

Federal Office of Public Health FOPH
Public Health Directorate Communicable
Diseases Division
Schwarzenburgstrasse 157
3003 Berne
Switzerland

Service du Médecin Cantonal. Genève

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Geneva Centre for
Emerging Viral Diseases

Division of Infectious
Diseases

Department of Medicine

Laboratory of virology

Division of Laboratory
Medicine

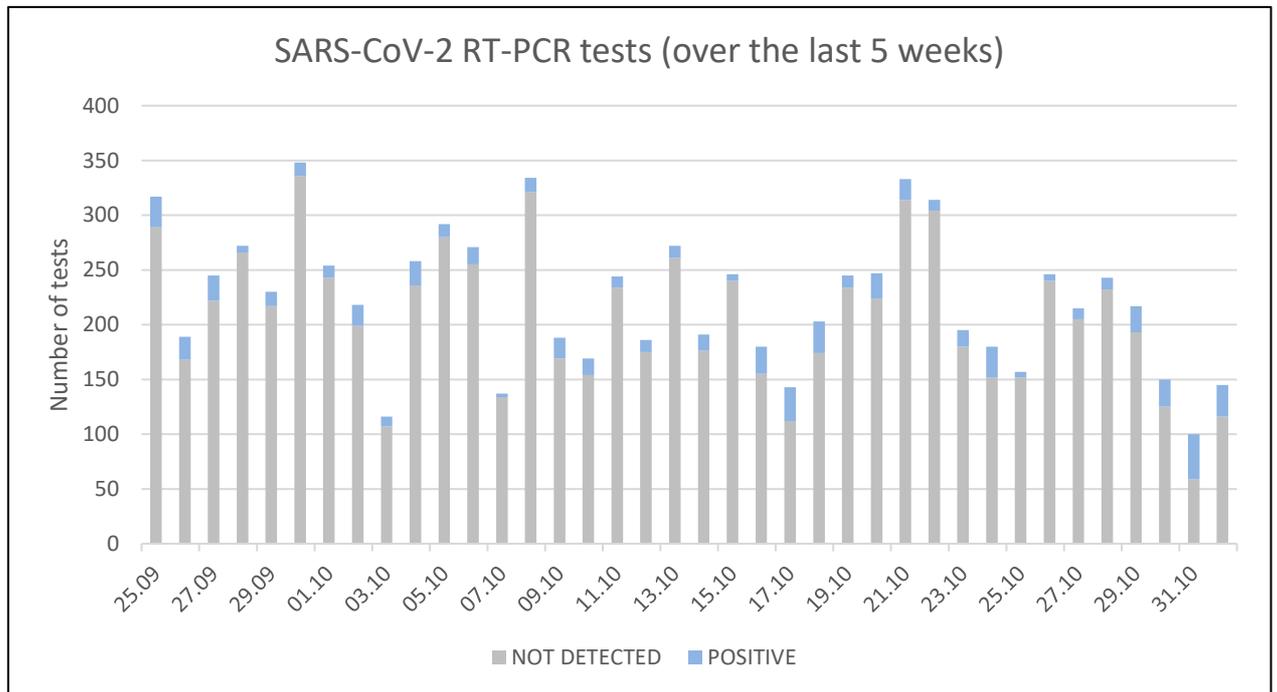
Diagnostic Department

SARS-CoV-2 genomic and variants surveillance in Geneva: weekly update Focus on AY.4.2 (update)

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

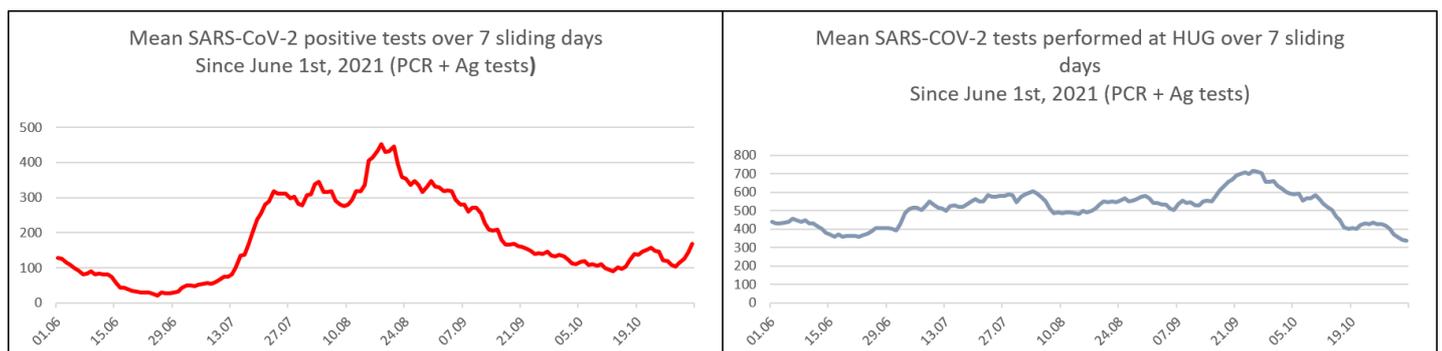
The number of tests (PCR and antigen tests) performed at the laboratory of virology of the Geneva University Hospitals represents around 17% of the total number of tests performed in the canton of Geneva during week 43 (2382/14117). Roughly 28% of the positive specimens collected in the Geneva area were processed at HUG (144/517) during week 43. 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 November 2, at 10:00 am.

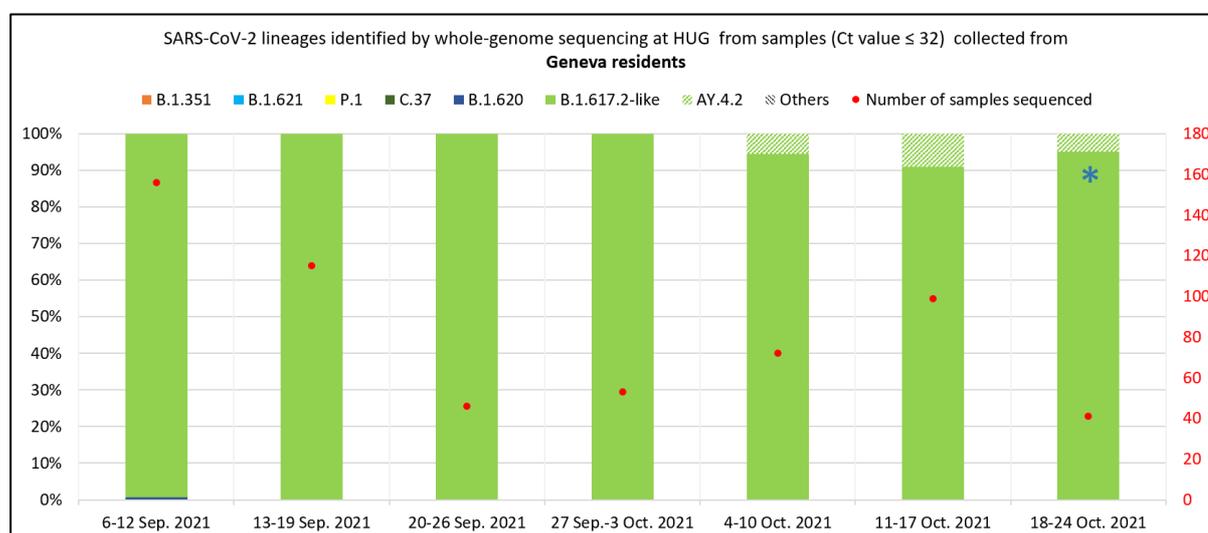


During week 43, the absolute number of positive SARS-CoV-2 tests increased. This was associated with a decrease in the number of tests performed at our institution, and thus with a substantial increase in the positivity rate, up to 20% on Sunday, October 31, 2021.

Similarly, at our outpatient symptomatic testing center (sector E'), the mean positivity rate increased during week 43, (mean positivity rate over 7 sliding days at 16%), peaking at 41% on Sunday, October 31, 2021.



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



Results of WGS of 582 sequences submitted to GISAID between September 6 and October 21, 2021.

Note: due to a technical problem encountered during the WGS process, a total of 76 SARS-CoV-2 positive samples collected between September 23 and 28 could not be sequenced. This partly explains the drop in the number of sequences available during this period.

* Partial data for week 42 (October 18 to October 24), as sequencing is still ongoing. Numbers will be updated in the next report.

Exclusively B.1.617.2 (Delta, or one of its sub-lineages) sequences have been identified in samples collected from Geneva residents since mid-September.

Four new sequences of the Delta sub-lineage AY.4.2 (a Variant under Investigation/Variant under Monitoring) have been identified among other sub-lineages in the last sequencing batch. For more information on this variant, please refer to the report of last week, posted on October 29, 2021. In addition, preliminary observational data from the UK suggest no significant reduction in vaccine effectiveness against AY.4.2 compared to the original B.1.617.2 Delta variant.

In total, the Delta sub-lineage AY.4.2 represented 5.5% (4/72) and 9% (9/99) of the sequences collected during weeks 40 and 41 (from October 4 to October 17). Among the 41 sequences available for week 42, only 2 (4.5%) are AY.4.2. Sequencing is still ongoing for the end of week 42 (October 18 to October 24).

Similarly to what has been observed last week, according to the cantonal physician team, AY.4.2 cases identified in Geneva are not all part of the same cluster, showing **community transmission of this sub-lineage in the Geneva area.**

None of them are currently or have been hospitalized because of COVID-19 at Geneva University Hospitals since the beginning of October. Of note, no further data is available regarding the health status of those individuals or their risk factors for severe disease.

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 526 new COVID-19 cases reported by the Direction Générale de la Santé in Geneva over week 42, 149 (28%) have been identified as post-vaccination infections.

As the number of vaccinated people increases, this number is expected to grow in an endemic stage.

More than 50% (9/16) of the people with a documented infection with AY.4.2 since July 2021 were vaccinated according to the Cantonal Physician team. This number is however too low draw any conclusion regarding vaccine escape. Of note, preliminary observational data from the UK suggest no significant reduction in vaccine effectiveness against AY.4.2 than against the original B.1.617.2 Delta variant. More information will be included in up-coming reports regarding any potential increased risk associated with Delta sub-lineages.

Conclusions

- Both the absolute number of positive tests and the mean positivity rate re-increased during the last week, peaking at 41% at our outpatient symptomatic testing center.
- The majority of new SARS-CoV-2 cases still arose in unvaccinated individuals, with Delta or one of its sub-lineage being the only identified variant in the Geneva area since mid-September.
- Four new sequences of the “variant under monitoring/investigation” Delta sub-lineage AY.4.2 have been retrieved in the last sequencing batch. In total, the Delta sub-lineage AY.4.2 represented 5.5% (4/72) and 9% (9/99) of the sequences collected during weeks 40 and 41 (from October 4 to October 17). Among the 41 sequences available for week 42, only 2 (4.5%) are AY.4.2. The evolution of the circulation of this variant will be closely monitored and more information will follow.
- There is community transmission of the Delta sub-lineage AY.4.2 in the Geneva area, as cases are not linked together according to the Cantonal Physician team.
- Some cases were identified as post-vaccination infections. Of note, because of the low numbers, no conclusion can be drawn at this time.
- More information on AY.4.2 is available in the last report, posted on October 29, 2021. Preliminary data from England suggest no significant reduction in vaccine effectiveness against AY.4.2 compared to the original B.1.617.2 Delta variant.



Laurent Kaiser



Samuel Cordey



Manuel Schibler



Pauline Vetter