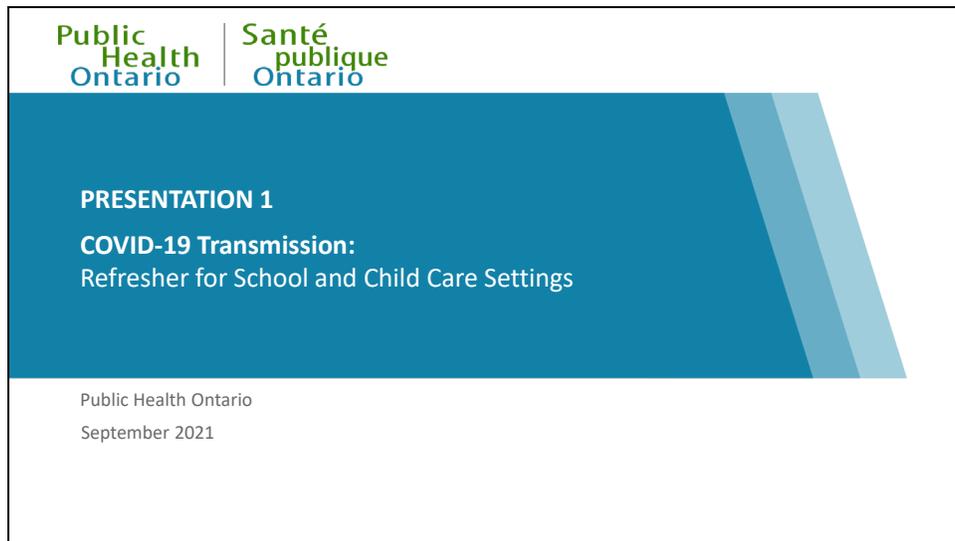


Presentations for Schools and Child Care Settings: **COVID-19 Transmission**

Transcript: Presentation 1 of 6

September 2021

Slide 1



The purpose of this presentation is to review the transmission of SARS-CoV-2, the virus that causes COVID-19.

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Objectives

- To review how the virus that causes COVID-19 (SARS-CoV-2) is spread and measures to reduce the risk of spread
- To review variants of concerns (VOCs) and implications for infection prevention and control (IPAC) in schools and child care settings

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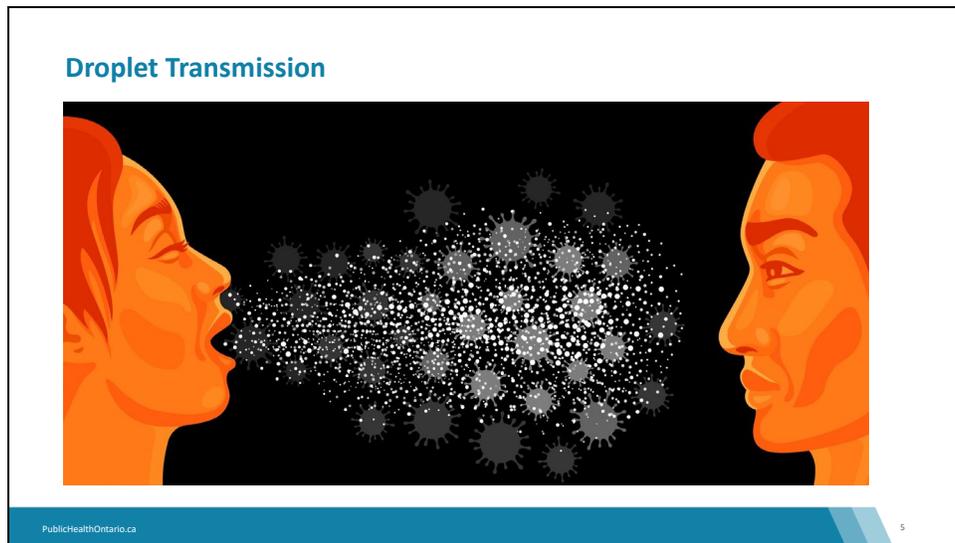
The objectives of this presentation are to review how the virus that causes COVID-19 (SARS-CoV-2) is spread and the measures that can be put in place to reduce the risk of spread. We will also review the variants of concerns (VOCs) and implications for infection prevention and control (IPAC) in schools and child care settings.

Slide 4



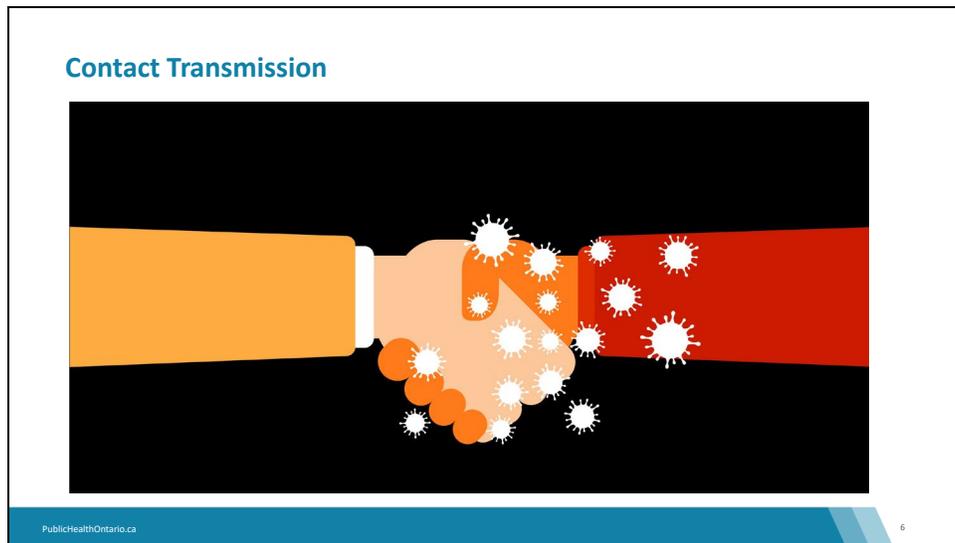
Infections with respiratory viruses are primarily transmitted through three modes: droplet, contact and airborne. These categories are not mutually exclusive as transmission occurs along a spectrum.

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Droplet transmission is when infection is spread through exposure to virus-containing droplets that are exhaled by an infectious person. Once exhaled, the concentration of droplets decreases by fallout from the air, with the largest droplets falling first and then smaller particles dilute in the growing volume of air. As a result, transmission is most likely to occur when someone is close to the infectious person, generally within about 2 meters (or 6 feet).

Slide 6



Contact transmission is when infection is spread by direct contact with an infectious person (for example holding or shaking hands) or with a contaminated item or surface, which is also called “fomite transmission.”

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Airborne transmission is when infection is spread by exposure to the smaller virus-containing respiratory droplets (also called aerosols) that can remain suspended in the air over long distances and over long periods of time.

Slide 8

How Does SARS-CoV-2 Virus Spread?

The diagram shows a person coughing and sneezing, with particles of varying sizes being released. Large particles, labeled 'More than 5 microns', are associated with 'Droplet transmission' and are described as 'Coughs and sneezes can spread droplets of saliva and mucus'. These particles are shown falling to the ground. Smaller particles, labeled 'Less than 5 microns', are associated with 'Airborne transmission' and are described as 'Tiny particles, possibly produced by talking, are suspended in the air for longer and travel further'. A comparison shows a 'Droplet' (60-120 microns wide) is larger than a 'Human hair' (60-120 microns wide).

- Primarily occurs by close, unprotected contact (whether by droplets or aerosols)
- Sometimes, COVID-19 can be spread through direct contact by touching a person who is ill or a surface that has been touched or sneezed on by an infectious person with COVID-19

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SARS-CoV-2 is a respiratory virus, so similarly, transmission occurs on a spectrum. It is primarily transmitted by close unprotected contact with droplets which spread at close range. These droplets can vary in size from large droplets that fall to the ground within seconds or minutes around the infected person, to smaller droplets, sometimes called aerosols. The role of both droplets and aerosols has been suggested to be most important for transmission in close range. Less commonly, the smaller droplets (or aerosols) can spread over longer distances and may be suspended for longer periods of time. Lastly, COVID-19 can potentially spread indirectly through contact with surfaces that have been touched or sneezed on by someone who is ill with COVID-19. The virus could survive from hours up to 7 days on some surfaces such as metal and plastic but it does not seem to spread easily this way.

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What factors can impact spread?

- Vaccination (e.g. being fully vaccinated reduces infection risk)
- Protective measures (e.g., physical distancing, wearing a well-fitted mask)
- How forcefully aerosols and droplets are expelled (e.g., singing or coughing are associated with higher risk)
- The amount of virus present (e.g., more virus is present early in the infection)
- The duration of the exposure (i.e., longer contact with an infectious person is higher risk)
- Environmental conditions (e.g., good ventilation and outdoors are associated with lower risk)

Science M, Thampi N, Bitnun A, Allen U, Birken C, Blackman N, et al. School operation for the 2021-2022 academic year in the context of the COVID-19 pandemic. Science Briefs of the Ontario COVID-19 Science Advisory Table. 2021;2(38):1-40. Available from: <https://doi.org/10.47326/ocsat.2021.02.38.1.0>

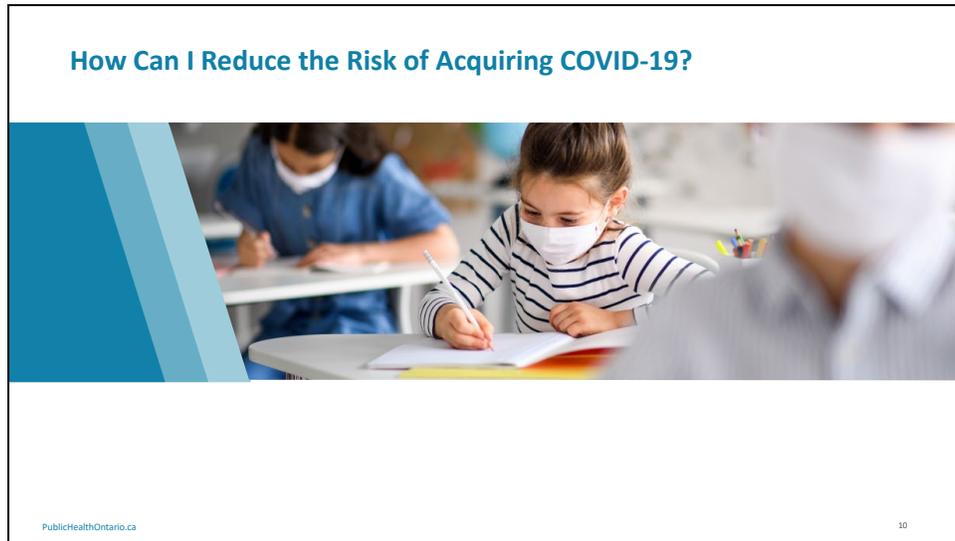
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When a person has infection, whether or not transmission from that person occurs depends on multiple factors. Examples include:

- vaccination (being fully vaccinated reduced infection risk)
- personal protective measures (e.g., physical distancing, wearing a well-fitted mask, and being fully vaccinated reduces the risk)
- how forcefully aerosols and droplets are expelled (e.g., singing or coughing are associated with higher risk)
- amount of virus present (e.g., more virus is present early in the infection)
- the duration of the exposure (i.e., longer contact with an infectious person is higher risk)
- environmental conditions (e.g., good ventilation and outdoors are associated with lower risk)

Slide 10



Now that we know how the virus is spread, it can help us to better understand the measures that will reduce our risk of acquiring infection. As a starting point, the risk of transmission is higher indoors, particularly when physical distancing is not practiced and/or when masking is not practiced consistently by all. This is why avoiding crowded places and limiting time in enclosed spaces are important measures at all times at work and in the community.

Slide 11

Preventing Transmission from Droplets and Aerosols

The infographic consists of four blue vertical panels, each with a circular image at the top and text below. The first panel shows a woman wearing a white surgical mask. The second panel shows a child coughing into their elbow. The third panel shows two stylized human figures with a double-headed arrow between them and the text '2M (6 Feet)'. The fourth panel shows a window with a rainbow visible outside.

- Wear a mask**
- Practice respiratory etiquette**
- Stay 2 m (6 feet) away from others**
- Optimize ventilation by increasing outdoor air**

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As mentioned, COVID-19 spreads primarily by respiratory droplets and aerosols, particularly when in close proximity to an infected person. This is why keeping a distance of 6 feet or more can help reduce the risk of transmission. Other practices that can reduce the risk of droplet and aerosol spread include practicing good respiratory etiquette, such as coughing into a sleeve, wearing a mask and optimizing ventilation (for example, increasing outdoor air by keeping windows or doors open). Increasing outdoor air will dilute and replace any air contaminated with SARS-CoV-2 virus or other air pollutants.

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Preventing Transmission from Contact



Clean your hands often with soap and water or alcohol-based hand rub (ABHR)

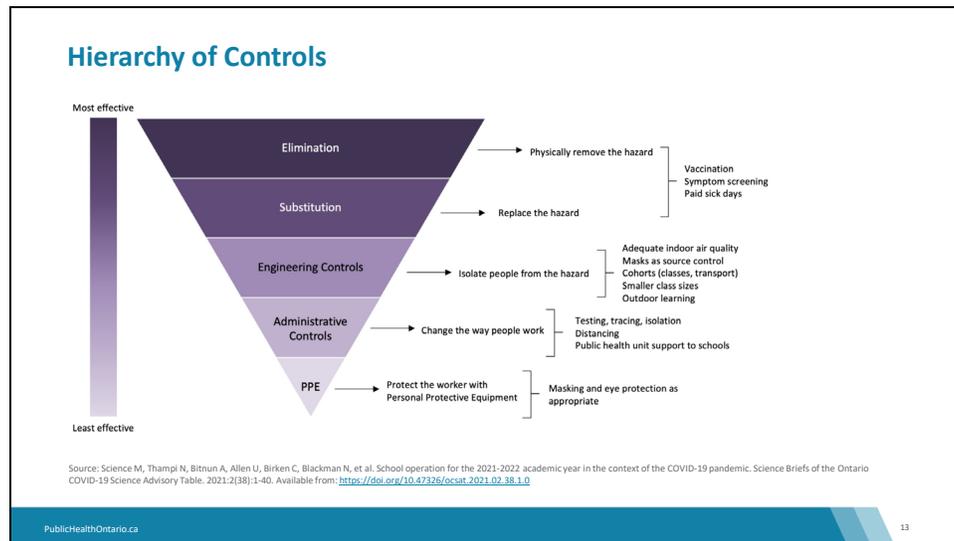
Avoid touching eyes, nose or mouth (especially with unwashed hands)

Clean surfaces, especially those considered high-touch (door handles, lights, handrails)

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While much less common, transmission can also occur through contact with surfaces that have been touched or sneezed on by someone who is ill with COVID-19. This is why making sure you clean your hands frequently with soap and water or alcohol based hand rub plays an important role in reducing the risk of infection. You can also reduce your risk by not touching your eyes, nose and mouth, as this is how the virus can enter your system to cause infection. Finally, keeping surfaces clean can help reduce the risk, and the focus should be on high touch surfaces like door handles.

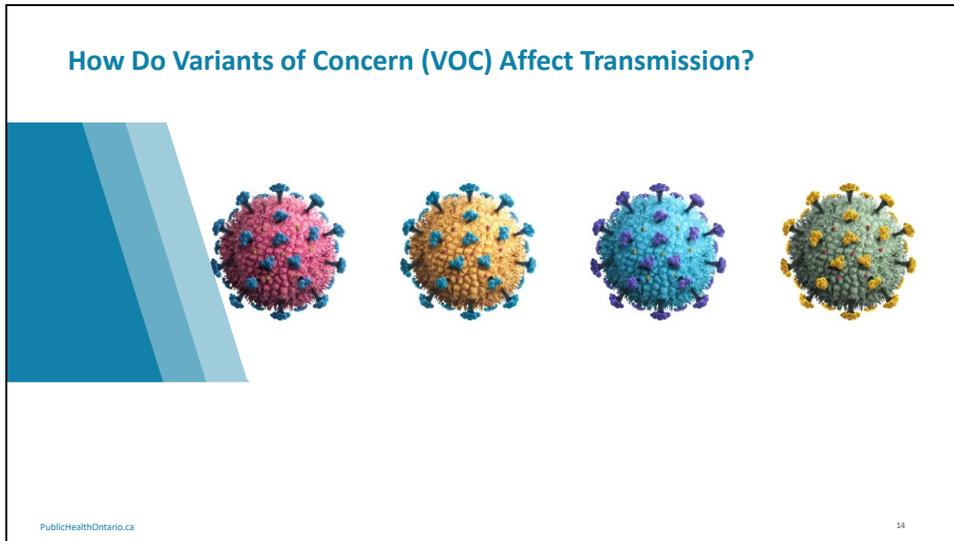
Slide 13



The Hierarchy of Hazard Controls from the Center for Disease Control is an approach to containment of hazards in the workplace, describing the layered occupational health and safety approaches. This slide shows how this can be adapted to schools and childcare settings and highlights the need for a bundle of health and safety measures to reduce the risk of COVID-19 transmission. At the top are the elimination and substitution strategies, which are most effective at preventing exposures and involves physically removing or replacing the hazard. In the context of COVID-19, this is where controlling community transmission will most effectively reduce the risk of cases being imported into schools and childcare settings. A robust screening process to identify symptomatic individuals, as well as case and contact management are important strategies to reduce the risk of infectious individuals entering the school or childcare setting. Vaccination also plays a key role in preventing COVID-19 infection.

Next on the hierarchy are the engineering controls such as physical barriers, point of care alcohol-based hand rub (ABHR), heating, ventilation, air conditions (HVAC) and administrative controls including policies and procedures, education and training. Personal protective equipment (PPE) is considered the last line of defense and should not be relied upon as the primary preventative measure for COVID-19, although it still plays an important role. As previously mentioned, it is the bundle of health and safety measures, rather than one specific measure, that needs to be put into place to help reduce infection risk, given the spectrum of transmission.

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Finally, I will end this presentation discussing the variants of concern or VOCs.

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Variants of Concern (VOCs)

- Variants are viruses that have changed or mutated. These virus changes have clinical or public health impact (e.g. increases spread, increases disease severity).
- VOCs identified globally and in Ontario include:
 - Alpha (B.1.1.7) variant first identified the UK
 - Beta (B.1.351) variant first identified in South Africa
 - Gamma (P.1) variant first identified in Brazil
 - Delta (B.1.617.2) variant first identified in India
- Other mutations/variants have emerged, will continue to emerge and evidence about their impact will need close and ongoing monitoring

Ontario Agency for Health Protection and Promotion (Public Health Ontario). COVID-19 variants of concern (VOCs) [Internet]. Toronto, ON: Queen's Printer for Ontario; 2021 [cited 2021 Apr 13]. Available from: <https://www.publichealthontario.ca/en/diseases-and-conditions/infectious-diseases/respiratory-diseases/novel-coronavirus/variants>

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First, it is important to note that variants are common with respiratory viruses, including coronaviruses; however, a variant becomes a variant of concern when its changes have a clinical or public health significance that affects one or more of: transmissibility (spread); virulence (severity of disease); vaccine effectiveness; or diagnostic testing.

VOCs have been identified globally and in Ontario. Currently, there are four variants of concern that are being closely monitored in Canada. These include the alpha variant or B.1.1.7 variant that was first identified in the UK, the beta variant or B.1.351 variant that was first identified in South Africa, the gamma variant or P.1 variant that was first identified in Brazil and the delta variant or B.1.617.2 variant first identified in India. Other variants have emerged. Laboratory and surveillance data are being monitored closely to gather evidence on their impact and identify those that have clinical or public health significance.

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Do I Need to Do Anything Differently because of the VOCs?

- No, you don't need to do anything differently because of the VOCs.
- While new VOCs are more transmissible, their **mode** of transmission has not changed. Recommended preventative measures (e.g. hand hygiene, physical distancing) remain the same, they just need to be applied consistently.

Ontario. Office of the Premier. News release: Ontario takes immediate action to stop the spread of COVID-19 variants [Internet]. Toronto, ON: Queen's Printer for Ontario; 2021 [cited 2021 Apr 13]. Available from: <https://news.ontario.ca/en/release/60176/ontario-takes-immediate-action-to-stop-the-spread-of-covid-19-variants-1>

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So do you need to do anything differently because of the current VOCs? At the present time, the answer is no. The VOCs to date seem to be more transmissible or more contagious, but show no evidence of being fundamentally different in their mode of transmission. What does this mean? It means that someone who is infected with a VOC is more likely to transmit the disease, but the recommended preventative measures remain the same. The evolution of the pandemic is being monitored closely and public health measures will be updated as needed.

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For More Information

Public Health Ontario Resources:

- [COVID-19 - Schools and Related Settings](#)
- [COVID-19 Variants of Concern \(VOCs\)](#)
- [What We Know So Far About... Coronavirus Disease 2019 \(COVID-19\)](#)

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If you would like more information, please see the list of resources here.

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How Did We Do?



PHO would appreciate your thoughts on these presentations.

Please visit PHO's school resources webpage to access and complete a short survey.

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PHO would appreciate your thoughts on these refresher presentations. Please visit PHO's school resources webpage to access and complete a short survey.

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For More Information About This Presentation, Contact:

communications@oahpp.ca

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