverage indicates two doses for 2-year-olds in provinces and territories that, as of March 1, 2017, provided publicly funded rotavirus vaccines: NL, PEI, QC, ON, MB, MB, SK, AB, BC, NT, YK

4. Survey results for 2021 will be available in early 2023.

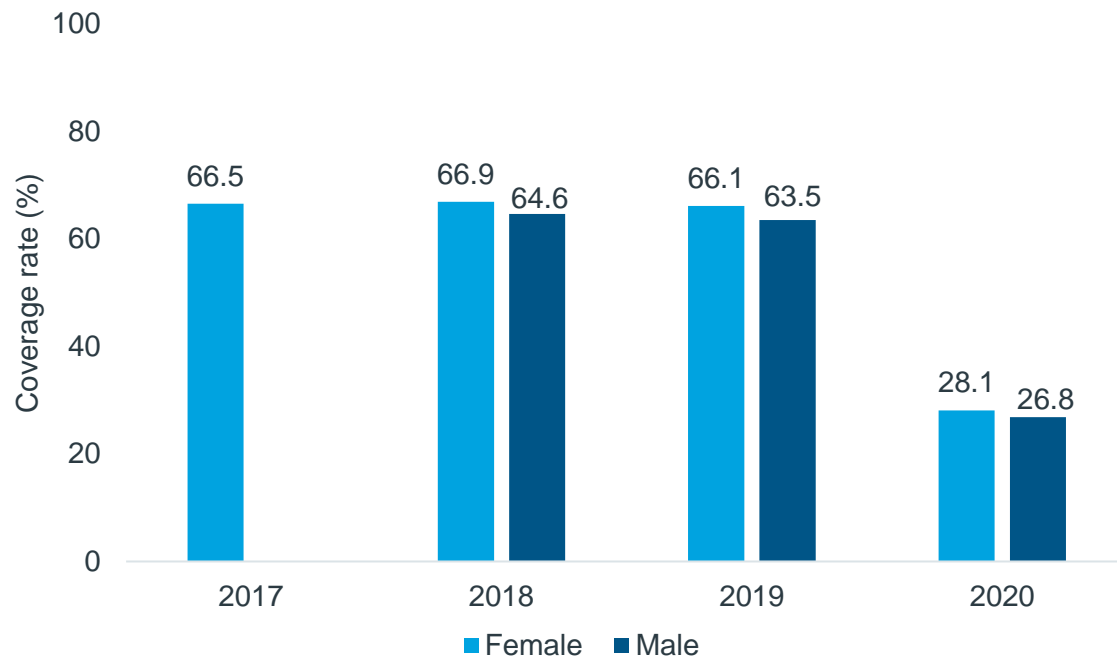
Source: 1. Statistics Canada. [Childhood National Immunization Coverage Survey, 2019](#);

Abbreviations: DTaP: Diphtheria, Tetanus, Pertussis; IPV: Inactivated Polio Vaccine; Hib: Haemophilus influenzae type B; MCV: Meningococcal Conjugate Vaccine; VAR: Varicella Zoster; MenC: Meningococcal C vaccine; PCV: Pneumococcal Vaccine; RV1/5: Rotavirus

# The COVID-19 pandemic has impacted school-based immunization programs in most provinces/territories in Canada

## British Columbia

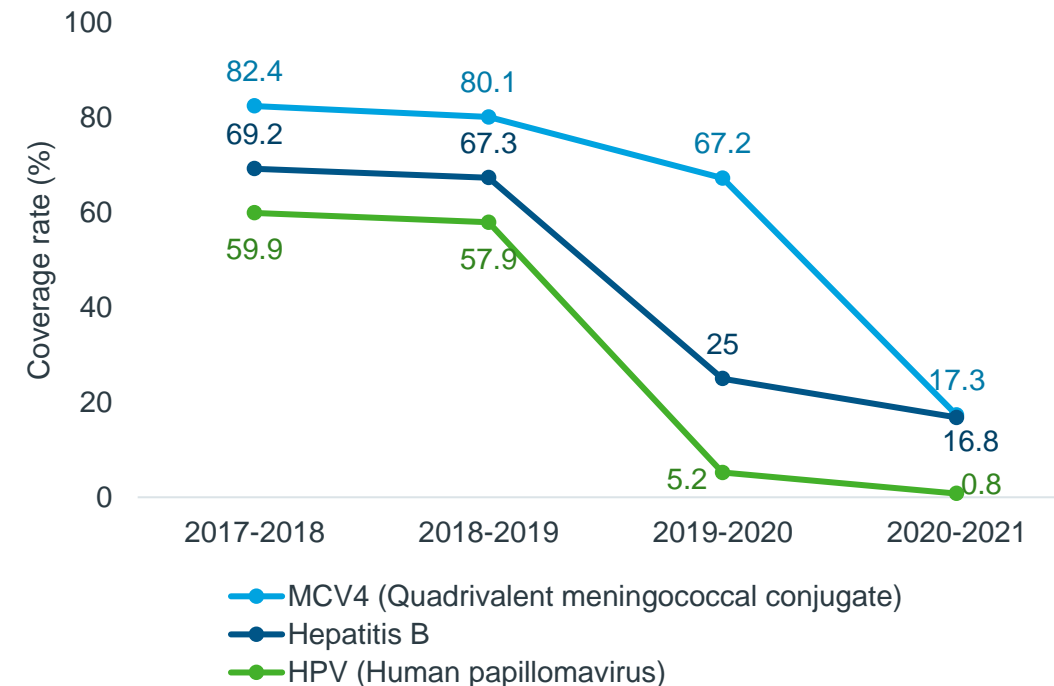
Coverage Rates in Grade 6 Students: HPV<sup>2</sup>



- When compared to 2019 rates, HPV coverage in grade 6 students in 2020 **decreased dramatically** in all health authorities and health service delivery areas in BC.<sup>2</sup>
- These decreases reflect the **redirection of public health resources from routine immunization programs to the COVID-19 pandemic response** during the latter part of the school year.<sup>2</sup>

## Ontario

Coverage Rates in 12-Year-Olds<sup>1</sup>



- As a result of the COVID-19 pandemic, there has been **limited public health unit capacity** to deliver **school-based immunization programs**, as well as to **enter and assess immunization records**.<sup>1</sup>
- Many grade 7 students in the **2019-20 cohort** initiated but did not **complete** their school-based immunization series.<sup>1</sup>

Sources: 1. Public Health Ontario. [Immunization Coverage Report for School-Based Programs in Ontario: 2019-20 and 2020-21 School Years](#). 2. BC Centre for Disease Control. [Grade 6 Coverage Results](#)

Abbreviation: human papillomavirus (HPV)

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# Overall, barriers to vaccination and underutilized access channels may prevent Canada from meeting its vaccination coverage goals

## Major Barriers and challenges to Vaccination in Canada

### Influenza

- Several major barriers to influenza vaccination exist, including personal beliefs and reluctance, misconception, and lack of awareness<sup>1, 2</sup>
- The COVID-19 pandemic has also resulted in limited appointment availability<sup>2</sup>



### Adults

- Barriers such as lack of awareness, vaccine fatigue and hesitancy, financial barriers, and barriers related to COVID-19 may be impeding vaccination<sup>2,3</sup>
- Several access channels for vaccines, particularly for high-risk populations, are underutilized in many provinces<sup>5</sup>



### Infants & Children

- Vaccine hesitancy and negative perceptions of childhood vaccines are common barriers to vaccination<sup>4</sup>
- Disruptions to school-based programs due to COVID-19 have had a significant impact on vaccination coverage<sup>6</sup>



## Gaps in Vaccine Coverage in Canada

Recent coverage rates in seniors and high-risk populations are below national vaccination coverage goals

Recent coverage rates for pneumococcal vaccination in seniors are below the national vaccination coverage goal

Recent coverage rates for childhood vaccines are below the national vaccination coverage goal

Sources: 1. Strain WD et.al., Vaccines (Basel). 2021; 9(4):312. 2. Vaccine uptake in Canadian adults: Highlights from the 2020-2021. Canada.ca 3. Stratoberdha D, et al. Can Pharm J. 2022;155(4):206-218. 4. [Vaccine-hesitancy-canadian-parents.pdf \(canada.ca\)](#), 2022 5. Vaccine Report 2022 (CanAge, 2022). 6. Public Health Ontario. [Immunization Coverage Report for School-Based Programs in Ontario: 2019-20 and 2020-21 School Years](#)

# The lack of an automated and harmonized way to capture vaccination data makes it difficult to monitor and report vaccination coverage rates

## Lack of Interconnected Systems

- Jurisdictions currently use **various immunization information systems** or other processes to track immunization data<sup>1</sup>
- The **variability in system infrastructure** between jurisdictions makes creating **interconnected systems** a challenge<sup>1</sup>

“We don’t have a **harmonized language**... that’s **critical to interoperability**”  
- Public health and immunization expert

## Varied Surveillance Methodologies

- The **data sources** and **methodology** used for immunization coverage assessment vary by province and territory (P/T).<sup>1</sup>
- The **time frame** between immunization **administration and data capture** by the system varies considerably between and even within individual P/Ts<sup>1</sup>

“**We don’t have a pan-Canadian immunization registry. We rely on a survey**... I suspect most people they call don’t even know what vaccine they got...”  
- Public health and immunization expert

## Challenge in Data Capture

- Reporting by **non-public health providers** (e.g., physicians) can be poor due to a **lack of incentive** to do so in many jurisdictions

“**It’s just another thing to do**... [other information systems are] burning out doctors already”  
- Public health and immunization expert

# Applying lessons learned from the COVID-19 pandemic response can help to bridge gaps in vaccine coverage



## Successes: What Worked Well

### Communication and Coordination

- Improved sharing of information and resources across jurisdictions strengthened the response

### Electronic Platforms for Booking Appointments

- Leveraging digital tools to provide patients with simple and easy to navigate means of finding and booking appointments for immunizations

“I can find a vaccination appointment in 5 minutes and I’m going to have a place and time... **It’s very efficient. It’s working very well.**”

- Public health and immunization expert



## Opportunities: What Can We Do Better

### Innovative Channels

- Heavy reliance on a single access channel can put immunization programs at risk if that channel is disrupted

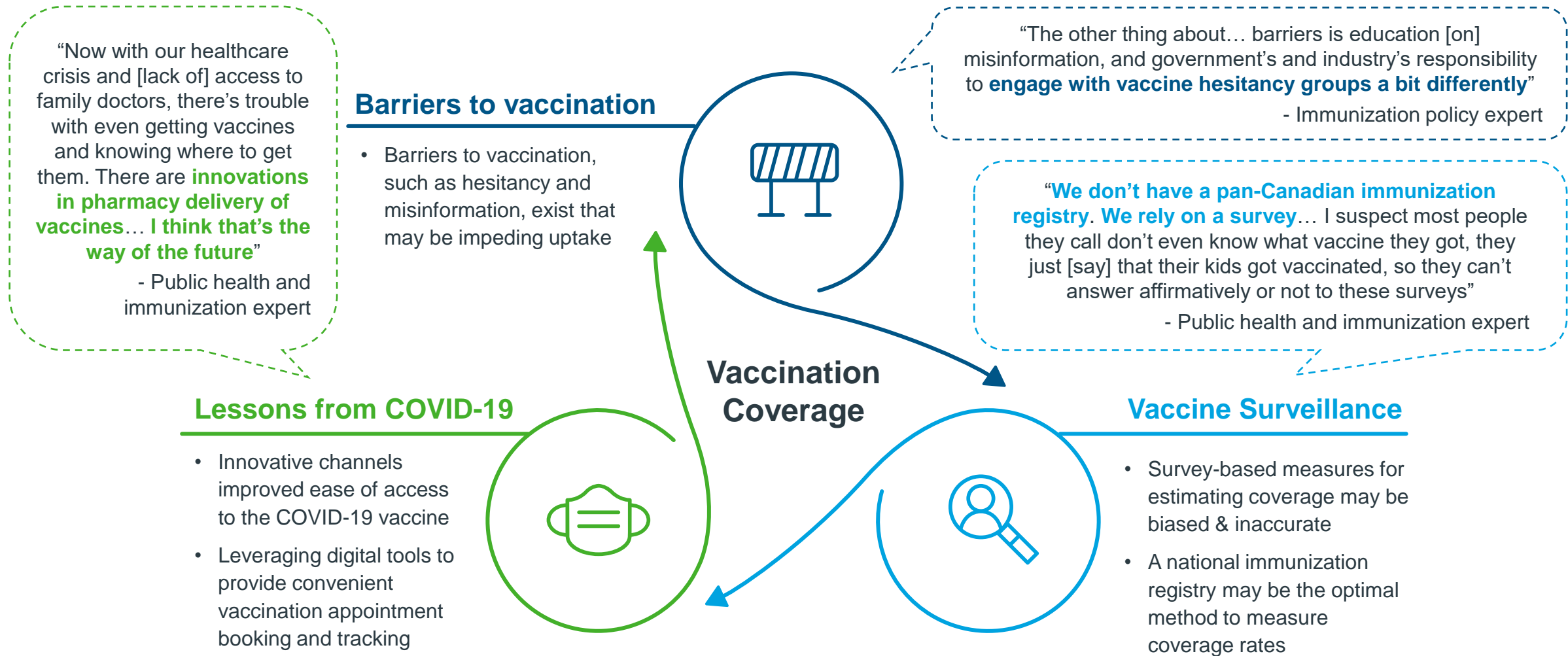
### Prevent Future Outbreaks

- Disruptions to routine childhood immunization mean that there is an urgent need to implement improved monitoring and catch-up vaccination strategies for vulnerable populations

“Our pharmacies... they’re really only allowed to give flu and COVID in Ontario, but I view those as a **more convenient access point.**”

- Public health and immunization expert

# Stakeholders interviewed agreed that addressing barriers, adopting innovative channels, and improving surveillance could improve coverage



# Improving access channels, coverage reporting and translating learning from COVID-19 response could be important in achieving coverage goals

## Section Summary

1

### Barriers to vaccination and underutilization of access channels may lead to suboptimal vaccination coverage

- Current coverage for influenza, adult and childhood vaccines are below the National Coverage Goals as set out by the National Immunization Strategy
- Beyond barriers such as hesitancy and misinformation, **the underutilization of readily-available access channels**, such as pharmacies, contributed to suboptimal vaccination coverage

2

### The lack of an automated and harmonized way to report uptake makes it difficult to monitor and report coverage rates

- **Variability in information system infrastructure** and **surveillance methodologies** makes monitoring and reporting of coverage rates challenging

3

### Translate lessons learned from the COVID-19 pandemic response to routine immunization program could be instrumental to outbreak prevention

- **Successful adoption of innovative access channels** and **the adoption of digital tools** to promote immunization are examples of successes that can be embraced across all immunization programs to protect Canadians from emerging disease threats



# Agenda

- + Executive Summary
- + Objectives and Methodology
- + Research Findings
  - Vaccine funding and decision making
  - Gaps in vaccine access
  - Gaps in vaccine coverage
- + **Summary of Findings and Gaps**



# Current decision-making process is highly complex, and fundings for immunization are limited and fragmented

## Vaccine Funding and Decision-making

1

Vaccines are currently underfunded



- Vaccines are considered low priority
- A lack of formal and transparent decision-making and funding process for immunization programs

2

Current immunization-related decision-making mechanisms are complex



- Immunization-related decision-making currently involve multiple levels of government and stakeholders

3

Immunization fundings are complex and fragmented



- Fundings required for functional immunization programs, including vaccine procurement, distribution, communications and operation of public health units, are managed by different divisions and units

# There are gaps to access for existing vaccines and challenges with access for pipeline candidates that require additional investments

## Gaps in Vaccine Access

1

There are gaps to access for existing vaccines, as demonstrated in case studies for influenza, RZV, Tdap, and Pneu-C-13



- An estimated 14 million doses of RZV, Tdap, and Pneu-C-13 vaccines may be required to address access gaps for existing recommended patient groups outlined in the case study
- Additional doses may be required to bridge the gaps in vaccines not included in the case study

2

Pipeline vaccines may also face challenges to access



- Additional investments may be required to ensure that pipeline vaccines are funded so that Canadians are protected

# Improving access channels, coverage reporting, and adopt innovations from COVID-19 response could be important in achieving coverage goals

## Gaps in Vaccine Coverage

1

Barriers to vaccination and underutilization of access channels may lead to suboptimal vaccination coverage



- Current coverage for influenza, adult and childhood vaccines are below the National Coverage Goals as set out by the National Immunization Strategy
- A large number of provinces/territories currently do not fund several vaccines administered at pharmacies

2

The lack of an automated and harmonized way to report uptake led to challenges in reporting coverage rates



- Variability in information system infrastructure and surveillance methodologies makes monitoring and reporting of coverage rates challenging

3

Translate lessons learned from the COVID-19 pandemic response for routine vaccinations could be instrumental to outbreak prevention



- Innovations and tools used during the COVID-19 pandemic response could be translated to improve routine vaccination programs

# Appendix

# Incremental dose estimate “Annual”: Doses required to provide universal coverage against influenza across Canada annually

## Influenza

Total population aged 2-59 years in QC:  
**N = 6,089,752**

**Sources:** 1. Statistics Canada. [Table 17-10-0005-01 Population estimates on July 1st, by age and sex.](#)

**Description:** Total current population of recommended Canadians *excluding* age groups for whom the vaccine is already publicly funded

**Assumptions:** Population growth beyond this immediate cohort is not accounted for

Total population:  
**N = 4,628,212**

**Sources:** 1. Ramage-Morin et al. *Health Rep.* 2020 Jul 2;31(5):3-8.

**Description:** Patients that are currently eligible to receive the vaccine within this age group based on other criteria (i.e., have underlying health conditions that increase the likelihood of severe infection) are excluded

**Assumptions:** 24% of the total population is estimated as being currently eligible as a result of an underlying health condition and are excluded

Total population:  
**N = 1,393,092**

**Sources:** 1. PHAC. [Seasonal Influenza Vaccination Coverage in Canada, 2021–2022.](#)

**Description:** Estimated national coverage rates for influenza vaccination in adults aged 18-64 years were used to estimate uptake

**Assumptions:** 30.1% of the population will receive the influenza vaccine

Total doses:  
**N = 1,393,092**

# Incremental dose estimate “Existing”: Doses required to provide 2 doses of RZV for adults currently aged $\geq 50$ years

## RZV

Total population aged  $\geq 50$  years in AB, BC, MB, QC, NB, NL, NS, SK, NT, and NU:  
N = 9,175,781

+

Total population aged 50-64 &  $\geq 73$  years in ON, 50-59 in PE, and 50-64 &  $\geq 82$  years in YT:  
N = 4,513,081

**Source:** Statistics Canada. [Table 17-10-0005-01 Population estimates on July 1st, by age and sex](#).

**Description:** Total current population of recommended Canadians *excluding* groups for whom the vaccine is already publicly funded.

**Assumptions:** Patients in Ontario aged 71-72 years and patients in Yukon aged 80-81 years are not included as the RZV program was already in place while they were within the eligible age range. Patients in Alberta aged  $\geq 18$  years that are organ transplant recipients are eligible to receive the RZV under the current vaccine schedule but are not excluded as the small population size is unlikely to affect the estimate.

Total population:  
N = 10,540,424

**Sources:** 1. PHAC. [Vaccine uptake in Canadian adults 2021](#). 2. McGirr et al. *Vaccine*. 2021 Jun 8;39(25):3397-3403.

**Description:** The uptake of RZV in currently ineligible patients was estimated by correlating an estimated national coverage rate (27.4%) and the proportion of prescriptions filled for RZV outside of Ontario and Prince Edward Island (provinces where the vaccine is partially publicly funded).

**Assumptions:** 23% of the population has already received the RZV.

Total population:  
N = 5,776,152

**Source:** PHAC. [Vaccine uptake in Canadian adults 2021](#).

**Description:** Given there is no reliable estimate of the coverage rate of RZV in a population of patients for which the vaccine is publicly funded, the coverage rate for the Pneu-P-23 vaccine in adults aged  $\geq 65$  years was used to estimate uptake. The Pneu-P-23 vaccine is publicly funded across Canada in seniors and, as such, the national coverage rate was assumed to reflect the uptake of a publicly-funded vaccine in a (mostly) elderly population.

**Assumptions:** 54.8% of the population will receive the RZV.

Total doses:  
N = 10,102,490

**Source:** McGirr et al. *Vaccine*. 2021 Jun 8;39(25):3397-3403.

**Description:** Second dose compliance of RZV was taken into consideration. An estimate from a Canadian study that examined second dose compliance at 12 months was used.

**Assumptions:** 74.9% of patients receiving the RZV will receive the entire series (i.e., 2 doses); 25.1% of patients receiving the RZV will not complete the series and receive a single dose.

# Incremental dose estimate “Existing”: Doses required to provide 1 Tdap dose per adult lifetime for adults currently aged $\geq 18$ years

## Tdap

Total population aged  $\geq 18$  years in BC and QC:  
**N = 11,509,562**

**Source:** Statistics Canada. [Table 17-10-0005-01 Population estimates on July 1st, by age and sex.](#)

**Description:** Total current population of recommended adult Canadians *excluding* groups for whom the vaccine is already publicly funded

Total population:  
**N = 11,509,562**

**Description:** There is no reliable estimate of the coverage rate of the Tdap vaccine in a population of patients for which the vaccine is not publicly funded. For the purpose of this estimate, it was assumed that no patients who do not have publicly funded access to the vaccine have received the vaccine.

**Assumptions:** 0% of the population has received the Tdap vaccine

Total population:  
**N = 3,890,232**

**Source:** PHAC. [Vaccine uptake in Canadian adults 2021.](#)

**Description:** The national coverage rate for pertussis vaccination in adults was used to estimate uptake.

**Assumptions:** 33.8% of the population will receive the Tdap vaccine

Total doses:  
**N = 3,890,232**

# Incremental dose estimate “Existing”: Doses required to provide 1 dose of Pneu-C-13 vaccine for adults currently aged $\geq 18$ years who are at risk

## Pneu-C-13

Total population aged  $\geq 18$  years in AB, YK, NT, and NU:  
**N = 3,649,495**

**Source:** Statistics Canada. [Table 17-10-0005-01 Population estimates on July 1st, by age and sex](#).

**Description:** Total current population of age groups of which recommended adult Canadians belong *excluding* groups for whom the vaccine is already publicly funded

Total population:  
**N = 240,867**

**Source:** Patel M et al. Emerg Infect Dis. 2020 Aug;26(8):1720-1730.

**Description:** Only patients that have an immunocompromising condition are included.

**Assumptions:** 6.6% of the total adult population has an immunocompromising condition

Total population:  
**N = 240,867**

**Description:** There is no reliable estimate of the coverage rate of the Pneu-C-13 vaccine in a population of patients who are at high risk of IPD for which the vaccine is not publicly funded. For the purpose of this estimate, it was assumed that no patients who do not have publicly funded access to the vaccine have received the vaccine.

**Assumptions:** 0% of the population has received the Pneu-C-13 vaccine

Total population:  
**N = 63,107**

**Source:** PHAC. [Vaccine uptake in Canadian adults 2021](#).

**Description:** Given there is no reliable estimate of the coverage rate of the Pneu-C-13 vaccine in a population of patients who are at high risk of IPD for which the vaccine is publicly funded, the coverage rate for the Pneu-P-23 vaccine in adults aged 18-64 years with chronic medical conditions was assumed to reflect the anticipated uptake

**Assumptions:** 26.2% of the population will receive the Pneu-C-13 vaccine

Total doses:  
**N = 63,107**



# Incremental dose estimate “Newly Eligible”: Doses required to continue providing 2 doses of RZV for adults aged $\geq 50$ years

## RZV

Total population aged  
49 years in Canada:  
N = 471,490

**Sources:** 1. Statistics Canada. [Table 17-10-0005-01 Population estimates on July 1st, by age and sex.](#)

**Description:** Total current population of adults aged 49 years who will become eligible for the vaccine at 50 years of age

**Assumptions:** Population growth beyond this immediate cohort is not accounted for

Total population:  
N = 471,490

**Description:** Patients are entering the recommended age range and are assumed to not have received the vaccine previously

**Assumptions:** 0% of the population has received the RZV

Total population:  
N = 258,377

**Sources:** 1. PHAC. [Vaccine uptake in Canadian adults 2021.](#)

**Description:** Given there is no reliable estimate of the coverage rate of RZV in a population of patients for which the vaccine is publicly funded, the coverage rate for the Pneu-P-23 vaccine in adults aged  $\geq 65$  years was used to estimate uptake

**Assumptions:** 54.8% of the population will receive the RZV

Total doses:  
N = 451,901

**Sources:** 1. McGirr et al. *Vaccine*. 2021 Jun 8;39(25):3397-3403.

**Description:** Second dose compliance of RZV was taken into consideration. An estimate from a Canadian study that examined second dose compliance at 12 months was used

**Assumptions:** 74.9% of patients receiving the RZV will receive the entire series (i.e., 2 doses); 25.1% of patients receiving the RZV will not complete the series and receive a single dose

# Incremental dose estimate “Newly Eligible”: Doses required to continue providing 1 Tdap dose per adult lifetime and 1 dose to children ages 14-16

## Tdap

Total population aged 17 years in BC and QC:  
N = 137,880

+

Total population aged 13 years in QC:  
N = 95,434

**Sources:** 1. Statistics Canada. [Table 17-10-0005-01 Population estimates on July 1st, by age and sex](#).

**Description:** Total current population of individuals aged 17 years who will become eligible for the vaccine at 18 years of age. Total current population of children aged 13 years in Quebec who will become eligible for a booster dose at 14 years of age

**Assumptions:** Population growth beyond this immediate cohort is not accounted for

Total population:  
N = 233,314

**Description:** Patients are entering the recommended age range and are assumed to not have received the vaccine previously

**Assumptions:** 0% of the population has received the Tdap vaccine

Total population:  
N = 137,552

**Sources:** 1. PHAC. [Vaccine uptake in Canadian adults 2021](#). 2. PHAC. [Vaccination coverage in Canadian children: Results from the 2019 childhood National Immunization Coverage Survey \(cNICS\)](#).

**Description:** Estimated national coverage rates for pertussis vaccination in adults and adolescents were used to estimate uptake

**Assumptions:** 33.8% of the adult population will receive the Tdap vaccine. 95.3% of the adolescent population will receive the Tdap vaccine

Total doses:  
N = 137,552

# Incremental dose estimate “Newly Eligible”: Doses required to continue providing 1 extra dose of Pneu-C-13 vaccine for at risk children & adults

## Pneu-C-13

Total population aged 17 years in AB, YK, NT, and NU:  
**N = 54,204**

+

Total population aged <1 years in YK:  
**N = 415**

**Sources:** 1. Statistics Canada. [Table 17-10-0005-01 Population estimates on July 1st, by age and sex.](#)

**Description:** Total current population of individuals aged 17 years who may become eligible for the vaccine at 18 years of age. Total current population of infants aged <1 year in Yukon

**Assumptions:** Population growth beyond this immediate cohort is not accounted for

Total population:  
**N = 3,583**

**Sources:** 1. Patel M et al. Emerg Infect Dis. 2020 Aug;26(8):1720-1730.

**Description:** Only patients that have an immunocompromising condition are included.

**Assumptions:** 6.6% of the adult population has an immunocompromising condition. 1.4% of the infant population has an immunocompromising condition.

Total population:  
**N = 3,583**

**Description:** Adult patients entering the recommended age range are assumed to not have received the vaccine previously. Infants are to receive their primary series

**Assumptions:** 0% of the population has received an extra dose of the Pneu-C-13 vaccine

Total population:  
**N = 943**

**Sources:** 1. PHAC. [Vaccine uptake in Canadian adults 2021.](#)

**Description:** Given there is no reliable estimate of the coverage rate of the Pneu-C-13 vaccine in a population of patients who are at high risk of IPD for which the vaccine is publicly funded, the coverage rate for the Pneu-P-23 vaccine in adults aged 18-64 years with chronic medical conditions (26.2%) was assumed to reflect the anticipated uptake for adults. The anticipated uptake in infants was assumed to be 100%

**Assumptions:** 26.2% of the adult population will receive the Pneu-C-13 vaccine. 100% of the infant population will receive the Pneu-C-13 vaccine

Total doses:  
**N = 943**

