



# Summary of COVID-19 virus variants in Ireland

Report prepared by HPSC and NVRL on 11/05/2021

## Background

All medical practitioners, including clinical directors of diagnostic laboratories, are required to notify the Medical Officer of Health (MOH)/Director of Public Health (DPH) of any confirmed, probable or possible cases of COVID-19 that they identify. Laboratory, clinical and epidemiological data, on notified COVID-19 cases, are recorded on Health Protection Surveillance Centre's (HPSC) Computerised Infectious Disease Reporting System (CIDR).

This report includes whole genome sequencing (WGS) carried out by the National Virus Reference Laboratory (NVRL) and partners. Current whole genome sequencing capacity is approximately 1,000 specimens per week.

This report summarises whole genome sequencing and epidemiological data for COVID-19 cases that have been sequenced in Ireland since week 51 2020 (specimen dates between 13th December 2020 and 30th April 2021). Epidemiological data on these cases were extracted from CIDR on 11/05/2021. CIDR is a dynamic system and case details may be updated at any time. Therefore, the data described here may differ from previously reported data and data reported for the same time period in the future.

The interim case definition for variants of concern (VOC) for public health response and an overview of the procedures for laboratory detection of mutations or variants of concern at NVRL are available [here](#).

The World Health Organization working definitions for 'SARS-CoV-2 variants of concern' and 'SARS-CoV-2 variants of interest' are available [here](#).

## Overview of virus variants identified in Ireland to date

The first VOC case was detected in Ireland in week 51 2020. Six percent of all confirmed COVID-19 cases since week 51 have been sequenced. The proportion of COVID-19 cases with sequencing results has increased over time, with 20% of confirmed cases sequenced between week 8 and week 17 2021.

In the past week, NVRL commenced categorising the previously described B.1.617 (India) variant into three sub-lineages; B.1.617.1, B.1.617.2 and B.1.617.3. In the same time-period, variant B.1.617.2 (India) has been added to the VOC category in Ireland. This follows decisions by WHO and Public Health England to categorise B.1.617 and specifically B.1.617.2 respectively as VOCs.

Cases of four variants of concern (VOC) have now been identified in Ireland to date; B.1.1.7 (UK<sup>1</sup>), B.1.351 (South Africa), P.1 (Brazil) and B.1.617.2 (India). Seven variants of interest (VOI) have also been identified; P.2 (Brazil), B.1.525 (Nigeria), B.1.526 (New York), B.1.1.318 (UK), B.1.429 (California) B.1.617.1 (India) and A.27 (first identified in Mayotte – French overseas Department). B.1.617.1 is newly added to this VOI category this week.

The first VOC case detected in Ireland, a B.1.1.7 (UK) case, had a specimen date in week 51 2020 (week starting December 13th). However, two earlier cases of B.1.1.7 have recently been identified through retrospective testing. The specimen dates for these two cases were in week 37 2020 and week 43 2020, indicating that B.1.1.7 was circulating prior to December 2020 in Ireland. Transmission of this variant is now widespread in Ireland. Ninety four percent of cases sequenced since week 8 2021 were found to be infected with the B.1.1.7 (UK) variant. Two cases of the B.1.1.7 (UK) variant identified in Ireland have been found to have the additional E484K mutation.

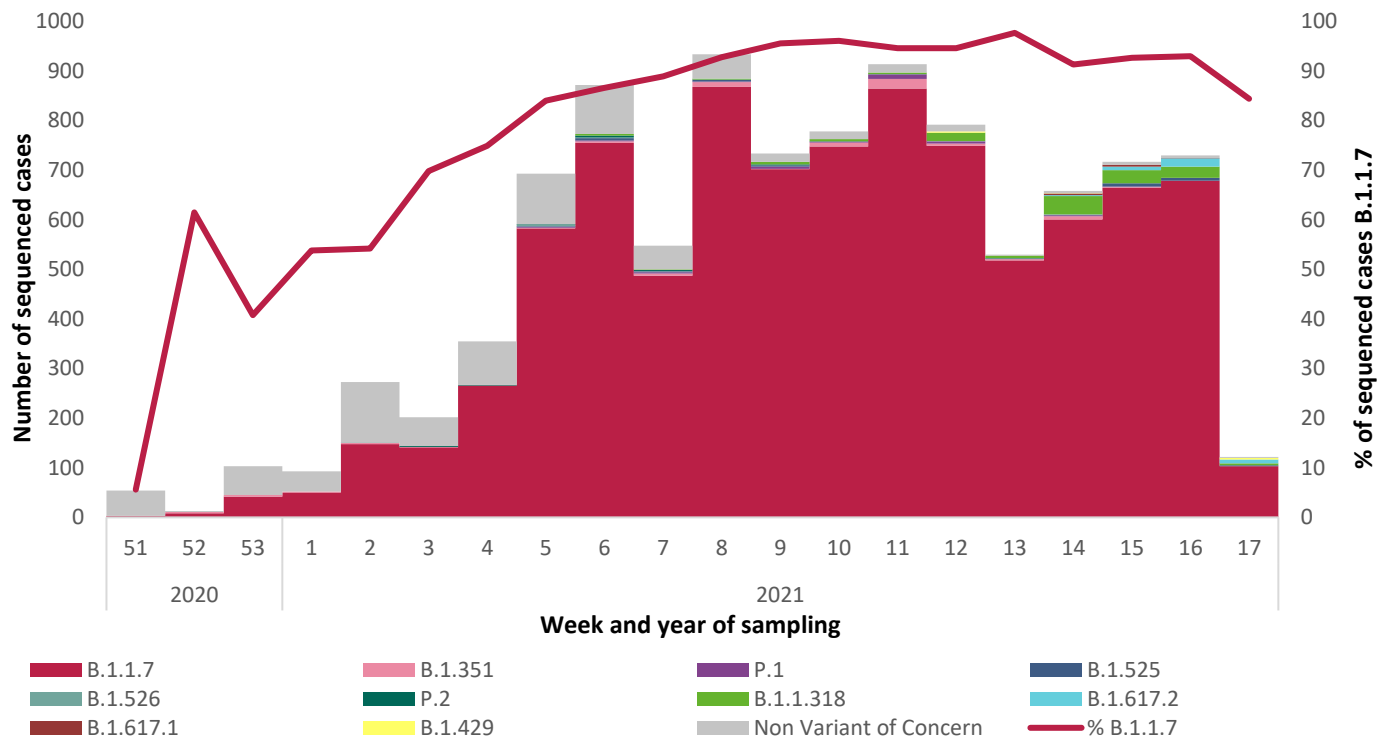
The first case of the B.1.351 (South Africa) VOC identified in Ireland had a specimen date in week 52 2020 (week starting December 19th). A total of 73 COVID-19 cases have been confirmed to have been infected with this variant in Ireland to date. The first case of the P.1 (Brazil) VOC was sampled in week 5 2021 (week starting January 31<sup>st</sup> 2021). To date this variant has been confirmed in 28 cases of COVID-19. The first case of the B.1.617.2 (India) VOC had a specimen date in week 14 2021 (week starting April 4<sup>th</sup> 2021). To date 34 cases of this VOC have been identified in Ireland. Figures 1a and 1b illustrate sequencing results since week 51 2020.

**Table 1. Sequencing results for COVID-19 cases sampled from week 51 (December 13<sup>th</sup> 2020) to week 17 (April 30<sup>th</sup> 2021)**

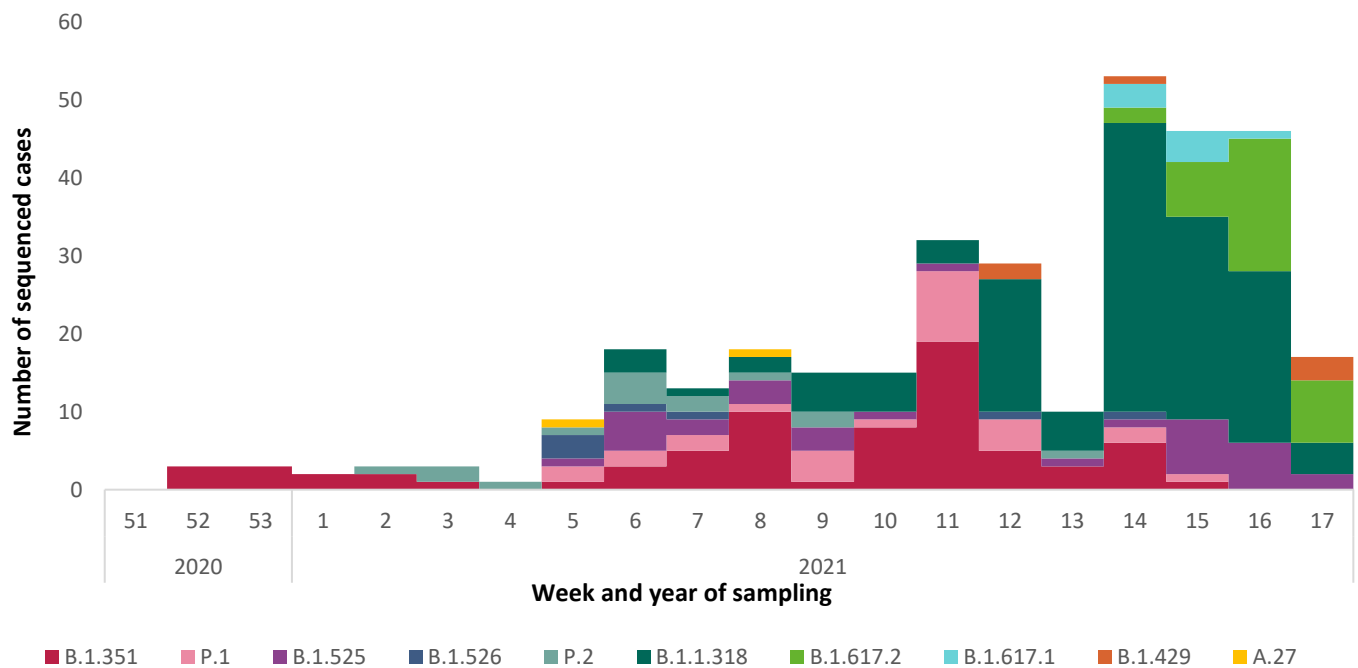
Virus variant	Number of cases	% sequenced cases
<b>Variants of concern</b>		
B.1.351 (South Africa)	73	0.7
P.1 (Brazil)	28	0.3
B.1.1.7 (UK)*	8981	88.8
B.1.617.2 (India)	34	0.3
<b>Variants of interest</b>		
B.1.1.318 (UK)	130	1.3
B.1.525 (Nigeria)	33	0.3
P.2 (Brazil)	15	0.1
B.1.617.1 (India)	8	0.1
B.1.526 (New York)	7	0.1
B.1.429 (California)	6	0.1
A.27 (France)	2	0.0
Other - not variants of concern or interest	800	7.9
<b>Total</b>	<b>10117</b>	<b>100</b>

\*Two cases infected with the B.1.1.7 variant were found to have the additional E484K mutation.

<sup>1</sup> The geographical region in brackets, after the variant name, indicates the location where the variant was first identified



**Figure 1a.** Whole genome sequencing results and percentage of sequenced specimens\* that were found to be the B.1.1.7 (UK) variant of concern, specimen collection dates from week 51 (December 13<sup>th</sup> 2020) to week 17\*\* (April 30<sup>th</sup> 2021)



**Figure 1b.** Whole genome sequencing results excluding B.1.1.7 (UK) and non-variants of concern, specimen collection dates from week 51 (December 13<sup>th</sup> 2020) to week 17\*\* (April 30<sup>th</sup> 2021)

\*The proportion of cases attributed to lineage B.1.1.7 is based on S gene target failure (SGTF) data from the Thermo Fisher TaqPath assay. To date, all those SGTF samples that have undergone WGS have been identified as lineage B.1.1.7.

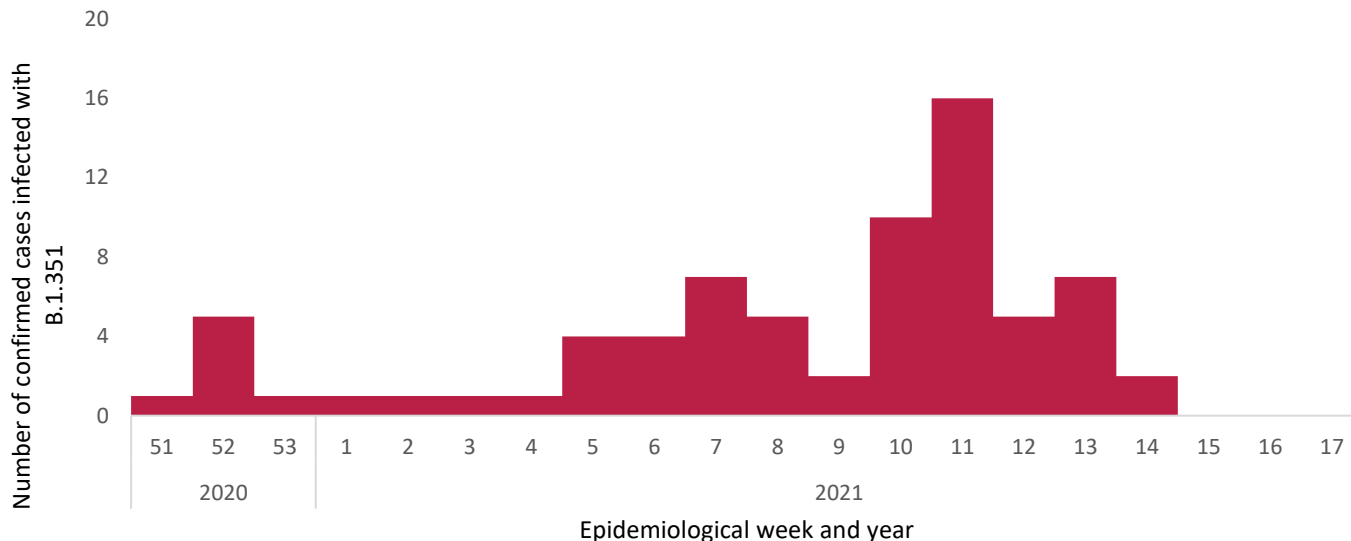
\*\*WGS result for specimens with sampling dates in recent weeks may not yet be available.

Note: Variants identified in <5 cases were not included in figure 1a.

Focus on the emerging variants of concern and variants of interest (excluding variant B.1.1.7)

## Variants of concern

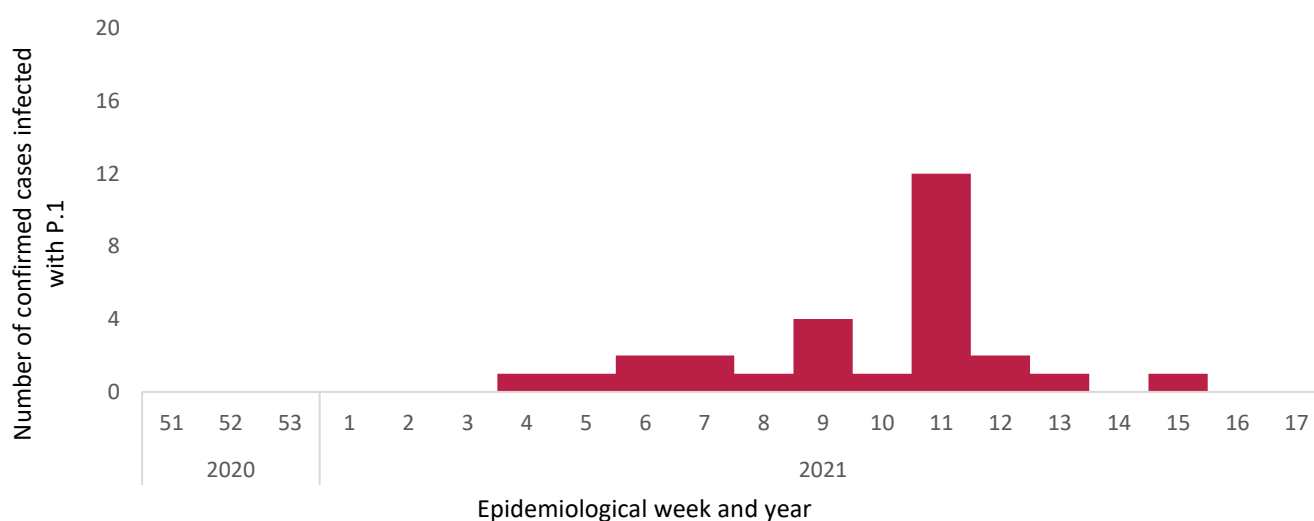
**B.1.351 (South Africa) VOC:** A total of 73 COVID-19 cases have been confirmed to have been infected with the B.1.351 (South Africa) VOC in Ireland to date. These are summarised in table 1, figure 2 and table 2. Table 4 summarises outbreaks or clusters with at least one linked case identified as infected with a VOC or a variant of interest (VOI).



**Figure 2. Number of cases of COVID-19 identified as infected with the B.1.351 (South Africa) VOC by epidemiological date\***

\*Epidemiological date is derived from the earliest of; onset date, date of diagnosis, laboratory specimen collection date, laboratory received date, laboratory reported date or event creation/notification date.

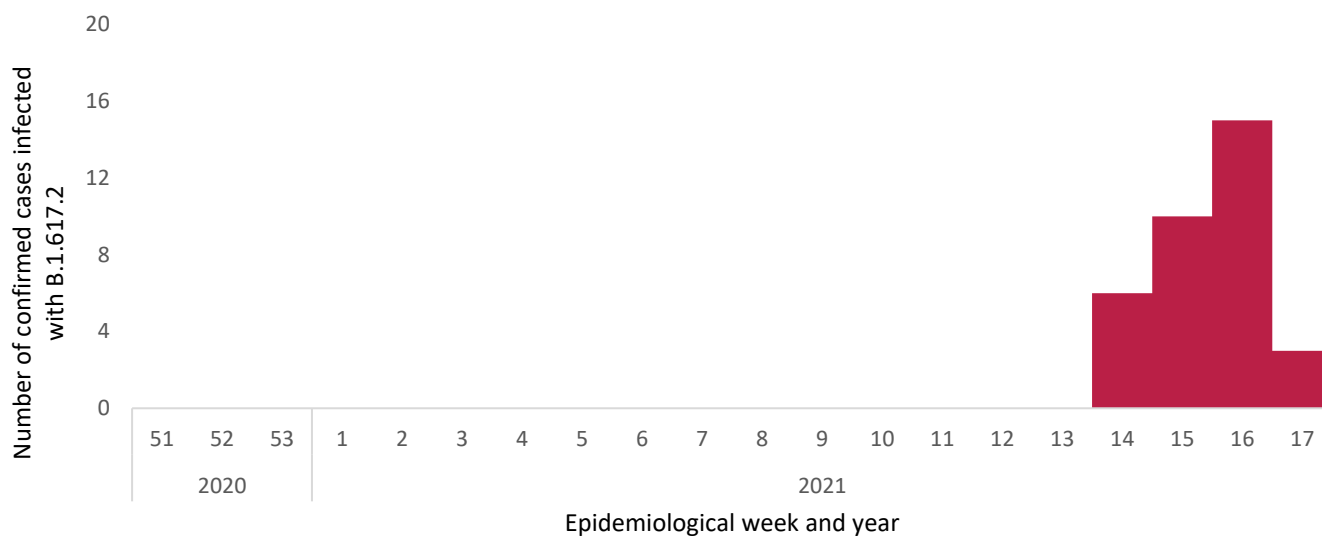
**P.1 (Brazil) VOC:** To date the P.1 (Brazil) has been confirmed in 28 cases of COVID-19. These are summarised in table 1, figure 3 and table 2.



**Figure 3. Number of cases of COVID-19 identified as infected with the P.1 (Brazil) VOC by epidemiological date\***

\*Epidemiological date is derived from the earliest of; onset date, date of diagnosis, laboratory specimen collection date, laboratory received date, laboratory reported date or event creation/notification date.

**B.1.617.2 (India) VOC:** To date the B.1.617.2 (India) VOC has been confirmed in 34 cases of COVID-19 (table 1, figure 4 and table 2).



**Figure 4. Number of cases of COVID-19 identified as infected with B.1.617.2 (India) VOC by epidemiological date\***

\*Epidemiological date is derived from the earliest of; onset date, date of diagnosis, laboratory specimen collection date, laboratory received date, laboratory reported date or event creation/notification date.

**Table 2. Summary of sequenced cases infected with the variants of concern B.1.351, P.1 and B.1.617.2, specimen collection dates from week 51 (December 13<sup>th</sup> 2020) to week 17 (April 30<sup>th</sup> 2021)**

Characteristic	B.1.351 (South Africa)		P.1 (Brazil)		B.1.617.2 (India)	
	Num	%	Num	%	Num	%
<b>Age group</b>						
≤18 yrs	15	20.5	2	7.1	4	11.8
19-34 yrs	16	21.9	13	46.4	23	67.6
35-44 yrs	20	27.4	7	25.0	5	14.7
45-64 yrs	18	24.7	6	21.4	2	5.9
65+ yrs	4	5.5	0	0	0	0
Unknown	0	0	0	0	0	0
<b>Sex</b>						
Male	33	45.2	15	53.6	21	61.8
Female	40	54.8	13	46.4	13	38.2
Unknown	0	0	0	0	0	0
<b>Total</b>	<b>73</b>		<b>28</b>		<b>34</b>	

## Variants of interest

The variants of interest (VOI) identified in Ireland to date are summarised in table 3. Outbreaks involving more than one case and where at least one case was identified as infected with a VOI are summarised in table 4. Seven VOIs have been identified in Ireland to date; P.2 (Brazil), B.1.525 (Nigeria), B.1.526 (New York), B.1.429 (California), B.1.1.318 (UK), B.1.617.1 (India) and A.27 (Mayotte).

**Table 3. Summary of sequenced cases infected with the variants of interest, specimen collection dates from week 51 (December 13<sup>th</sup> 2020) to week 17 (April 30<sup>th</sup> 2021)**

Characteristic	P.2 (Brazil)		B.1.525 (Nigeria)		B.1.526 (New York)		B.1.1.318 (UK)		B.1.617.1 (India)		B.1.429 (California)	
	Num	%	Num	%	Num	%	Num	%	Num	%	Num	%
<b>Age group</b>												
≤18 yrs	1	6.7	10	30.3	6	85.7	39	30.0	1	12.5	2	33.3
19-34 yrs	7	46.7	9	27.3	0	0	28	21.5	2	25.0	2	33
35-44 yrs	5	33.3	10	30.3	0	0	27	20.8	4	50.0	0	0
45-64 yrs	1	6.7	4	12.1	1	14.3	28	21.5	1	12.5	2	33.3
65+ yrs	1	6.7	0	0	0	0	8	6.2	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
<b>Sex</b>												
Male	7	46.7	12	36.4	5	71.4	57	43.8	6	75.0	3	50.0
Female	8	53.3	21	63.6	2	28.6	73	56.2	2	25.0	3	50.0
Unknown	0	0	0	0	0	0	0	0.0	0	0	0	0
<b>Total</b>	<b>15</b>		<b>33</b>		<b>7</b>		<b>130</b>		<b>8</b>		<b>6</b>	

**Note:** 2 cases of A.27 have also been identified

**Table 4. Summary of outbreaks with at least one associated case identified as infected with a variant of concern or a variant of interest, specimen collection dates from week 51 (December 13<sup>th</sup> 2020) to week 17 (April 30<sup>th</sup> 2021)**

Variant	Number of outbreaks	Total number of cases linked to outbreaks on CIDR*	Range of outbreak size
B.1.351 (South Africa)	24	143	2 - 27
P.1 (Brazil)	9	29	2 - 9
B.1.617.2 (India)	8	27	2 - 6
P.2 (Brazil)	3	13	3 - 5
B.1.525 (Nigeria)	6	38	2 - 18
B.1.526 (New York)	2	10	2 - 8
B.1.1.318 (UK)	17	119	2 - 22
B.1.429 (California)	1	6	

\*WGS results are not available for all cases associated with each outbreak

## Acknowledgements

Sincere thanks are extended to all those who participate in the collection and reporting of data used in this report. This includes the National Virus Reference Laboratory staff, notifying clinicians, public health doctors, nurses, surveillance scientists, contact tracers, microbiologists, laboratory staff, staff in ICU units and administration staff.

## Technical notes and links to further virus variant resources

**Table A. Description of possible and confirmed attributes associated with variants of concern and interest**

PANGO lineage	Description
B.1.1.7	Increased transmission, no change in antigenicity, potential increased disease severity
P.1	Increased transmission, reduced neutralisation by antibodies generated in response to vaccination or previous infection with another variant, potential increased disease severity
B.1.351	Increased transmission, reduced neutralisation by antibodies generated in response to vaccination or previous infection with another variant, potential increased disease severity
P.2	Potential increased transmission, potential reduced neutralisation by antibodies generated in response to vaccination or previous infection with another variant
B.1.525	Potential increased transmission, potential reduced neutralisation by antibodies generated in response to vaccination or previous infection with another variant
B.1.526	Potential increased transmission, reduced neutralisation by antibodies generated in response to vaccination or previous infection with another variant
B.1.1.318	Under investigation
B.1.617	Potential increased transmission, potential reduced neutralisation by antibodies generated in response to vaccination or previous infection with another variant – emerging variant, further studies needed
B.1.429	Potential increased transmission, reduced neutralisation by antibodies generated in response to vaccination or previous infection with another variant

### Further information

Dates of epidemiological weeks are available at:

<https://www.hpsc.ie/notifiablediseases/resources/epidemiologicalweeks/>

<https://www.cdc.gov/coronavirus/2019-ncov/cases-updates/variant-surveillance/variant-info.html>

<https://www.cdc.gov/coronavirus/2019-ncov/transmission/variant.html>

<https://www.ecdc.europa.eu/en/publications-data/covid-19-infographic-mutations-current-variants-concern>

<https://www.gov.uk/government/publications/covid-19-variants-genomically-confirmed-case-numbers/variants-distribution-of-cases-data>

<https://www.gov.uk/government/news/confirmed-cases-of-covid-19-variants-identified-in-uk>