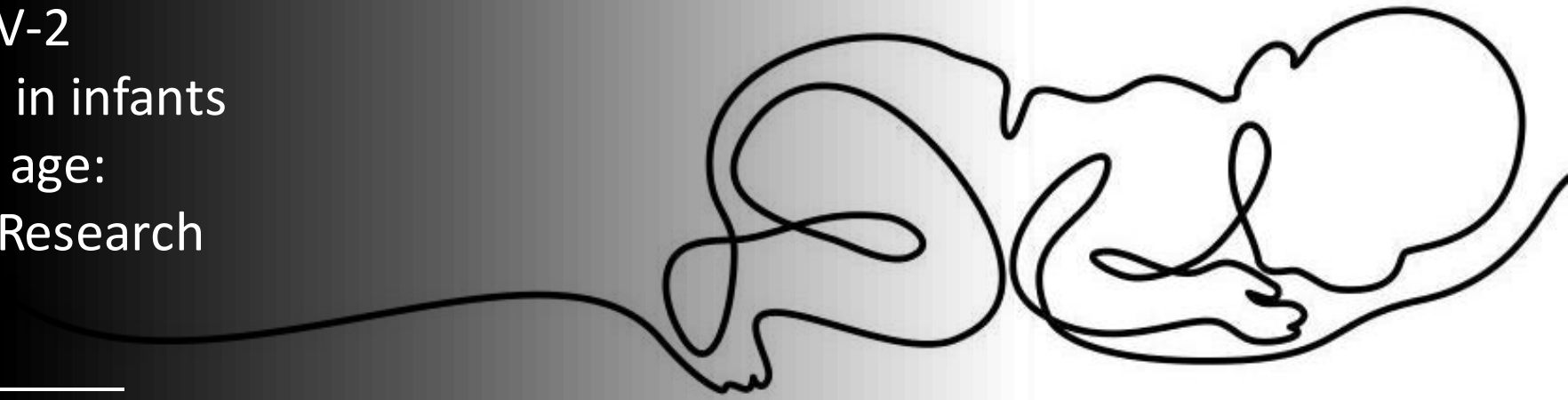
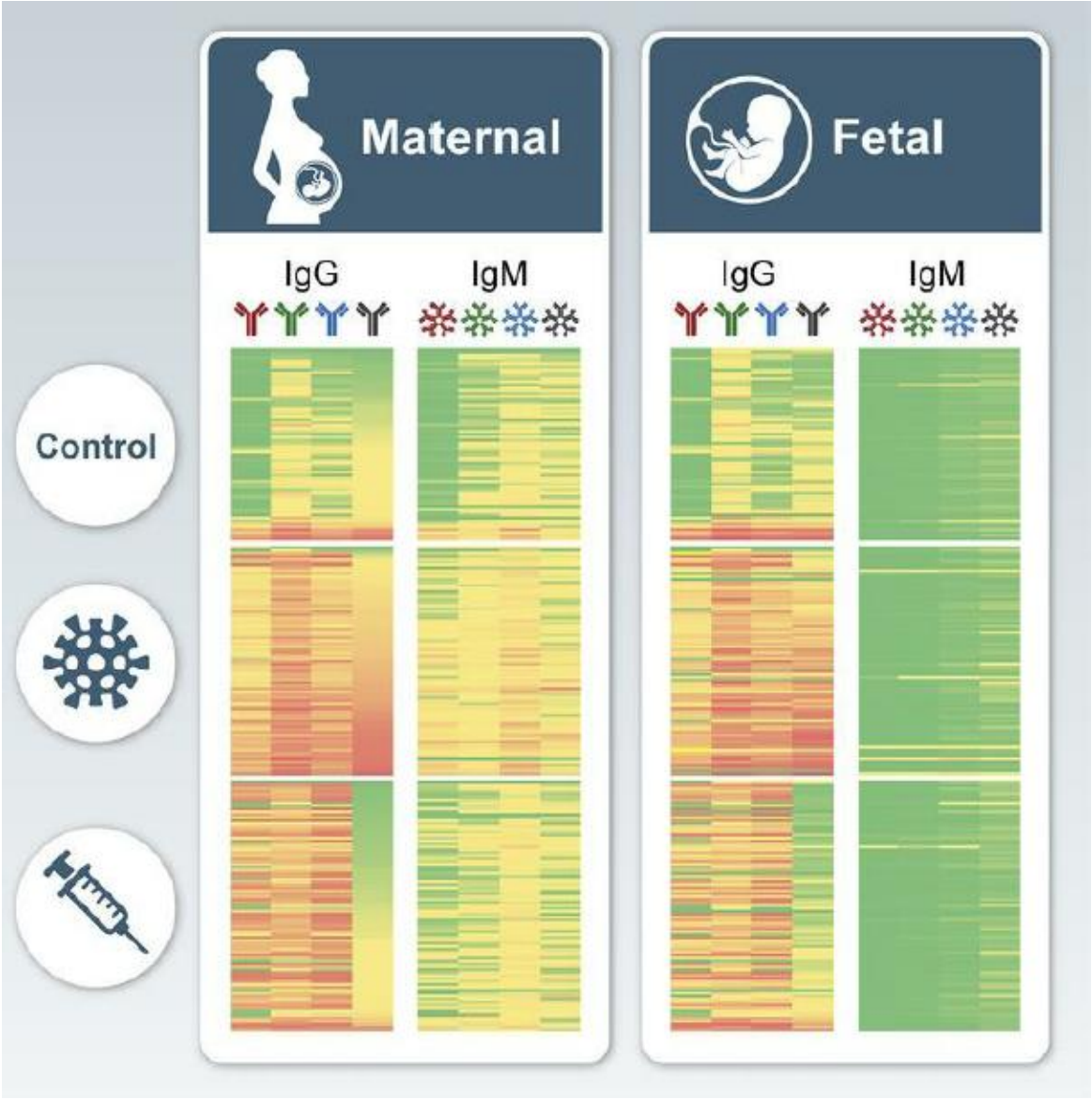
Effectiveness of maternal mRNA COVID-19 vaccination during pregnancy & postpartum against Delta & Omicron SARS-CoV-2 infection & hospitalization in infants younger than 6 months of age: a Canadian Immunization Research Network (CIRN) study




Maternal
Fetal
IgG
IgM
IgG
IgM
Control

Objective

Estimate vaccine effectiveness of maternal mRNA COVID-19 vaccination during pregnancy & postpartum against Delta & Omicron infection & hospital admission in infants aged < 6 months

Methods

Design

- Test-negative

Setting

- Ontario

Study population

- Infants < 6 months, born May 2021 to March 2022
- SARS-CoV-2 PCR test May 2021 (pregnancy) or June 2021 (post-partum) to September 2022

Cases & controls

- Cases: SARS-CoV-2 PCR test positive infants
  - ± signs/symptoms
- Controls: SARS-CoV-2 PCR test negative infants

Delta & Omicron variants detected by s-gene target failure screening, whole genome sequencing, or dates

Exposure

Exposed

- Pregnancy
  - ≥ 2 vaccine doses, with ≥ 1 dose between conception & 14 days before birth
- Postpartum
  - ≥ 2 vaccine doses between birth & 14 days before the infant's test

Unexposed

- No COVID-19 vaccine doses preconception, during pregnancy, or postpartum

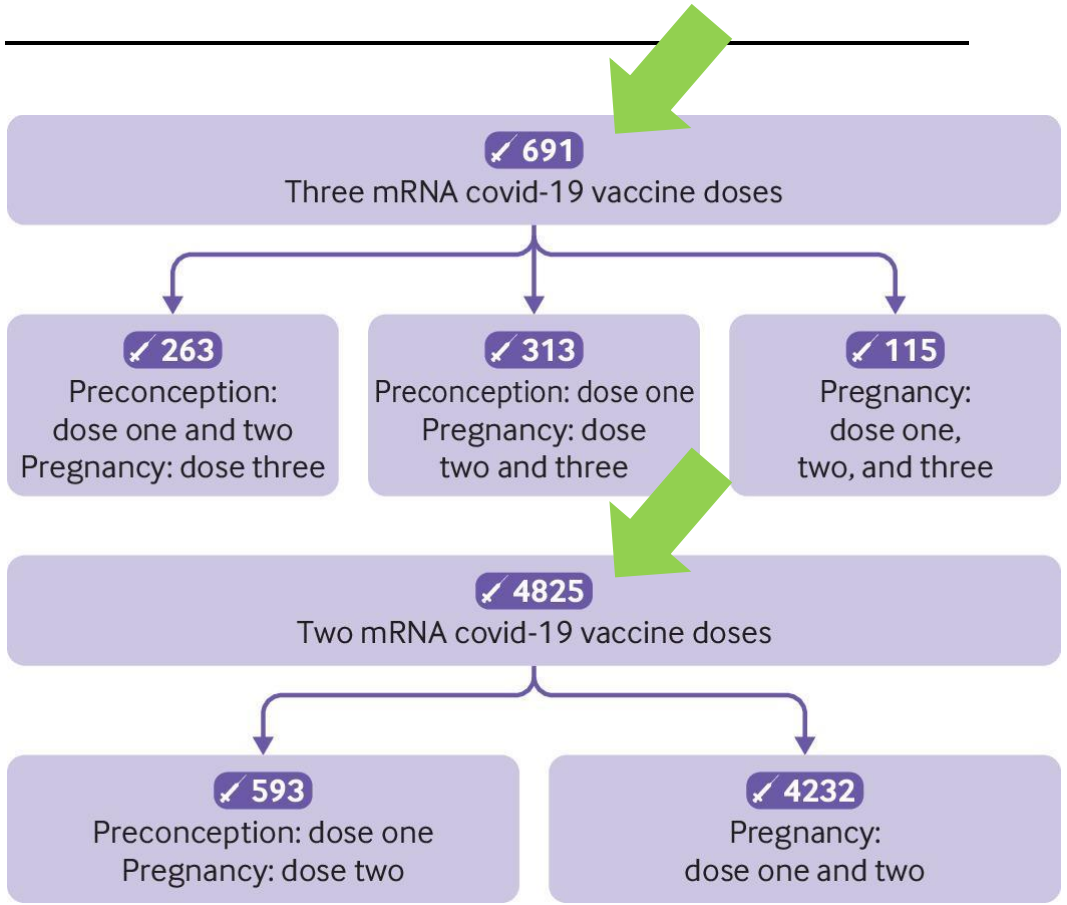
Excluded

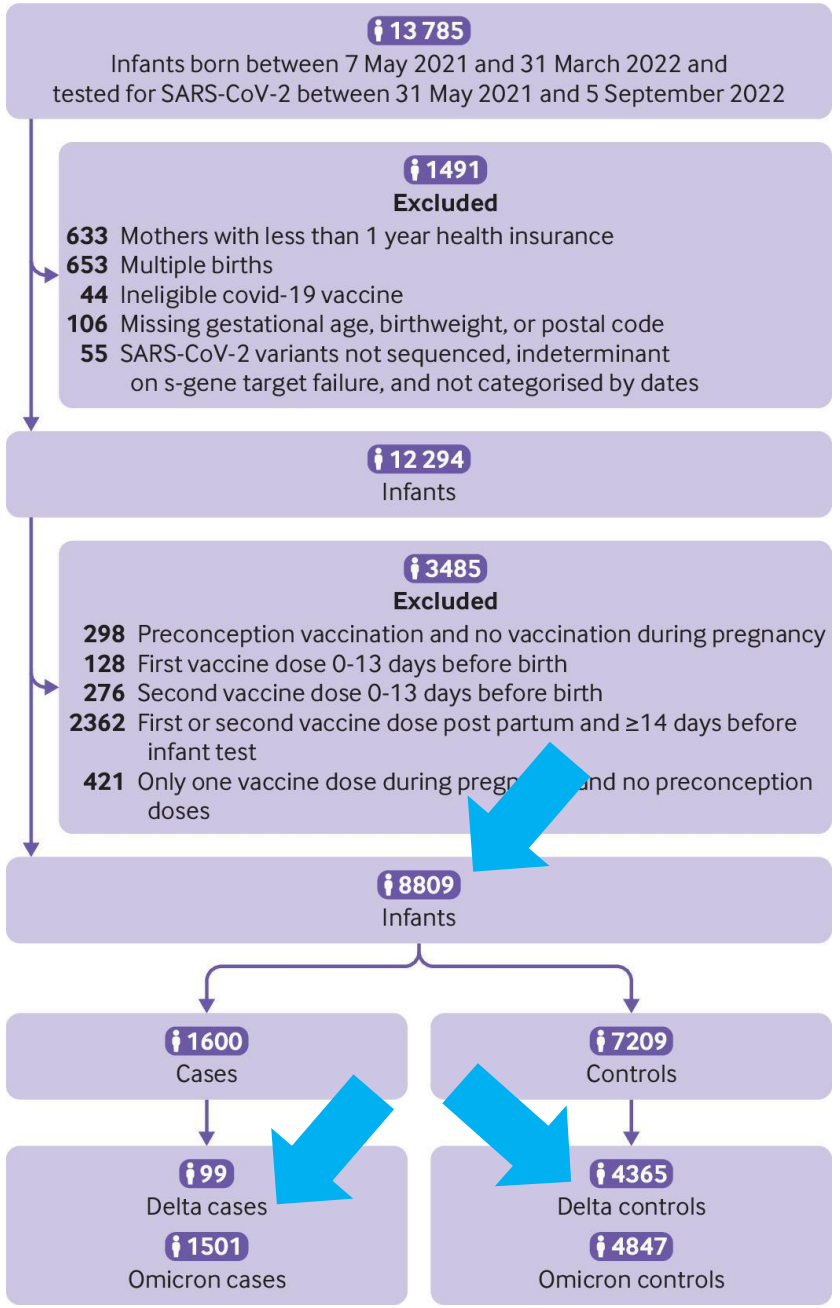
- Viral vector & non-Health Canada-approved COVID-19 vaccines

Data Sources

- MOMBABY database
- Ontario COVID-19 vaccine registry (COVaxON)
- Public Health Case & Contact Management Solution (CCM)
- COVID-19 Integrated Testing Data (C19INTGR)
- Canadian Institute for Health Information Discharge Abstract Database (CIHI-DAD)
- Ontario Health Insurance Plan (OHIP)
- Ontario Drug Benefit (ODB)
- Ontario Census Area Profiles (CENSUS)

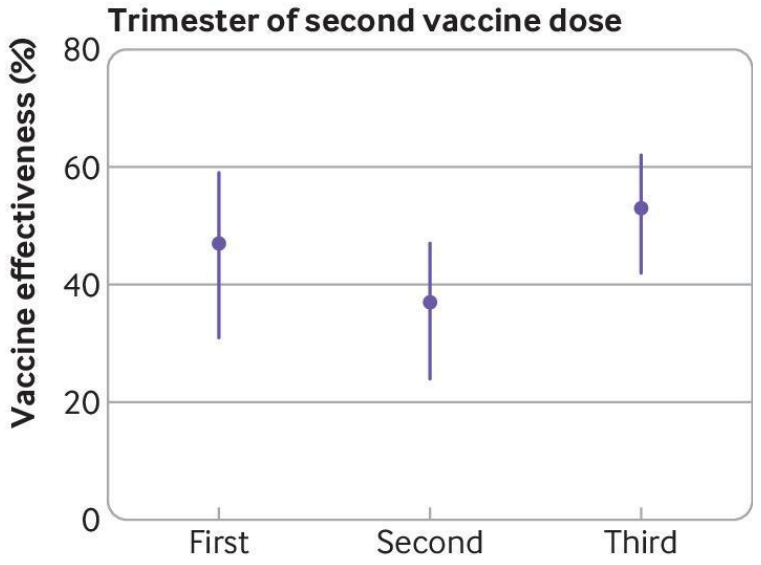
Results: Pregnancy

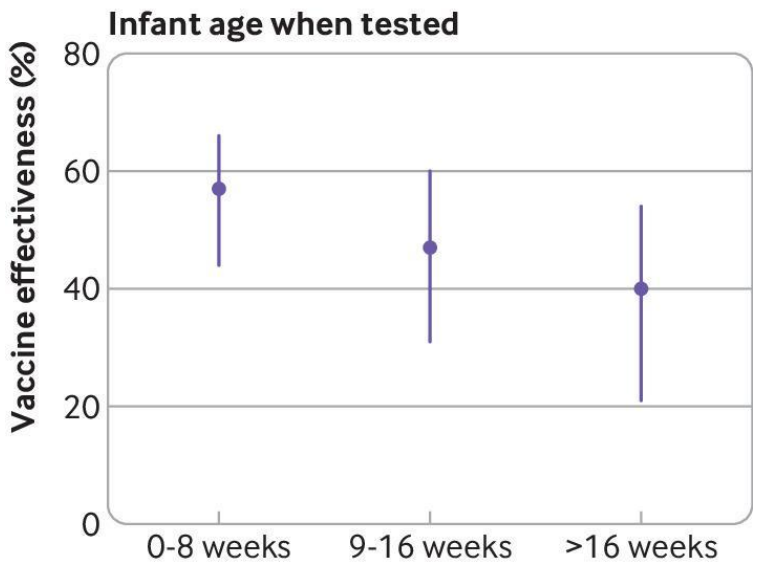




Results: Pregnancy

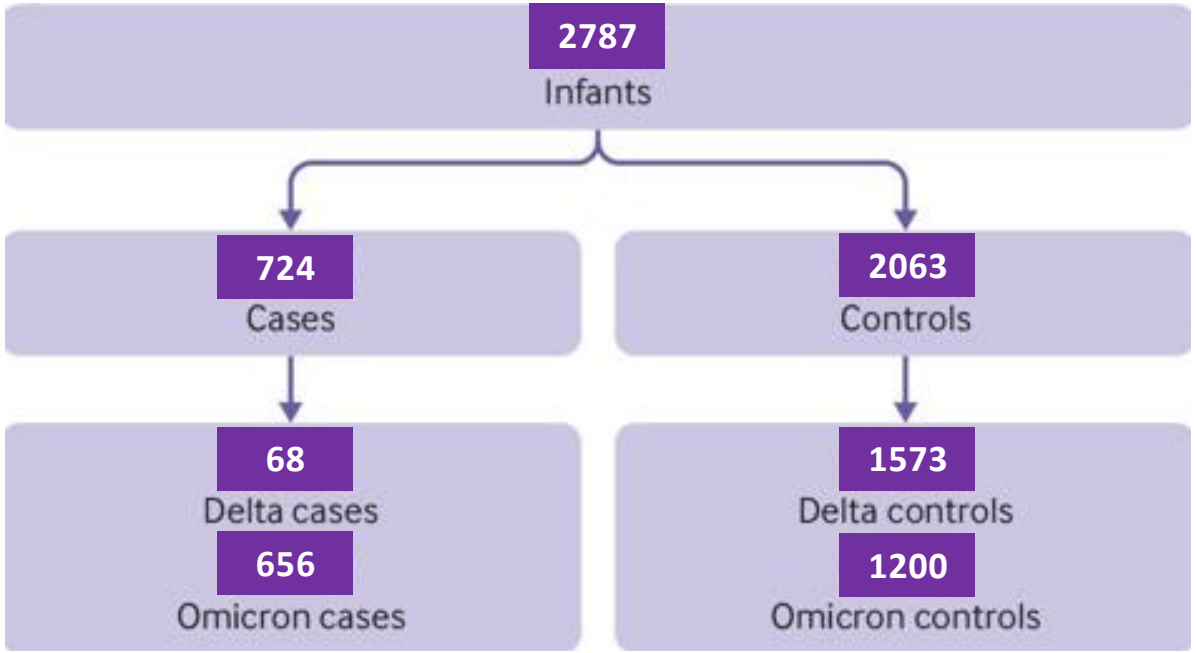
Effectiveness of maternal vaccination: % (95% CI)	
Delta, 2 doses	
Infection	95 (88 – 98)
Hospital admission	97 (73 – 100)
Omicron, 2 doses	
Infection	45 (37 – 53)
Hospital admission	53 (39 – 64)
Omicron, 3 doses	
Infection	73 (61 – 80)
Hospital admission	80 (64 – 89)





Results: Postpartum

Effectiveness of maternal vaccination: % (95% CI)	
Delta	
Infection	73 (42 – 87)
Hospital admission	-
Omicron	
Infection	13 (-14 – 33)
Hospital admission	36 (-21 – 66)



Limitations

- Residual confounding
  - Breastfeeding
  - Vaccination status of other close contacts
- Testing eligibility varied over the study period
- Unavailability of home SARS-CoV-2 rapid antigen test results
- mRNA COVID-19 vaccines only
- Inability to assess waning after 3rd doses

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