KU LEUVEN

DEPARTMENT OF MICROBIOLOGY, IMMUNOLOGY AND TRANSPLANTATION

UZ LEUVEN | LABORATORIUMGENEESKUNDE

Genomic surveillance report

Update for Belgium, 05/04/2022

Lize Cuypers, Guy Baele, Simon Dellicour, Piet Maes, Emmanuel André

See page 2 for full list of authors and participating laboratories

April 2022

Content

This rapport was written in collaboration with:

Louis Nevejan, Tom Wenseleers, Bram Slechten, Johan Van Weyenbergh, Els Keyaerts, Joren Raymenants, Barney Potter, Sunita Janssenswillen, Elke Wollants, Marc Van Ranst and the Belgian Sequencing Consortium.

Corresponding author: lize.cuypers@uzleuven.be (National Reference Center for Coronaviruses, UZ Leuven)

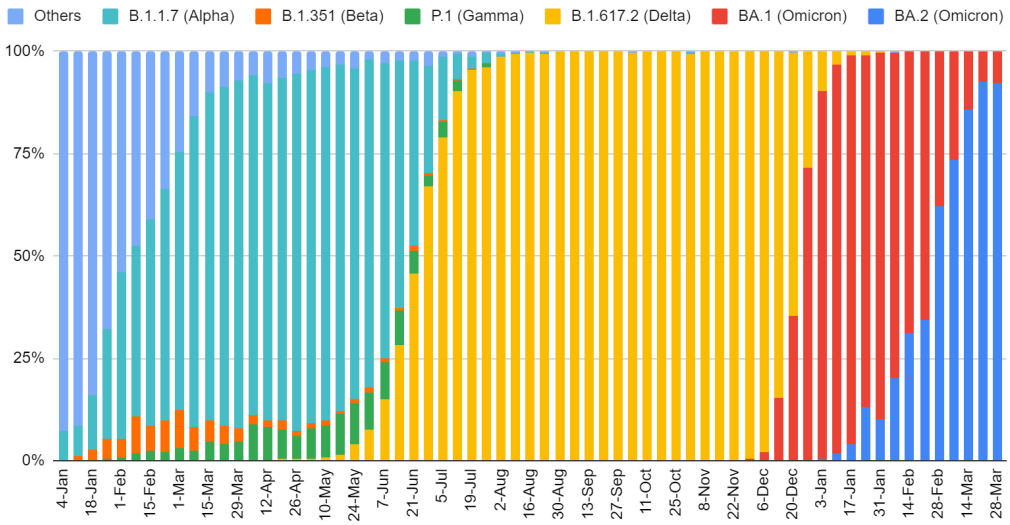
Belgian Sequencing Consortium:

Cliniques Universitaires Saint-Luc, Centre Hospitalier CHU UCL Namur, 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, UZ Leuven/KU Leuven and Sciensano HealthData.

Previous reports are available online using this link.

Executive summary

The share of BA.2 has reached more than 95% of new infections diagnosed in Belgium, as suggested by the share of SGTF among positive qPCR results (data federal platform labs), and supported by sequencing-based surveillance (BA.2 was responsible for 92.2% (↗) of the infections diagnosed between 21/3/2022 and 3/4/2022 - 769 sequences analyzed at this stage).
During this same period, BA.1 and BA.1.1 jointly represented 7.7% (↘) of the circulating strains. No Delta case was reported during the last two weeks.



Exceptionally no report will be written next week (Tuesday 12/04) due to Easter holidays. Many thanks for understanding. A new report will be published on Tuesday 19/04.

1 Epidemiological context and indicators related to diagnostic activities

The share of positive samples (Cq <25) presenting an S gene target failure (SGTF) reflects the share of BA.1 and BA.1.1 samples circulating in the country. Samples which are negative for this marker can be Delta or BA.2, although from genomic baseline surveillance we know that Delta is only sporadically detected for more than two months (one genome for the last month through the baseline surveillance initiative). Samples without SGTF (most likely to be BA.2 infections) have taken over, now representing up to 97% of positive samples diagnosed (Figure 1).

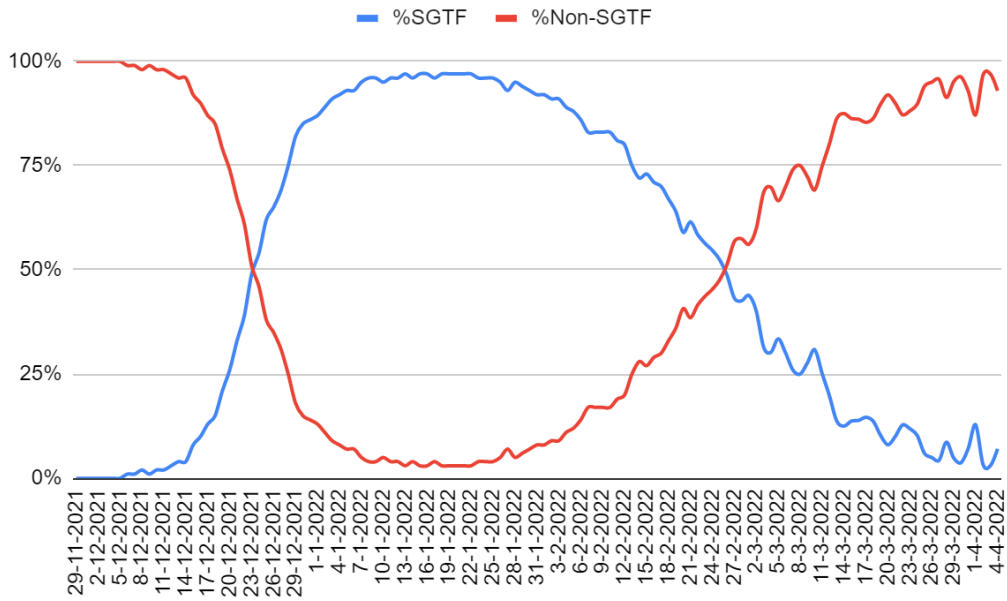


Figure 1: *S gene target failure (SGTF; blue: BA.1 & BA.1.1) and others (red: currently considered predominantly BA.2) among positive samples reported by the federal platform laboratories.*

As shown in Figure 2, the increasing share of non-SGTF positive PCR results was first associated with a steep decrease in SGTF samples (BA.1, BA.1.1, and BA.3). More recently, and despite de-intensification of PCR testing at national level, we observe a rise in the number of non-SGTF infections (BA.2). The recent increase in infections and hospital admissions correspond, in terms of timing, to this viral population replacement as well as to the recent release of general disease control measures. Moreover, a recent change in testing indications has led to a delayed and partial reflection of this surge of infections.

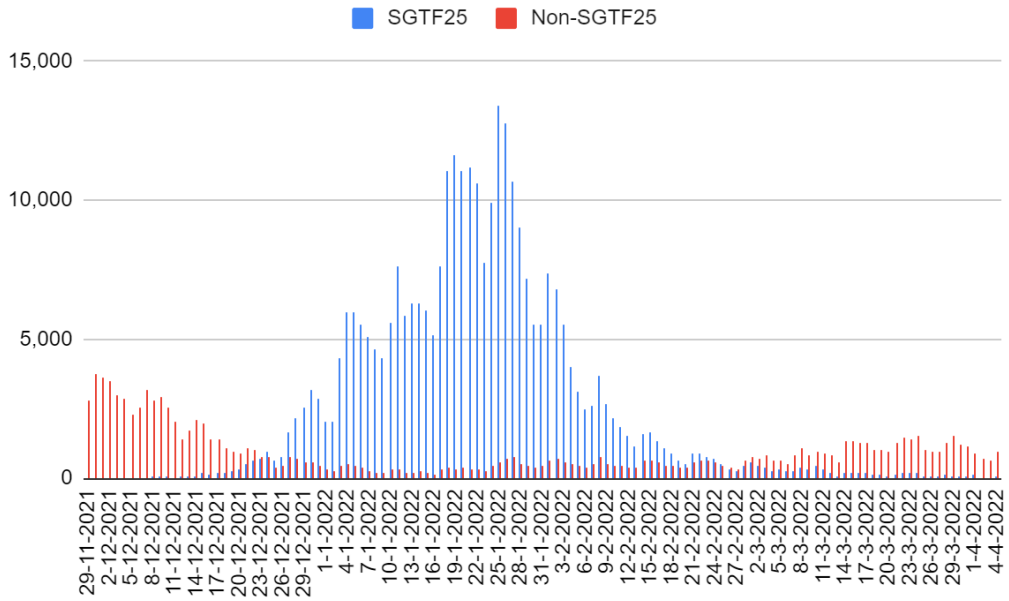


Figure 2: *Number of samples tested positive in the federal platform laboratories with S gene target failure (SGTF; blue) and without SGTF (non-SGTF; red). The absolute numbers are less representative of the actual epidemiology since a couple of weeks, as a result of a change in testing indications and a lower testing intensity.*

2 Monitoring of Variants of Concern in Belgium

During the last two weeks of baseline surveillance - 21/3/2022 and 3/4/2022 - (769 sequences collected at this stage), BA.1 and BA.1.1 jointly represented 7.7% (↘) of the circulating strains, while BA.2 represented 92.2% (↗) of the strains. No Delta sequence was reported for the last two weeks (Figure 3).

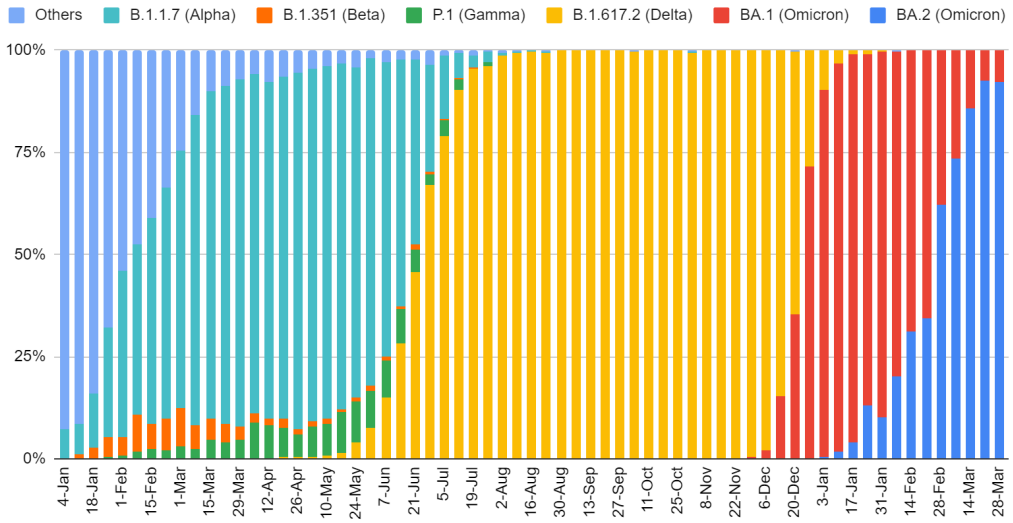


Figure 3: *Share of variants of concern per week in Belgium*

3 Reports on large outbreak(s) in Mainland China

The past few days saw various news articles on peaks in the number of SARS-CoV-2 confirmed infections in Mainland China, with China reporting a total of 13,146 infections on Sunday April 3rd, effectively the highest since the peak of the first wave in China over two years ago. These infections are attributed to the Omicron BA.2 variant, according to news reports. Despite these (absolute) numbers not being exceptionally high compared to those reported in other countries (Figure 4), they are highly relevant as they show that China's remarkably successful "zero-COVID" system - among the strictest approaches to tackling the pandemic anywhere in the world - is now struggling to cope. In March, President Xi Jinping announced that China would stick to a 'dynamic zero-COVID strategy', which aims to stamp out infections and prevent the virus from spreading through communities. This policy now stands in contrast to a global trend towards easing restrictions and attempting to co-exist with the circulating virus. The government seems determined to maintain this strategy as shown by the firm lockdown measures taken: tens of millions of people in China, including the largest city and financial center Shanghai, have been put under lockdown (but also Xi'an and Shenzhen, as well as the entire northern province of Jilin). Mass testing is being carried out, while makeshift hospitals and quarantine centers have been set up across the country.

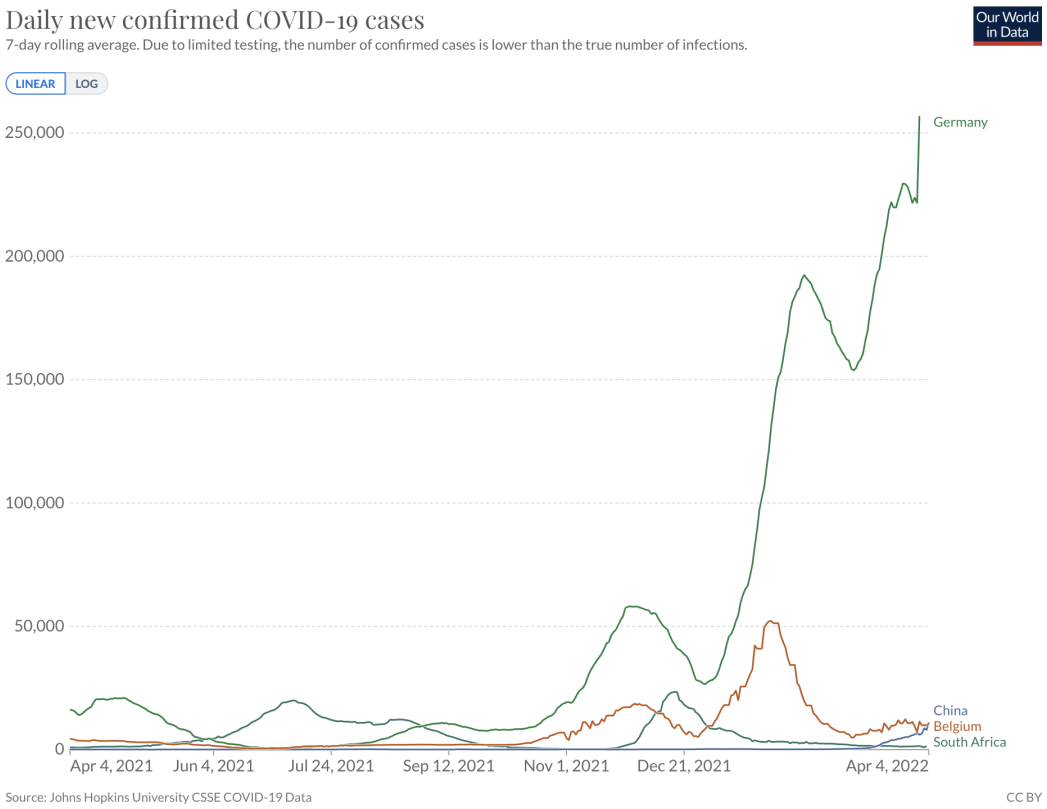


Figure 4: *Daily new confirmed COVID-19 cases (absolute numbers) for selected countries. Source: Our World in Data.*

The surge in COVID cases has prompted officials to impose what is called a staggered shutdown: first the eastern and then the western halves of Shanghai were to close businesses, suspend public transportation and confine residents in their buildings, so that mass testing could be carried out. These drastic measures are being taken for good reason. China's efforts to eliminate infections with lockdowns, travel restrictions, mass testing and surveillance had largely kept SARS-CoV-2 out since it first emerged two years ago, thereby also keeping fatality rates (and absolute number of deaths) low (Figure 5). But if Omicron runs out of control, the effects could be devastating - and similar to the current outbreak in Hong Kong, where deaths have surged and hospitals are overwhelmed. Estimations suggest that more than one million people in mainland China could die during an Omicron wave, partly because of lower levels of protection in older people as only 50% of people over the age of 80 are fully vaccinated, according to the Chinese government.

Recent experience in Hong Kong has highlighted the danger of low vaccination rates in older people. In early March, there were close to 900 cases of COVID-19 per 100,000 residents in Hong Kong, the highest level recorded anywhere in the world during the pandemic. Deaths have also surged to nearly 300 a day earlier this month. Experts blame low vaccination rates in elderly people for Hong Kong's high mortality rate. Only about one-third of those aged over 80 years are fully vaccinated, and 90% of deaths have been in people who are not fully vaccinated. While China's overall vaccination rate is higher than 85%, older people are reported to have been able to remain unvaccinated. It's estimated that fifty-two million people aged over 60 years are yet to be fully vaccinated. The most vulnerable — those aged over 80 years — are the least well vaccinated, with only 20% having received the primary vaccination course and booster shot (Dyani Lewis, Nature, 2022; https://www.nature.com/articles/d41586-022-00884-z).

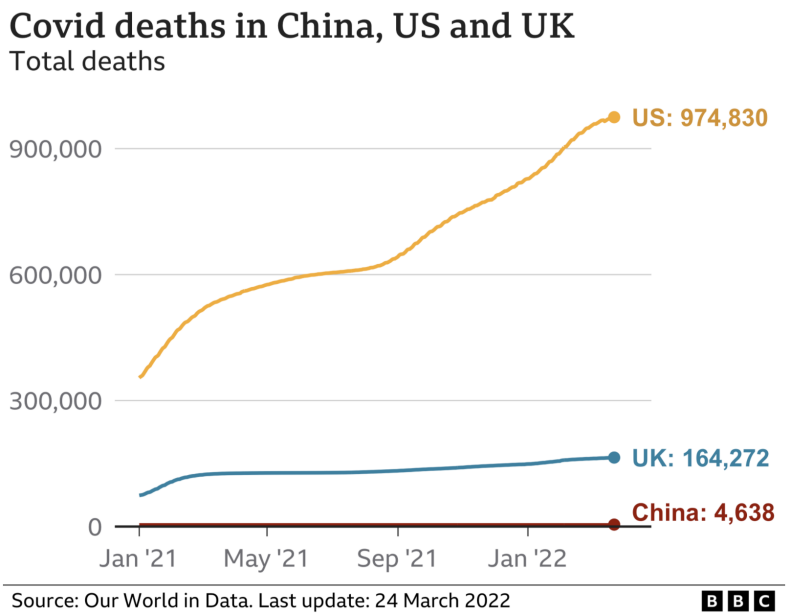


Figure 5: *COVID deaths (absolute numbers) in China, the US and the UK (Source: Our World in Data; https://www.bbc.com/news/59882774)*