Genomic surveillance of SARS-CoV-2 in Belgium

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

Situation update – 18th of January 2022
(report 2021_64)

Executive summary

80,216 Belgian sequences of SARS-CoV-2 are now publicly available on GISAID; compared to last week's report, 1,812 sequences have been added.

2,317 sequences of positive SARS-CoV-2 samples collected in the context of baseline surveillance between 03/01 and 16/1/2022 have at this stage been analyzed. For those samples, Omicron (BA.1 and BA.2) represented 89.1% (88.6% and 1.1% respectively) of the strains analyzed. Furthermore, 10.0% of samples were characterized as Delta.

The share of Omicron (BA.1 and BA.2) among circulating strains reached **93.7%** of the circulating strains sampled after 10/1/2022. This proportion is expected to continue to increase as a result of the decreasing share of Delta and the expected increase of BA.2, as observed in other countries.

Authors (National Reference Laboratory – UZ Leuven and KU Leuven):
Lize Cuypers, Guy Baele, Piet Maes, Simon Dellicour, Louis Nevejan, Tom Wenseleers, Bram Slechten, Johan Van Weyenbergh, Els Keyaerts, Joren Raymenants, Barney Potter, Sunita Janssenswillen, Elke Wollants, Marc Van Ranst, Emmanuel André.

Contributed to this report: *Louis Nevejan*

With the collaboration of the laboratories of UCL, ULB, UMons, UNamur, ULiège, UGent, UZA/UAntwerpen, Jessa ZH, AZ Delta, AZ Klina, IPG, AZ St Lucas Gent, OLVZ Aalst, Briant network, ZNA, AZ St Jan Brugge, UZ Brussel, LHUB-ULB, and UZ Leuven/KU Leuven; and Sciensano HealthData.

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 the 24th of November 2021 in Belgium, the B.1.1.529 Variant of Concern (Omicron) has become the dominant lineage in Belgium one month after the first case was detected. This viral population replacement has happened at a very rapid pace (Figure 1). This replacement has also been observed among people hospitalized with COVID-19, as the BA.1 sublineage of Omicron is now responsible for the vast majority of infections among hospitalized patients (Figure 2). Currently, through data from Sciensano, we are aware of 107 hospitalized patients with a BA.1 infection, of which only 2 persons were fully vaccinated.

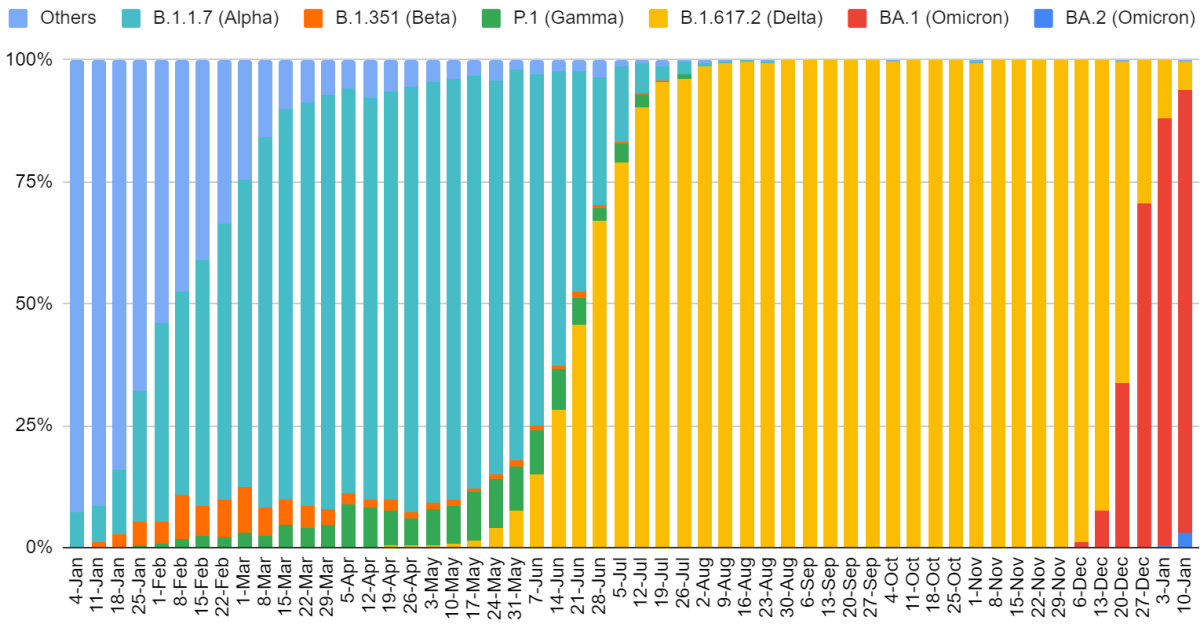

Figure 1: *Weekly evolution of the frequency of variants of concern reported by the* ***baseline surveillance*** *network using a whole genome sequencing (WGS) approach.*

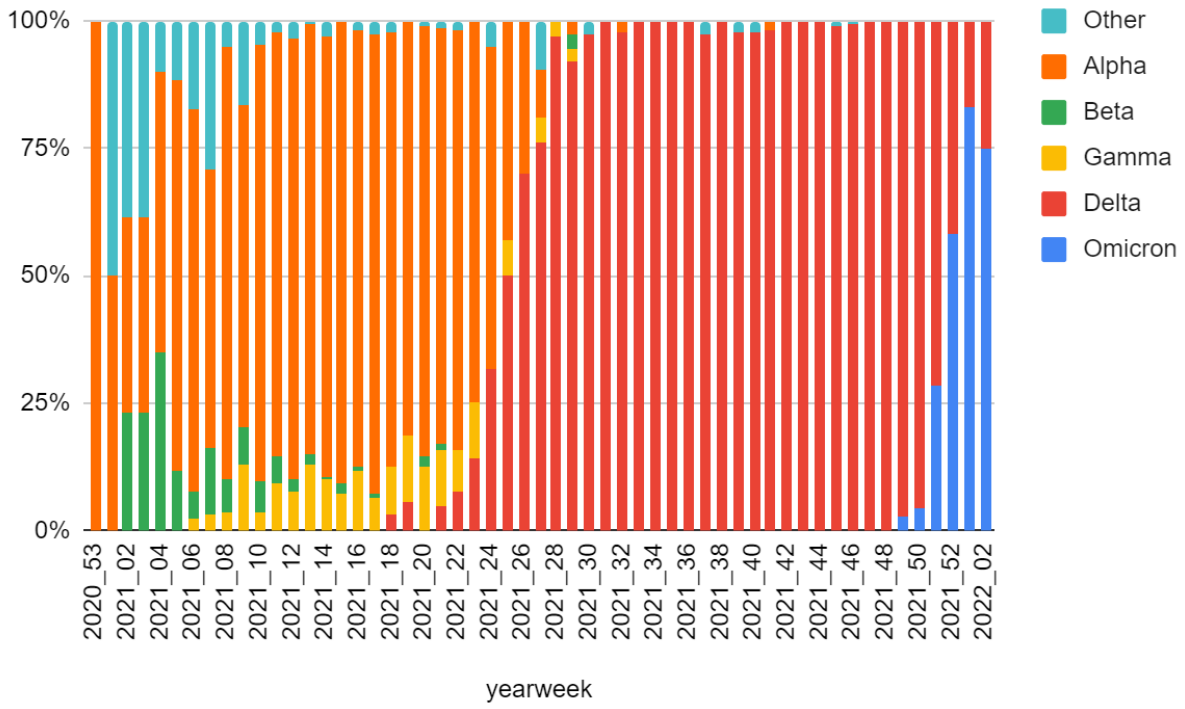

Figure 2: *Weekly evolution of the frequency of variants of concern reported among* ***hospitalized*** *patients using a whole genome sequencing (WGS) approach (data source: Sciensano - subset of sentinel hospitals; data of the last weeks may still evolve in the future as a consequence of delayed reporting).*

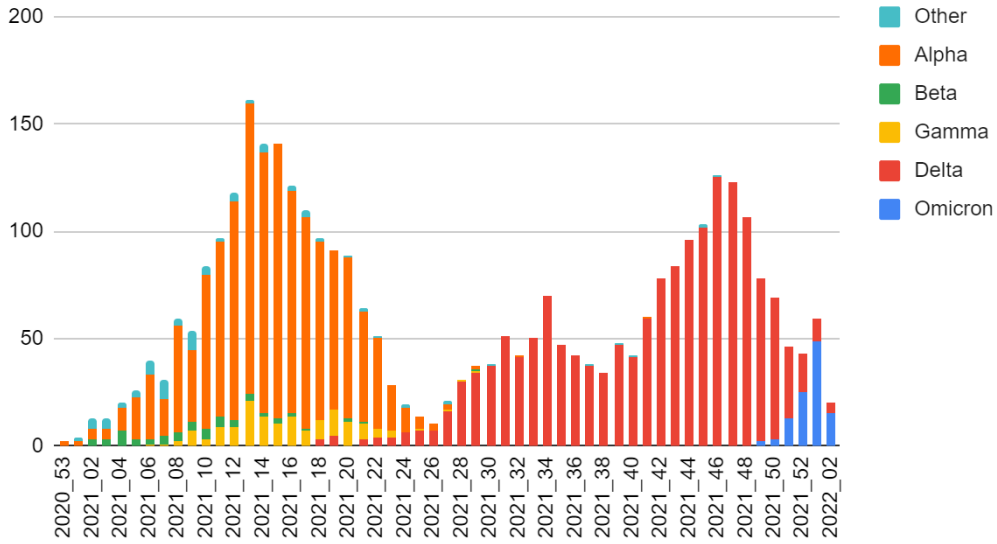

Figure 3: *Weekly evolution of the number of variants of concern reported among* ***hospitalized*** *patients using a whole genome sequencing (WGS) approach (data source: Sciensano - subset of sentinel hospitals; data of the last weeks may still evolve in the future as a consequence of delayed reporting).*

2. Disease severity associated with Omicron infections

We looked at the severity of disease among 143 patients admitted with a new COVID-19 infection in UZ Leuven University Hospitals between 13 December 2021 and 16 January 2022. A genotyping result was available at this stage for 95 patients.

Omicron represented 73% of COVID infections among patients presenting an asymptomatic infection or mild to moderate disease (48/66). The proportion of Omicron tended to increase during the second half of the period evaluated, probably as a consequence of the increasing circulation of the variant in the community.

During the same period, Omicron was identified among 20.7% (6/29) of the patients classified with severe or critical disease or who have evolved towards a fatal outcome. The proportion of Omicron tended to double during the second half of the period evaluated, probably as a consequence of the increasing circulation of the virus in the community.

These preliminary data are in line with a milder severity estimated for this new variant compared to Delta (Figure 4). These observations should be confirmed by an analysis involving data coming from a larger set of hospitals, which would require a systematic comparison of hospital and genomic data. Further, these proportions are expected to evolve in the coming days and may differ in regions of the country where vaccination coverage is lower. They should therefore be interpreted with caution at this stage. These indicators will continue to be closely monitored in the coming days and weeks.

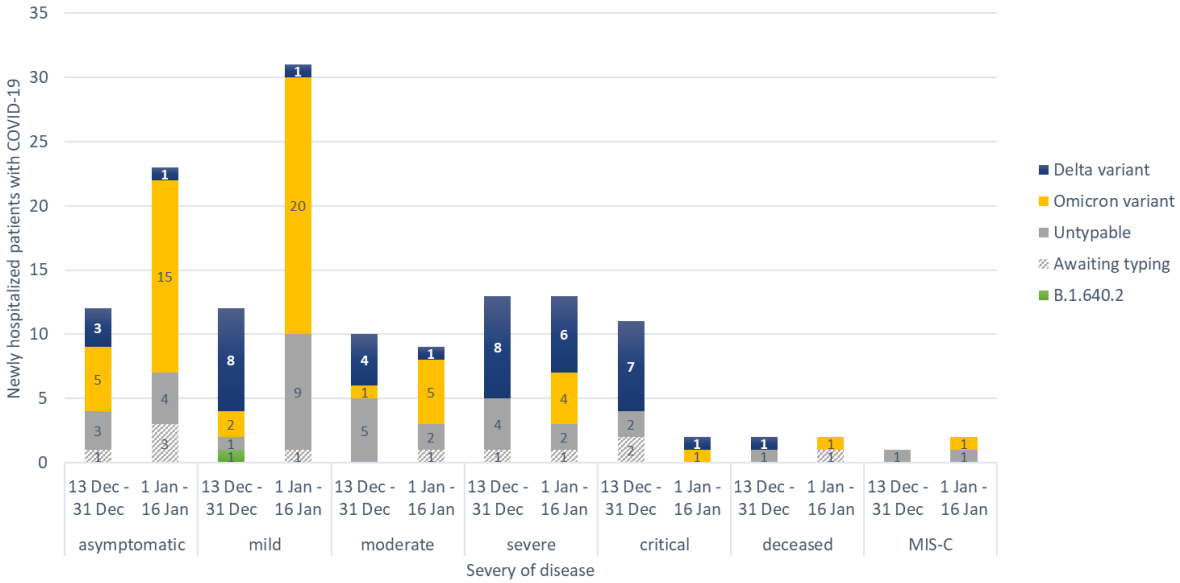

Figure 4: *Severity of disease among 143 patients admitted with COVID-19 to UZ Leuven University Hospitals (13 December 2021 to 16 January 2022)*

3. Evaluation of the testing strategy and the positivity rate

The overall positivity rate has reached very high (unprecedented) levels since the recent surge of Omicron infections in Belgium. Such a high positivity rate signals an inadequate testing strategy or testing capacity.

The evolution of the positivity rate should be interpreted with caution as the testing indications for testing have changed recently. We illustrate this statement with the following evolution observed at the Federal Platform laboratory of UZ Leuven:

- Testing of **high risk contacts**
  - Number of tests **decreased by 3.6x** between Week 52/2021 and Week 2/2022
  - Represented 50% of all tests performed during Week 52 of 2021 (positivity rate of 19%)
  - Represented 17% of all tests performed during Week 2 of 2022 (positivity rate of **33%**)

- Testing of people reporting a **positive antigen test**
  - Number of tests **increased by 2.9x** between Week 52/2021 and Week 2/2022
  - Represented 2.7% of all tests performed during Week 52 of 2021 (positivity rate of 92%)
  - Represented 7.6% of all tests performed during Week 2 of 2022 (positivity rate of **93%**)

- Testing of people referred for **symptoms**
  - Number of tests **increased by 2.9x** between Week 52/2021 and Week 2/2022
  - Represented 5% of all tests performed during Week 52 of 2021 (positivity rate of 40%)
  - Represented 15% of all tests performed during Week 52 of 2021 (positivity rate of **52%**)

Considering the very high positivity rate, we recommend to stop confirming with a PCR test the positive rapid antigen tests, and to ask patients to self-report their test result, similarly to what has now been suggested in the United Kingdom (source).

4. Sampling site in the context of Omicron

As previously reported, there have been early anecdotal reports suggesting that oro-pharyngeal swabbing could be superior to naso-pharyngeal swabbing in the context of Omicron.

The National Reference Laboratory has compared the PCR result and viral load (Cq) among 264 patients sampled twice. 80 patients tested positive, among which 88.8% (71) tested positive on both swabs, 7.5% (6) tested positive only on the oropharyngeal swab and 3.8% (3) patients tested positive only on the nasopharyngeal swab

Based on these results, we recommend swabbing both sites in the context of medically-supervised PCR tests. These observations should also be taken into account by the manufacturers of rapid antigen tests, and these companies should be asked to demonstrate the non-inferiority of the swabbing method recommended in their insert compared to double-site swabbing.