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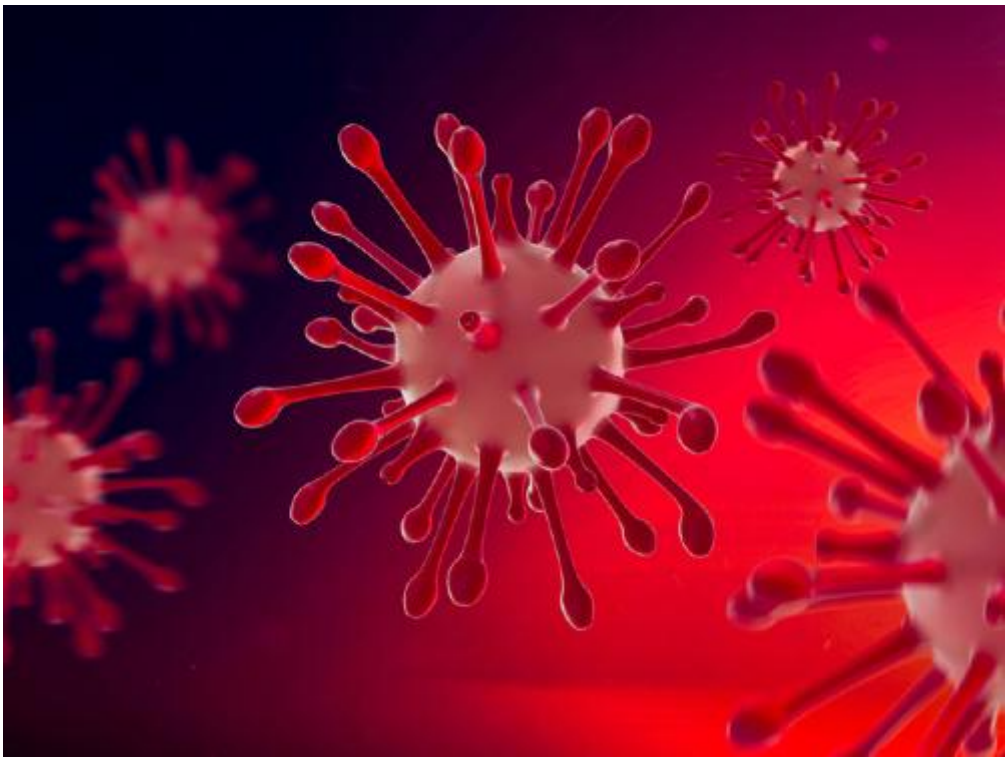

Five things you need to know about: the Delta variant

Since its emergence in March 2021, the Delta variant has rapidly become predominant across the European Union. More than 99% of newly reported cases are attributed to this variant, according to the European Centre for Disease Prevention and Control (ECDC), which estimates the Delta variant to be twice as transmissible as the original strain.

21 October 2021 - By SUSAN LANGTHORP

Through mathematical modelling, the ECDC forecasted the disease burden between now and the end of November 2021. This model showed that countries with low COVID-19 vaccination coverage that plan to relax non-pharmaceutical community mitigation strategies run a high risk of seeing a significant rise in cases, hospitalisations and mortality. This forecast was published in the ECDC's latest Rapid Risk Assessment report released on 30 September.

At the beginning of October, 75% of adults in the EU were fully vaccinated. However, only 61.1% of the total population in the EU/EEA have been fully vaccinated to date, and as such we can't be complacent. The ECDC's modelling scenarios indicate that the potential burden of disease risk in the EU from the Delta variant is high from now to the end of November, unless vaccination coverage can be increased rapidly in the total population in the next few weeks.

Dr Andrea Ammon, director of the ECDC said: ‘We need to remain vigilant and continue to use common sense to prevent the spread of the virus. This means getting a full course of vaccination as soon as the opportunity arises and maintaining physical distancing, washing hands, avoiding crowded spaces, and wearing a mask when necessary.’

This article will answer five key questions about the Delta variant.

1. What are the symptoms of infection by the Delta variant? Do they differ from those of infection by the original strain?

Following the outbreak of the novel coronavirus pandemic in China in 2019, health officials alerted the public to watch out for the hallmark symptoms: fever, continuous coughing, and a loss of taste and smell.

As the Delta variant spreads around the globe, evidence is growing that its symptoms may be different. In particular, coughing and loss of the sense of taste and smell aren’t as common any more, according to data from the ECDC.

Ironically, symptoms arise as the body attempts to deal with the infection. For example, a fever is detrimental to viruses. Heat inactivates many viruses and COVID-19 is no exception.

Reasons for changes in symptoms come down to evolution. When a virus mutates, it can cause differences in the symptoms. Sometimes there are advantages for the virus to do this. For example, any symptom that increases the rate of spread of the virus is of inherent benefit.

2. Why exactly is the Delta variant more contagious than the original coronavirus?

Viruses need access to their hosts’ cells to reproduce. Having achieved this, they hijack the genetic material of the cell under siege to make more viruses that can then spread the disease.

The speciality of the Delta variant lies in its spike protein. The word "corona" in coronavirus means "crown" in Latin. The crown’s spikes attach and latch onto a person’s cells. The more a virus can cling on to a host’s cells, the more successful it will be in taking over the cells for its own purposes, that is, to create more viruses to spread.

To its advantage, the Delta variant has several mutations affecting its spike protein structure: these allow Delta to join very tightly to its host, compared to other variants. Once it fastens onto a person’s cell receptors, it can remain securely attached, allowing it to reproduce and spread efficiently.

As a result of this genetic lottery, we know that as it mutates, the Delta variant is indeed more contagious than its predecessors. In addition to its ability to infect, the Delta variant produces higher numbers, its viral load, in the respiratory tract, specifically the nasal passages.

3. Can existing vaccines protect against the Delta variant? What are the health implications of catching the Delta variant, for the unvaccinated?

‘Currently, it is difficult to ascertain whether a decrease in [vaccine] effectiveness against the Delta variant infections is mainly due to waning immunity over time or due to the strain partially escaping the vaccine,’ said Dr Zoi-Dorothea Pana, specialist in paediatrics, epidemiology and infection control at the European University, Cyprus.

However, the main priority is that vaccine effectiveness against severe disease, hospitalisation and death is maintained during the spread of the Delta variant. As summarised in the ECDC’s latest Rapid Risk Assessment, this aspect needs to be carefully monitored over time, particularly among the elderly.

For those who have been vaccinated, the risk of hospitalisation or experiencing more than five symptoms in the first week of illness is reduced. ‘From a community perspective, results suggest that outbreaks of the Delta variant in unvaccinated populations might lead to a greater burden on healthcare services,’ explained Dr Pana.

4. How widespread is COVID infection in children? What role do schools play in transmission of the variant?

According to the ECDC and the World Health Organization (WHO), children seem to be equally susceptible to COVID-19 infection as other age groups. Based on current evidence, transmission of the virus from and between children can be influenced by many factors. ‘These include severity, viral load and shedding duration, the variant of concern, [and] duration of exposure, as well as environmental and physiological factors specific to each child,’ said Dr Pana.

ECDC risk assessment reports in July and September 2021 suggested that overall, COVID-19 transmission in the school setting is not the primary cause behind community transmission. Dr Pana emphasised: ‘What is important is that when outbreaks occur in schools, appropriate mitigation measures are implemented.’

According to an ECDC study, schools need to be prepared through a combination of non-pharmaceutical interventions (NPIs): quarantines, closures and social distancing. ‘Synergy from the promotion of full vaccination coverage, implementation of layered NPIs (adapted on community transmission levels) and support of rigorous contact testing seems to be a balanced way to move forward,’ advised Dr Pana.

5. Is the Delta variant more dangerous for children?

The good news is that children in Europe and worldwide continue to have much lower hospitalisation rates, intensive hospital care admissions and death rates than all other age groups infected by COVID-19.

However, as there is increased risk of Delta transmission among unvaccinated young children in particular, we still need to protect them in the coming months, in all settings. Protective mitigation strategies may include approaches that prevent crowding, alongside hygiene and measures to minimise transmissions, that is, the 3 W’s: wear a mask, wash your hands and watch your distance.

For younger children, "cocooning" is an additional option. ‘A cocoon vaccination strategy refers to vaccination for all family members and any other individuals who come into regular contact with the child,’ explained Dr Pana.

‘The best way to protect our children from this pandemic and those in the future is to increase the level of education and awareness,’ said Dr Pana. ‘Adoption of a safe lifestyle rather than a mandatory mitigation strategy is to be promoted,’ she continued. Long-term, Dr Pana would like to see critical thinking skills fostered in education, as well as science and health literacy, to counter the rising tide of fake news.

One of the European Commission’s activities to prepare for the increased threat of variants is support for the clinical research network VACCELERATE. Formed in February 2021 under the HERA Incubator, the new European bio-defence preparedness plan, the network will address research questions on areas of interest like the effects of third booster shots and of reduced doses of the vaccine in adolescents.

A member of the COVID team advising the Cypriot government, Dr Pana is now working with funding from the VACCELERATE programme. She concluded: ‘With the added value from specific expertise in the platform, combined with equal access to all citizens, VACCELERATE is a service for the EU community and for all children across the European region.’

The research in this article was funded by the EU. If you liked this article, please consider sharing it on social media.

More info

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Threat Assessment Brief: Implications for the EU/EEA on the spread of the SARS-CoV-2 Delta (B.1.617.2) variant of concern

Alpha (B.1.1.7)

ECDC statement on the SARS-CoV-2 Delta variant in the EU/EEA

SARS-CoV-2 variants of concern as of 7 October 2021

Preparing Europe for the increased threat of variants (europa.eu)