

COVID-19: Variants of Concern

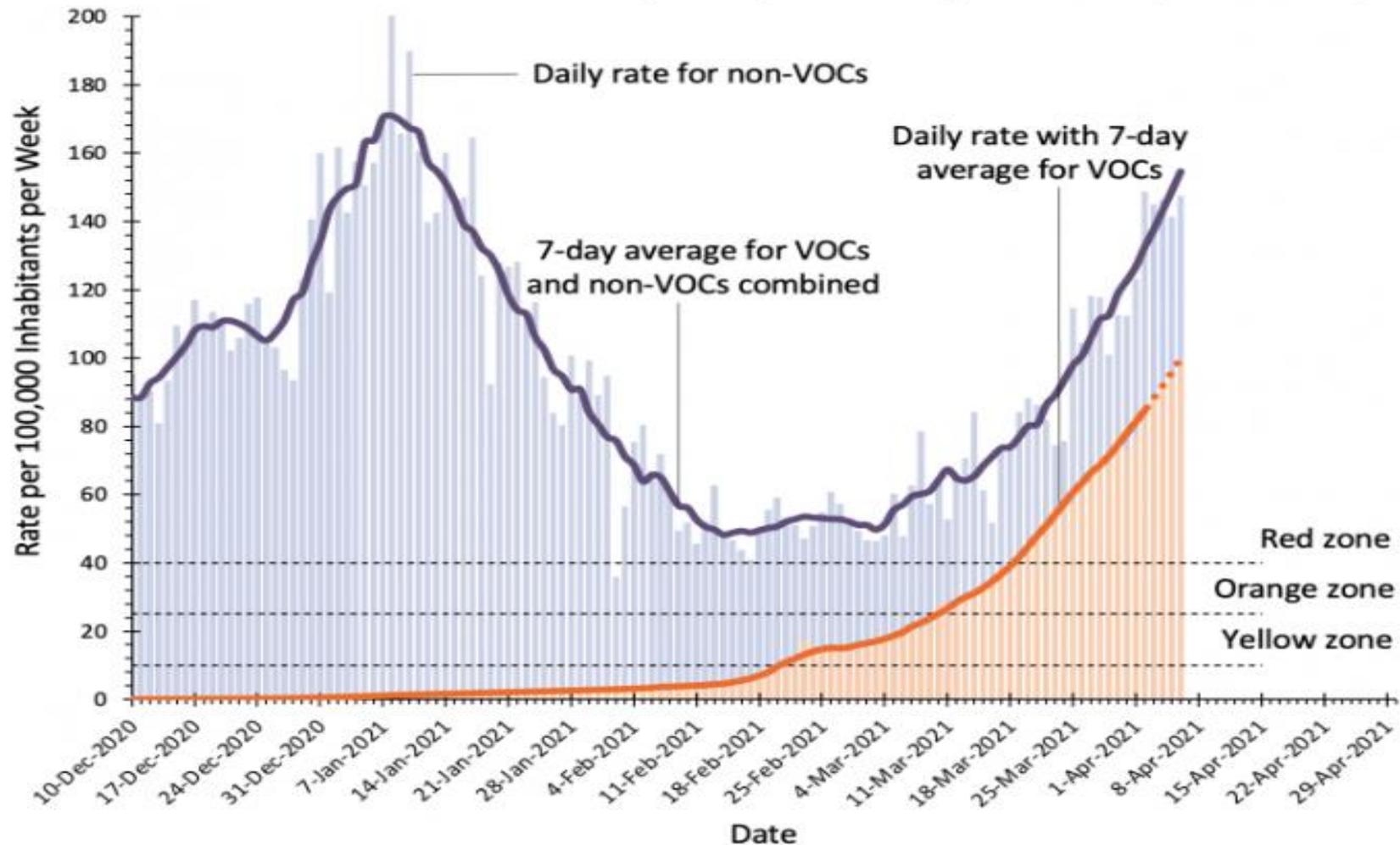
April 20, 2021

Key messages

- Rising case counts overall in Ontario with a rising percentage of cases with a mutation or VOC detected
- Compared with early variants of SARS-CoV-2, VOCs are associated with a 63% increased risk of hospitalization, a 103% increased risk of intensive care unit (ICU) admission and a 56% increased risk of death due to COVID-19
- There are already substantial impacts on health and the healthcare system, with anticipated additional future impacts to address post-acute COVID-19
- There is a risk of decreased vaccine effectiveness with P.1 and B.1.351 VOCs, particularly if these VOCs increase
- Urgent need for continued and strengthened public health measures to get overall case counts down and buy time for population-level vaccination

Ontario is in the Third Wave, Rapid rise in all cases, Majority of new cases are Variants of Concern (VOCs)

New VOCs and early variants (non-VOCs) – December 10, 2020 to April 6, 2021



Profile of people impacted by Wave 3 is changing

- Younger age groups (10-59 years)
 - Cases increasing
 - Hospitalizations
 - Deaths
- Outbreaks
 - Workplaces
 - Congregate settings
 - Schools

Recent COVID-19 case outcomes by age in Ontario – As of April 19, 2021

| Age group | Cases | Case rate | Hospitalizations | Deaths |
|-----------|--------|-----------|------------------|--------|
| 0 to 09 | 3,593 | 236.6 | 17 | 0 |
| 10 to 19 | 6,538 | 404.1 | 13 | 0 |
| 20 to 29 | 11,419 | 543.7 | 98 | 1 |
| 30 to 39 | 8,755 | 425.8 | 142 | 3 |
| 40 to 49 | 7,941 | 423.2 | 206 | 5 |
| 50 to 59 | 7,689 | 373.1 | 357 | 11 |
| 60 to 69 | 4,750 | 264.6 | 422 | 17 |
| 70 to 79 | 2,146 | 185 | 435 | 31 |
| 80 to 89 | 827 | 153.2 | 286 | 46 |
| 90+ | 201 | 144 | 73 | 15 |
| All ages | 53,878 | 362.5 | 2,050 | 129 |

Growing list of COVID-19 VOCs

| Pangolin Lineage | B.1.1.7 | B.1.351 | P.1 |
|--|--|---|--|
| Location first detected | United Kingdom (Kent) | South Africa (Eastern Cape) | Brazil (Manaus) |
| Increased transmissibility? | Yes | Yes | Yes |
| Increased disease severity? | Yes | Unknown [‡] | Unknown [‡] |
| Decreased vaccine effectiveness? | No | Yes | Yes |
| Spike mutations (key mutations in bold)# | Δ69-70[‡] , N501Y^{**} D614G, P681H/R | L18F, K417N , E484K , N501Y , D614G, A701V | L18F, K417T , E484K , N501Y , D614G |

- United States has declared two additional VOCs identified in California which show increased transmissibility: B.1.427 and B.1.429
- Several ‘Variants of Interest’ have mutations/genetic markers that may potentially have clinical or epidemiological impacts

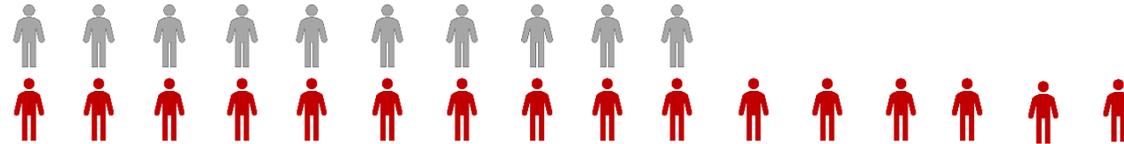
VOC transmission predominantly occurs via respiratory droplets and aerosols during close, prolonged and unprotected contact

- No evidence that there is any difference in the modes of transmission of these VOCs, than what has been seen with non-variant SARS-CoV-2
- The predominant mode of transmission of COVID-19 is via respiratory droplets and aerosols during close (<2m), prolonged and unprotected contact
 - Increased risk in confined, crowded, and poorly ventilated spaces
- No direct evidence of long-range airborne transmission
- Research ongoing into factors driving increased transmission

VOCs have more severe consequences and are more fatal

Hospitalization

Hospitalization with VOC



ICU Admission

ICU Admission with VOC



Death

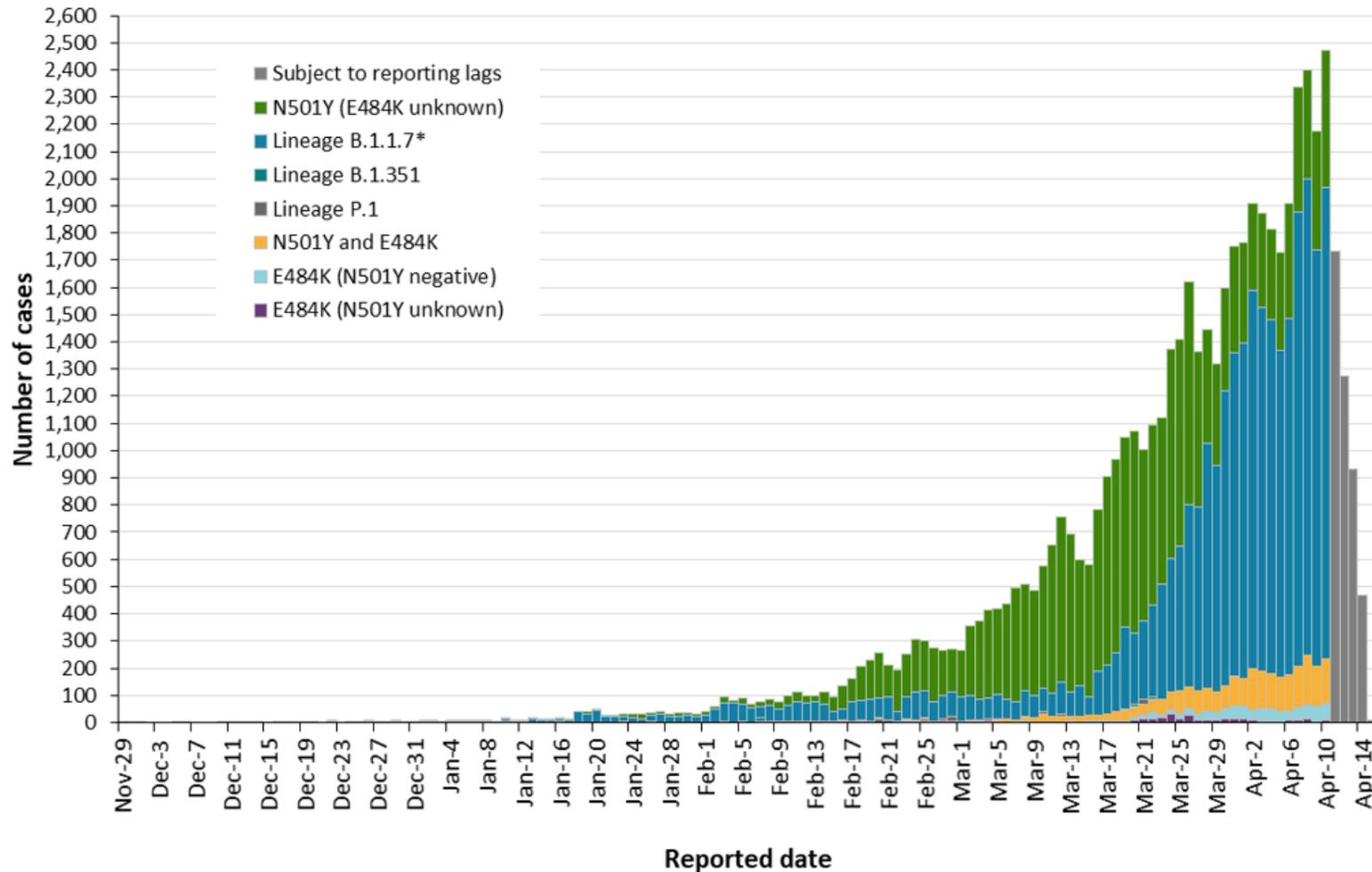
Death with VOC



Compared to people infected with the earlier variants, more people with COVID-19 are hospitalized, admitted to ICU, and die if they are infected with the variants of concern.

The majority of VOC cases in Ontario are B.1.1.7

Confirmed COVID-19 cases with a mutation or VOC detected by public health unit reported date: Ontario, November 29, 2020 to April 15, 2021



- P.1 and B.1.351 cases are still relatively low in Ontario
- Risk of vaccine escape with P.1 and B.1.351 VOCs
- Early evidence from Italy that B.1.1.7 remains dominant after P.1 introduction

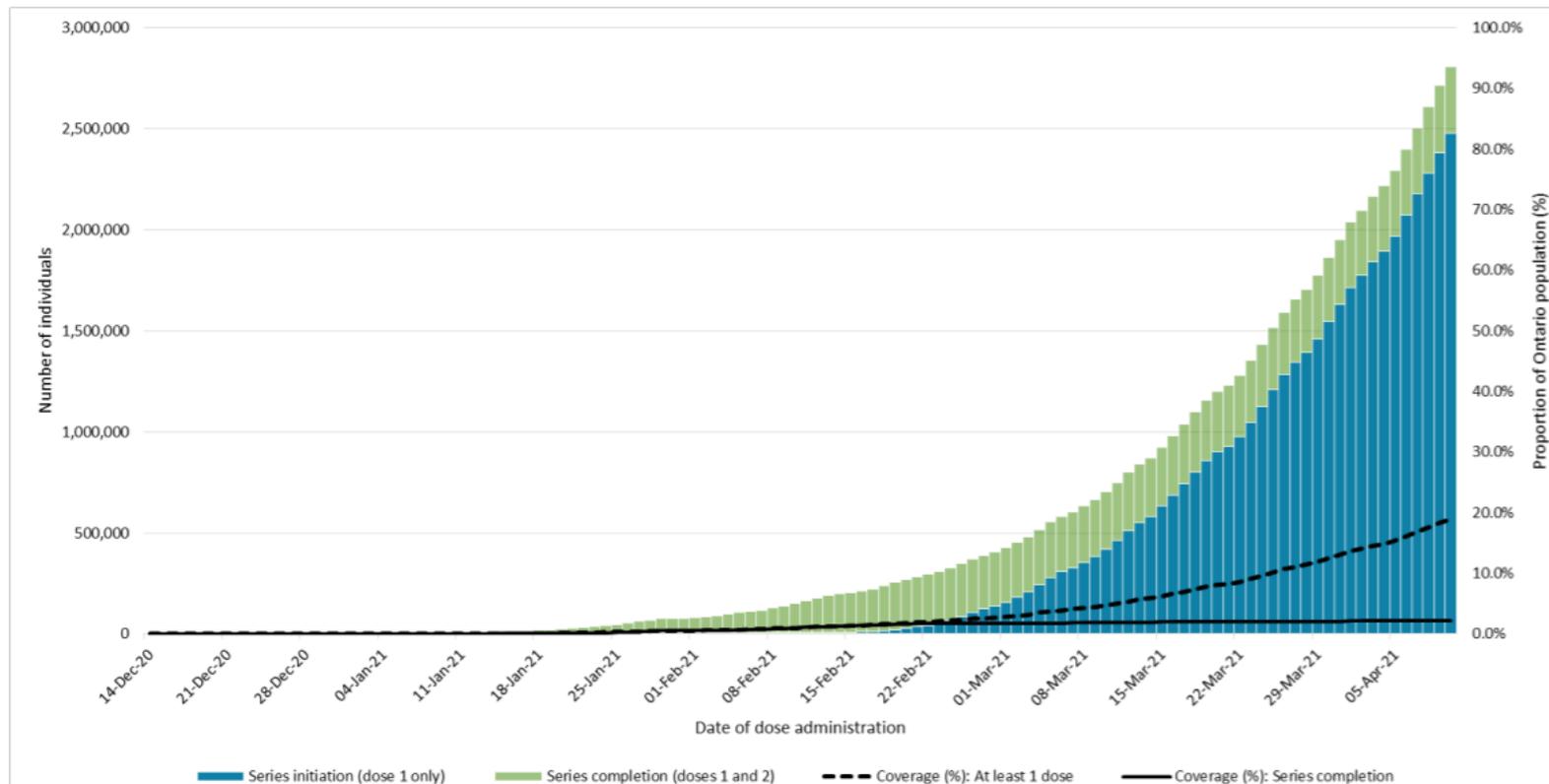
VOCs in Canadian Provinces (BC, AB, QC, ON)

| | BC | AB | QC | ON |
|---|--|--|---|---|
| VOCs (to April 15) | 5162 cases with VOCs <ul style="list-style-type: none"> • 70% B.1.1.7 • 29% P.1* • 1% B.1.351 | 13,952 cases with VOCs <ul style="list-style-type: none"> • 98.7% B.1.1.7 • 1% P.1 • 0.2% B.1.351 | 19,810 cases with VOCs <ul style="list-style-type: none"> • 92% B.1.1.7; • 6.5% B.1.351 • 0.2% P.1 • 0.7% B.1.525 | 30,476 confirmed VOCs <ul style="list-style-type: none"> • 99% B.1.1.7 • 0.7% P.1 • 0.3% B.1.351 |
| Public Health Measures for VOCs | No specific measures for VOCs above existing guidance | For P.1, B.1.351 – up to 24 days quarantine if can't fully isolate | No specific measures for VOCs above existing guidance | Interim enhanced contact measures for all case/contact follow-up |
| Vaccine coverage (up to April 3, reported by PHAC) | 15.5% | 12% | 17% | 14.5% |

*Large P.1 outbreak in Whistler, BC

Ontario is not yet near vaccination rate needed to achieve herd immunity

Cumulative number of individuals who received a COVID-19 vaccine and provincial coverage estimates by administration date* - December 14, 2020 to April 10, 2021



*Counts are shown using the date of dose one administration for individuals that have received only one dose and the date of dose two administration for individuals that have received both doses.

- 56% to 89% of the population of Ontario will require vaccination against COVID-19 to achieve herd immunity
- 18.9% of the Ontario population have received at least one dose of a COVID-19 vaccine
- Can reduce the risk of vaccine escape with P.1 and B.1.351 VOCs by optimizing vaccine to those at highest risk of contracting COVID-19

COVID-19 vaccination is effective in LTCH settings

Number of vaccinated COVID-19 LTCH resident and staff cases by vaccine category

| Vaccine Category | Number of resident cases | Percent of resident cases | Number of staff cases | Percent of staff cases | Total LTCH cases | Percent of LTCH cases |
|------------------------------------|--------------------------|---------------------------|-----------------------|------------------------|------------------|-----------------------|
| Vaccinated but not protected | 512 | 92.6% | 476 | 89.3% | 988 | 91.0% |
| Partially vaccinated | 22 | 4.0% | 26 | 4.9% | 48 | 4.4% |
| Fully vaccinated breakthrough case | 19 | 3.4% | 31 | 5.8% | 50 | 4.6% |
| Total | 553 | 100.0% | 533 | 100.0% | 1086 | 100.0% |

- Breakthrough cases include those with VOCs and non-VOCs
- In residents, there have been no breakthrough cases that have been admitted to the ICU or died
- In staff, there have been no cases that have been hospitalized, admitted to ICU or died
- Important to stop emergence and spread of vaccine escape VOCs by keeping overall cases in the population low

Data Source: CCM/COVax as of April 5th, 2021

Post-Acute COVID-19 ('long COVID')

- No universally agreed upon definition
- Generally, symptoms that develop or persist for at least 3 weeks (e.g., after symptom onset, testing, or discharge from hospital)
- A significant proportion of people experience post-acute COVID-19 regardless of definition used
- The most commonly reported persistent symptoms are neuropsychiatric or respiratory. COVID-19 can damage the brain, heart, lungs, liver and kidneys and long-term conditions associated with these organs and organ systems are expected as research continues
- There is evidence that COVID-19 can lead to decreased health-related quality of life (e.g., decreased ability to perform daily tasks, reduced capacity for physical activity, missing work)
- Care for post-acute COVID-19 patients will likely place added stresses on healthcare and social support systems (e.g., pulmonary rehabilitation, physical rehabilitation, mental health services)
- Particular attention is needed for those admitted to ICU because recovery usually involves post-intensive care syndrome

Strategies to limit VOCs and their impacts

- **Strict adherence to public health measures continues to be effective.** Limiting circulation of virus in Ontario and globally
 - Less virus replicating = less mutations
 - Fewer overall cases = less post-acute COVID-19
 - Re-evaluate and clearly define 'essential' as only what is needed (i.e., food, medication, healthcare, essential childcare, public safety and businesses needed to keep these operating); everyone who can work from home should do so; limit movement between communities and in and out of the province (including air travel)
 - Give supports to allow people to adhere (i.e., paid sick leave, paid leave to get vaccinated)
 - Appropriate enforcement of stay-at-home order (e.g., large parties, non-essential businesses, non-compliant essential workplaces)
 - Reasonable outdoor activities (e.g., personal and household physical activity (+singles), parks, trails, distanced fitness classes, distanced worship with mechanisms to avoid crowding throughout and masks worn)
- **Public health management strategies continue to be effective.**
 - Enhanced case and contact measures
 - Rapid roll-out of vaccines (domestically and internationally) ***First doses prioritized to those at highest risk**
- **Strict adherence to infection prevention and control (IPAC) measures continues to be effective.** Limiting spread from all cases, including VOCs.
 - No changes in transmission-based precautions (e.g., droplet and contact precautions, no recommended changes to personal protective equipment (PPE), physical distancing (> 2 metres))
 - Less room for error (IPAC lapses, PPE lapses)
- **Ontario's testing includes surveillance for new VOCs and monitoring of current.**

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