Genomic surveillance of SARS-CoV-2 in Belgium

Report of the National Reference Laboratory (UZ Leuven & KU Leuven)

Situation update – 10th of August 2021
(report 2021_40)

Executive summary

36,994 Belgian sequences of SARS-CoV-2 are now publicly available on GISAID.

Among these, 681 sequences of positive SARS-CoV-2 samples collected between 26 July and 8th of August were reported in the context of baseline surveillance,
- B.1.617.2 (*Delta*) represented 95.7% (compared to 94.6% in the last report) ↗
- B.1.1.7 (*Alpha*) represented 2.9% (compared to 3.7% in the last report) ↘

Other variants currently represent less than 2% of the circulating strains.

Other points of attention:

- The NRC performed 4112 tests among departing travellers and 1599 tests among returning travellers during the week of August 2. The positivity rate among returning travellers was 3.7 times higher compared to departing travellers (3.3% against 0.9%). This difference highlights the risk of infection associated with travels and the potential benefits of extending testing criteria among returning travellers. The current restrictive testing indications and financial barriers for testing could contribute to a continuous importation of undetected infections associated with secondary clusters.

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Previous reports can be downloaded using the following link:
https://www.uzleuven.be/nl/laboratoriumgeneeskunde/genomic-surveillance-sars-cov-2-belgium

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1. Monitoring of VOCs in Belgium

While first identified on 6 April 2021 in Belgium, the B.1.617.2 Variant of Concern (Delta) is now the dominant lineage in the country.

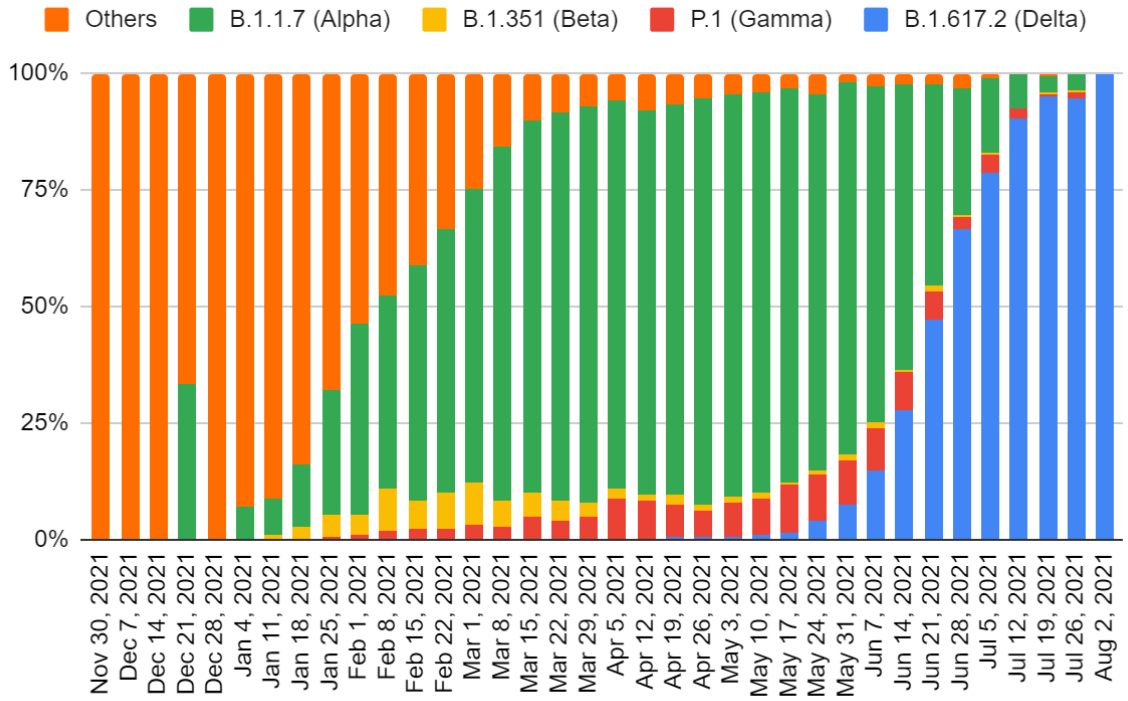

Figure 1: *Weekly evolution of the frequency of variants of concern reported by the baseline surveillance network using a whole genome sequencing (WGS) approach.*

Lineage	Number of Belgian cases reported on GISAID	First reported
B.1.1.7 (Alpha) and Alpha + E484K	20,832	30/11/2020
B.1.351 (Beta) and B.1.351.2/3	1120	20/12/2020
P.1 (Gamma) and P.1.1	1974	29/1/2021
B.1.617.2 (Delta) and AY.1 and AY.3	4509	6/4/2021
B.1.621 B1.621.1	19 12	24/6/2021 22/5/2021
B.1.214.2	763	3/1/2021
A.27	19	11/1/2021
B.1.427 (Epsilon)	1	18/1/2021
B.1.525 (Eta)	84	19/1/2021
P.2 (Zeta)	2	9/2/2021
B.1.526 (Iota)	7	9/2/2021
B.1.1.318	61	22/2/2021
C.36.3	29	23/3/2021
B.1.617.1 (Kappa)	18	25/3/2021
B.1.619 B.1.619.1	124 11	23/1/2021 11/6/2021
B.1.620	39	31/3/2021
C.37 (Lambda)	11	20/6/2021
P.3 (Theta)	3	27/6/2021

Table 1: *List of VOCs (red) and VOIs (orange) identified in Belgium to date and cumulative number of sequences available on GISAID (total of 36,994 sequences).*

2. Testing of travellers

Departing travellers

During the last 6 full weeks (June 28 to August 8), the National Reference Center in Leuven has tested 42,597 departing travellers, among which 273 were tested positive (0.6%). The positivity rate increased from 0.28% during the first week to 0.90% during last week. The Delta variant represented 100% of the positive samples tested during the last week.

Returning travellers

For the last 6 full weeks (June 28 to August 8),

- Among the travellers returning from abroad to the region of Leuven, 2,645 people were tested, among which 92 were tested positive (3.5%). The Delta variant represented 97.6% of the positive samples tested during the last week.

According to data provided by Sciensano, at the Belgian level and during the last 8 weeks, 84.7% of the travellers who tested positive upon return were infected with the variant Delta (when considering the variants Alpha, Beta, Gamma and Delta). During this same period of time, 10.9% of the people tested positive for the variant Delta were returning travellers (Table 2).

	% of returning travelers among persons positive for the considered VOC*	**% of persons positive for the considered VOC among all positive returning travelers****
Alpha	8,7% (90/1029)	14,5% (90/621)
Beta	12,5% (2/16)	0,3% (2/621)
Gamma	1,8% (3/165)	0,5% (3/621)
Delta	11,0% (526/4784)	84,7% (526/621)

Table 2: *(*) Ratio between the number of returning travelers tested positive for a given VOC and the total number of persons tested positive for that VOC; (**) Ratio between the number of returning travelers tested positive for a given VOC and the total number of returning travelers tested positive for one of the four VOCs. N.B.: We only considered positive persons for which the travel history status is known (estimated for the last 8 weeks, i.e. weeks 24-31).*

3. Update on re-infections: which variants do we observe?

Surveillance methodology

A re-infection is defined as a distinct clinical episode of SARS-CoV-2 infection after a first positive SARS-CoV-2 test. Data is provided by Sciensano.

Table 3 highlights for the last two months the number of re-infection cases documented. Of the 4.902 infections reported (only considering cases for which pre-infection status is known), 89 re-infections were observed (1.8% of total).

	% of re-infections among persons positive for the considered VOC*
Alpha	1,5% (12/791)
Beta	0,0% (0/11)
Gamma	0,8 % (1/119)
Delta	1,9% (76/3981)

Table 3: *Percentage of re-infections among persons tested positive for each VOC (only considering positive persons for which the pre-infection status is known) during the last 8 weeks (W24-31).*

4. Update on hospitalisations: which variants do we observe?

Surveillance methodology

For the hospitalised cases, the reported numbers are purely descriptive as the data were derived from COVID-19 patients who were hospitalized and registered by the hospitals in the Clinical Hospital Survey (CHS) coordinated by Sciensano. The CHS is not exhaustive and covers approximately 60% of all hospitalized COVID-19 patients in Belgium. As a consequence, absence of a link between variant data and registration in the CHS does not automatically imply that this patient did not require hospitalization. Approximately 40% of hospitalized COVID-19 patients are not registered in the CHS.

Table 4 highlights for the last two months the number of hospital admissions documented. Of the 77 COVID-19 patients that were hospitalised and for which variant data is available, the large majority (71.4%) was reported to be infected with the variant Delta.

	Share (%) of VOCs represented in hospital admissions*
Alpha	19,5% (15/77)
Beta	0,0% (0/77)
Gamma	3,9% (3/77)
Delta	71,4% (55/77)

Table 4: *Share of VOCs among hospital admissions (only considering approximately 60% of all hospitalised COVID-19 patients in Belgium) during the last 8 weeks (W24-31).*

5. Update on post-vaccination infections: logistics

Surveillance methodology

A breakthrough infection is defined as a positive SARS-CoV-2 test at least 7 days after the full completion of a vaccination scheme. To facilitate the transfer of samples that meet the definition to a sequencing lab, laboratories that submit RT-PCR test results to HealthData, will receive an automatic message from HealthData notifying them that a particular sample meets the criteria of a post-vaccination breakthrough case.

However, since 64.1% of the total Belgian population and even 78.8% of the population older than the age of 18, is reported to be fully vaccinated (Dashboard Sciensano, August 9), an important share of the current infections meets the definition of a breakthrough infection. Therefore, to optimally and efficiently use the large sequencing capacity that is in place in Belgium, we suggest to transfer the sample, at least in case it meets the criteria for sequencing (sufficient high viral load!), to any of the sequencing laboratories (as listed on the website of RIZIV-INAMI), preferentially geographically the closest or for which logistic flows already are in place.

In the upcoming weeks, the indications for WGS will be revised as vaccination coverage will increase even more and post-vaccination breakthrough cases will be highly represented in the strong baseline surveillance that is already in place.