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Emerging Viral Diseases

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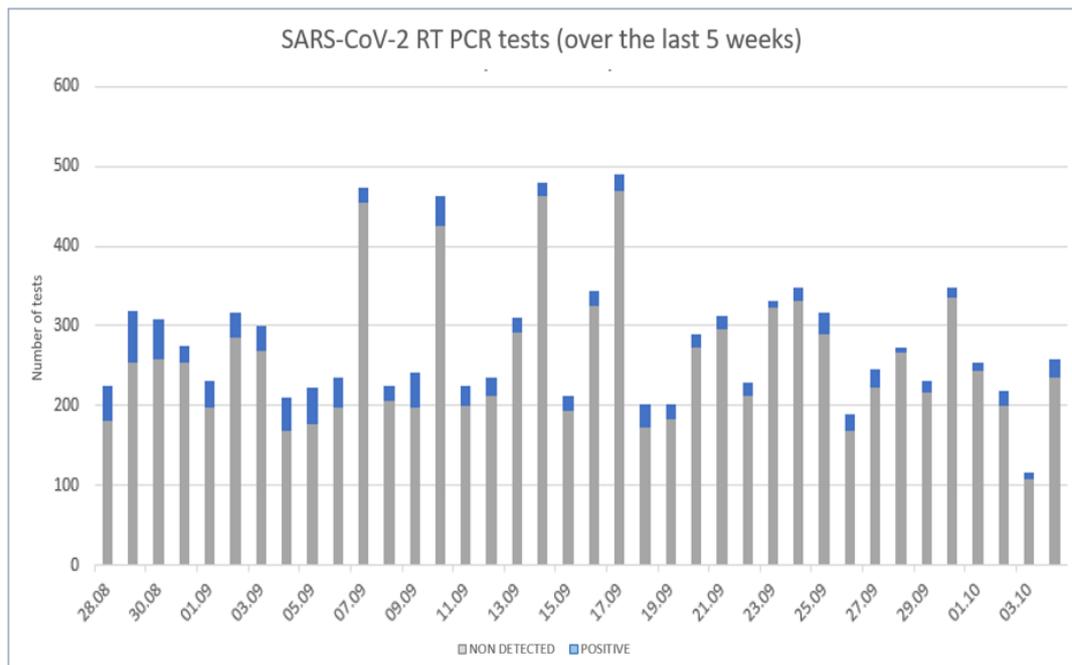
Diagnostic Department

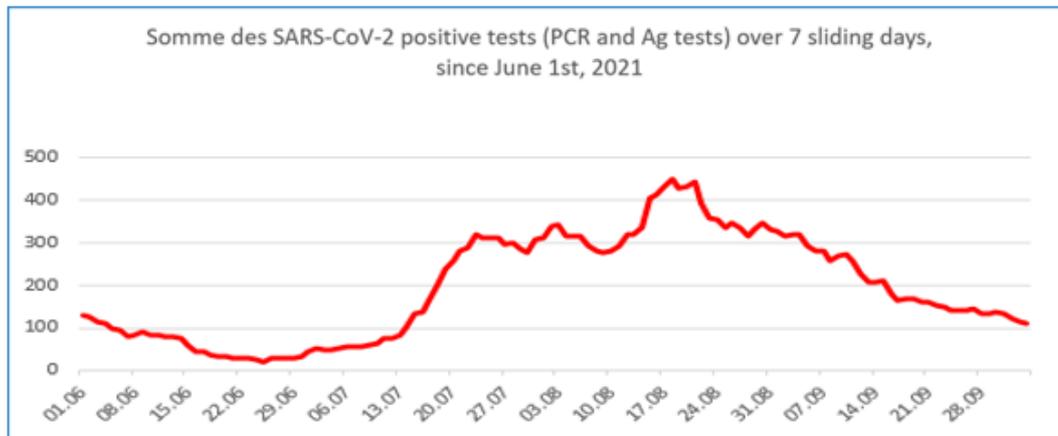
SARS-CoV-2 genomic and variants surveillance in Geneva: Bi-weekly update

The laboratory of virology of the Geneva University Hospitals as a sentinel site for the Geneva area

The number of tests (PCR and antigen tests) performed at the laboratory of virology of the Geneva University Hospitals represents a quarter of the total number of tests performed in the canton of Geneva during weeks 38 and 39 (9189/39749). Roughly 27% of the positive specimens collected in the Geneva area were processed at HUG (252/932) during weeks 38 and 39. Tests performed at our outpatient testing center (located in the Hospital but open to anyone from the community) are either PCR-based or antigen-based. Most symptomatic patients are screened by RT-PCR and all positive antigen-based tests are confirmed by PCR, allowing screening for variants.

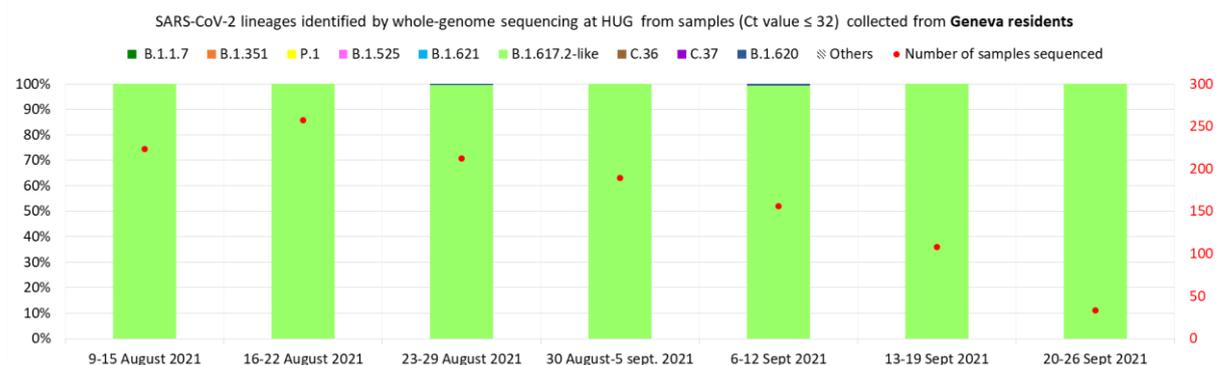
WGS is carried out in close collaboration with the Health 2030 Genome Center in Geneva and Philippe Le Mercier from the Swiss Institute of Bioinformatics. Since March 1, 2021, the sequencing has been done within the Swiss national SARS-CoV-2 genomic and variants surveillance program. All specimens with a Ct value ≤ 32 are sequenced. In some instances, sequencing can be done on specimens sent by other laboratories in Switzerland. Phylogenetic analysis data are produced by Nextstrain, in collaboration with Richard Neher's group at the University of Basel. The number of positive tests in the canton and the total number of tests done during the surveilled week come from the website of the Direction Générale de la Santé in Geneva (available at <https://infocovid.smc.unige.ch/>), accessed September 6, at 10:00 am.





Both the absolute number of positive SARS-CoV-2 tests and the percentage of positive results have been decreasing over the last 2 weeks.

SARS-CoV-2 lineages identified by whole-genome sequencing at HUG from samples (Ct value ≤ 32) collected from Geneva residents



Results of WGS of 1337 sequences submitted to GISAID between July 26 and September 12, 2021.

Since mid-July, almost exclusively Delta (or one of its sub-lineages) has been retrieved from sequences collected from Geneva residents.

Delta's sub-lineages are not detailed. There is no evidence that any clade within Delta is of greater concern. Similarly, no special issues regarding transmissibility, immune escape, clinical severity or diagnostic failure between Delta and its various sub-lineages have been identified yet.

Two B.1.620 sequences have been identified, two weeks apart. Few is currently known regarding the phenotypic characteristics of this VOI, harboring the Spike mutations S477N, E484K and P681H.

No Mu sequence has been detected since week 27.

Post-vaccination infections in the canton of Geneva

Post-vaccination infection is defined here as a positive SARS-CoV-2 test occurring more than 14 days after the second vaccine dose. This surveillance is done in collaboration with the Direction Générale de la Santé (DGS) of Geneva. Data are collected by the DGS of Geneva during contact tracing calls after having obtained informed consent from SARS-CoV-2 positive patients. The list of patients with post-vaccination infections is sent weekly to HUG virology laboratory, which makes an effort to retrieve initial diagnostic samples in order to ensure sequencing, as recommended by FOPH.

Among the 413 and 309 new COVID-19 cases reported by the Direction Générale de la Santé in Geneva respectively over week 38 and 39, respectively, 20% and 17% have been identified as post-vaccination infections.

A total of 135 post-vaccination infections have been identified in the Canton of Geneva among 722 cases during the last two weeks of September, 2021. Over the same time period, only 11 fully vaccinated patients have been hospitalized at HUG**. Among them, 45% had mild disease and were hospitalized because of comorbidities/concomitant disease, but not severe COVID-19.

**Available data from the Geneva University Hospitals COVID-19 surveillance, available in detail in a separate report.

Conclusions

- Both the positivity rate and the absolute number of positive SARS-CoV-2 tests have been decreasing over the last 3 weeks. Of note, post-vaccination infections represented around 19% of SARS-CoV-2 infections during weeks 38 and 39 in the Geneva area.
- WGS confirmed that almost exclusively the Delta variant (B.1.617.2 and its sub-lineages) has been identified since the end of July, 2021
- Two B.1.620 VOI sequences have recently been identified, one during week 34, the other during week 36.
- No Mu VOI sequences have been retrieved in the Geneva area since week 27.



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