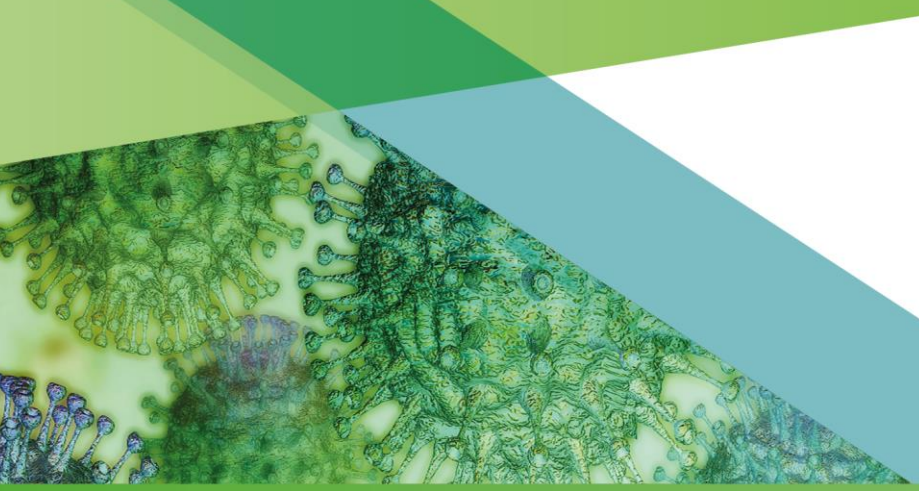

TECHNICAL REPORT

Evaluation of the SARS-CoV-2 testing policy in Belgium from June to December 2021

14 February 2022

Executive summary

Introduction

The Belgian Interministerial Public Health Conference asked ECDC to carry out an external evaluation of the testing policy applied by Belgium in response to the coronavirus disease 2019 (COVID-19) pandemic, including the resources involved. This report summarises the ECDC evaluation of the Belgian SARS-CoV-2 testing policy from June to December 2021, as compared to relevant ECDC technical guidance as well as expert opinion on COVID-19 surveillance and testing, including genomic surveillance.

Aim and objectives

The aim of this report is to independently evaluate the Belgian SARS-CoV testing policy to support an optimal and sustainable testing policy for public health purposes. The objectives of the evaluation were to assess the testing policy in Belgium with regards to diagnosis of COVID-19 to identify cases and guide the prevention and control of transmission; testing for COVID-19 to monitor COVID-19 incidence and trends; screening for COVID-19 to identify clusters and mitigate their impact on healthcare and other high-risk settings; and genomic surveillance of SARS-CoV-2 and detection of variants.

Methods

ECDC conducted a situation analysis to evaluate the SARS-CoV-2 testing policy in Belgium through a desk review of published SARS-CoV-2 testing policy and testing figures and through interviews with key representative experts. The evaluation considers the Belgian policy implemented from June to December 2021 and includes references to the changes that occurred in January 2022.

Findings

Testing strategies were first decided upon in Belgium by existing institutions, but during the crisis, other bodies were set up. The Belgian testing strategies were developed based on scientific advice and have regularly been adapted, with indications for testing, based on the epidemiological situation. The policies are put into operation through a strong mechanism of concertation and coordination involving all political levels in Belgium as well as, where needed, representatives of field actors. The case definitions used are aligned with those of ECDC.

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European Centre for Disease Prevention and Control. Stockholm, 2022.

Belgian Authorities have invested efforts to significantly increase SARS-CoV-2 testing capacities, both by means of reverse transcription polymerase chain reaction (RT-PCR) and rapid antigen detection tests (RADT); self-administrated RADT have been recently introduced for specific circumstances.

Efforts are ongoing in Belgium for the deployment of a comprehensive syndromic surveillance system. The objective is to adapt existing sentinel surveillance networks for respiratory infections in order to include syndromic surveillance of COVID-19 and testing of SARS-CoV-2. Syndromic surveillance at the level of GPs, emergency departments and intensive care units are considered as initial priorities.

Belgium follows a broad testing strategy, with a defined order of priority outlined for different epidemic scenarios. The strategy prioritises the testing of vulnerable individuals, as well as those in high-risk settings, including healthcare workers and those in close contact with vulnerable people.

Belgium performs comprehensive genomic surveillance and sequences are reported weekly, with volumes sufficient to estimate variant proportions of 2.5% or lower, following ECDC recommendations.

Conclusions and options for improvement

Belgium has developed strong concerted mechanisms with regards to the development and implementation of rapidly adaptable COVID-19 national testing strategies. It exhibits good practice in its frequent and regular analysis of test indications and results. This enables the testing policy to be built on evidence and for the ongoing adaption to the evolving situation.

Belgium should consider ensuring a continued and sustainable testing capacity able to monitor representative trends, to detect epidemiological changes at an early stage and to quickly adapt to changing testing requirements in a rapidly evolving situation.

Belgium should consider continuing to review, revise and implement a testing strategy based on the epidemiological situation, with a clear prioritisation of testing in situations of very high incidence, such as 14-day notification rates of 500 cases/100 000 inhabitants or higher, that preserves timely and reliable testing (RT-PCR) for high-risk and vulnerable groups.

As the circulation of SARS-CoV-2 will continue for the foreseeable future as an endemic disease, Belgium should consider beginning to elaborate a strategy towards a return to routine public health system functions that is suitable for the long-term and offers a transition from widespread PCR screening testing to more sustainable, objective-driven surveillance and outbreak-specific testing. For public health surveillance purposes, Belgium should consider continuing plans to maintain, further expand and adequately fund the coverage of syndromic sentinel surveillance systems in the ambulatory sector as well as in the acute and chronic healthcare settings.

Due to the exceptional circumstances of sustained wide-spread incidence, the use of (repeated) self-administrated RADT is a tool for control of COVID-19 transmission but should be kept restricted to guiding personal behaviour and preventing transmission during private gatherings.

Limitations

The timeframe and circumstances for addressing this specific request did not allow for ECDC to perform an in-depth analysis, but only for providing some observations and feedback focusing on the main principles and practices of the Belgian testing policy. This report does not comment on SARS-CoV-2 testing for clinical purposes, nor on cost-benefit performances.

Introduction

To support public health preparedness and response to the COVID-19 pandemic, ECDC considers that testing strategies should be in place to ensure that reliable and timely data is available for surveillance purposes and to guide overall prevention and control measures. An appropriate testing strategy should also ensure that clusters of cases are prevented or promptly detected and controlled, particularly in settings where there are high-risk groups, such as hospitals and long-term care facilities, to minimise the impact on vulnerable populations and healthcare systems, while ensuring that society and economies can continue to function. To ensure this public health function, ECDC recommends that testing strategies should be objective-driven and sustainable. They should be flexible and rapidly adaptable, depending on the local epidemiology, transmission, population dynamics and available resources [1]. Detailed guidance on these topics is provided in ECDC publications including on SARS-CoV-2 testing strategy and objectives, on surveillance and on the use of rapid antigen tests [1-3].

The COVD-19 pandemic, in particular the emergence of variants of concern, has highlighted genomic surveillance as an essential component of public health SARS-CoV-2 testing that enables countries to detect, monitor and assess virus variants that can result in increased transmissibility, disease severity, or have other adverse effects on public health and social control measures. ECDC provides practical guidance to EU/EEA Member States on implementing SARS-CoV-2 genomic surveillance, including advice on the number of samples that need to be sequenced to achieve various objectives [4].

The Belgian Interministerial Public Health Conference asked ECDC to carry out an external evaluation of the testing policy applied by Belgium in response to the COVID-19 pandemic, including the resources involved. This evaluation should support the decision-making processes with regards to SARS-CoV-2 testing in the mid-term (months) and for the longer-term (years).

This report summarises the ECDC evaluation of the Belgian SARS-CoV-2 testing policy from June to December 2021, as compared to relevant ECDC guidance on COVID-19 surveillance and testing, including genomic surveillance. This time period, jointly agreed between Belgium and ECDC representatives, corresponds to the spread of the Delta variant, at the exit of the third wave of COVID-19 observed in Belgium. Due to the important changes induced by the Omicron variant of concern (VOC) on the spread and characteristics of the disease, considerations with regards to the ongoing epidemiological situation have been included.

Aim and objectives

The aim of this report is to independently evaluate the current Belgian SARS-CoV-2 testing policy, relative to ECDC guidance, in order to support an optimised and sustainable testing policy for public health purposes. This report does not comment on SARS-CoV-2 testing for clinical care.

To achieve this, the objectives of the evaluation were to assess the testing policy in Belgium with regards to:

- diagnosis of COVID-19 to identify cases and guide the prevention and control of transmission;
- testing for COVID-19, to monitor COVID-19 incidence and trends;
- screening for COVID-19 to identify clusters and mitigate their impact on healthcare and other high-risk settings;
- genomic surveillance of SARS-CoV-2 and detection of variants.

Methods

ECDC conducted a situation analysis to evaluate the SARS-CoV-2 testing policy in Belgium through a desk review of the published SARS-CoV-2 testing policy and data on testing volumes as well as through interviews with representative experts.

Details of Belgian case definitions, testing indications and testing protocols were extracted from publicly available information on the Belgian Institute of Public Health (Sciensano) website [5,6].

Information on the COVID-19 epidemiology in Belgium including case counts, deaths, testing numbers and test positivity rates were extracted from the publicly available Sciensano Belgium COVID-19 Epidemiological Situation summary dashboard online [7]. Data on genomic surveillance in Belgium were extracted from the European Surveillance System (TESSy) and the GISAID EpiCoV database [8]. In addition, publicly available reports on genomic surveillance of SARS-CoV-2 in Belgium from the National Reference Laboratory at the Leuven University Hospitals (UZ Leuven and KU Leuven) were accessed [9]. Data from other countries were additionally extracted from TESSy and included in the analysis, for comparative purposes.

The Belgian testing policy and figures were then evaluated in reference to ECDC case definitions for COVID-19 [10] and reporting protocols [2] as well as to relevant technical reports and guidance: 'COVID-19 testing strategy and objectives' [1], 'Options for the use of rapid antigen tests for COVID-19 in the EU/EEA - first update' [3], 'Considerations on the use of rapid antigen detection (including self-) tests for SARS-CoV-2 in occupational settings' [11], 'COVID-19 surveillance guidance' [12] and the 'WHO interim guidance recommendations for national SARS-CoV-2 testing strategies and diagnostic capacities' [13]. SARS-CoV-2 genomic surveillance in Belgium was evaluated in reference to ECDC technical report 'Guidance for representative and targeted genomic SARS-CoV-2 monitoring' [4].

Findings

Diagnosis of COVID-19 to identify cases and guide the control of transmission

SARS-CoV-2 testing governance

ECDC encourages countries to implement an objective-driven and sustainable testing strategy for COVID-19. ECDC advises that strategies should be flexible and rapidly adaptable to change, depending on the local epidemiology, transmission, population dynamics and resources [1]. Belgium has regularly been adapting its testing policy, with criteria for prioritisation based on the epidemiological situation. National policy and overall guidance are provided and regularly updated to ensure that all citizens and residents throughout the country benefit from an equal approach, although regional and provincial authorities can implement adaptations, based on the local context and epidemiology.

Testing strategies were first developed in Belgium by existing institutions such as the Federal Public Service Health (Ministry of Health), Sciensano, the National Reference Centre, the Risk Assessment Group (RAG) and other structures where all Belgian competent bodies and authorities are represented. Due to the duration of the pandemic, several other bodies were set up, including a COVID-19 Commissariat, several specific and complementary Task Forces, expert groups, political committees and the Interfederal Committee Testing-Tracing (ICTT). The latter holds a core role in the technical implementation of the testing policy and contributes to its evaluation.

The Belgian testing strategies are developed based on scientific advice, mainly given by the RAG, and are implemented through a mechanism of concertation and coordination involving all political levels in Belgium as well as, where needed, representatives of field actors. Where variations exist at the regional level on the choices or capacity of implementation, solutions are developed to keep a common or comparable overall approach. A comprehensive publication of testing-related decisions is made through the COVID-19 dedicated website pages of Sciensano, which is mainly intended for health professionals although is also consulted by the general public [14].

For the optimal use of SARS-CoV-2 testing for public health purposes, including surveillance, there is a need to ensure data consistency, comparability and completeness. In Belgium, reimbursement of SARS-CoV-2 tests, both RT-PCR and RADT, is conditioned to specific indications [6] and to the provision of epidemiological information, usually collected via an electronic form. This makes the analysis of SARS-CoV-2 test results possible according to the setting or to the indication, such as screening, clinical diagnosis, travel-related purposes and contact tracing, amongst others. The Interfederal Committee Testing-Tracing analyses the indications for testing for almost all reimbursed tests. Strategies implemented are monitored on a weekly basis, which allows for regular adaptations. Given the availability of these data, a return on investment for the substantial budget mobilised could also be routinely conducted. The availability of some epidemiological data can be temporarily delayed for about 25% of the test results. The data can be completed from other sources and the results are used in almost real-time by the RAG for the weekly evaluation of the epidemiological situation, to allow interpretation of the epidemiological indicators, such as number of new infections and positivity rate. The ICTT is carrying out a parallel weekly monitoring of the testing strategy based on the almost complete epidemiological dataset from the reimbursment data.

Testing strategies and implementation measures are developed and adapted, taking into account, among other elements, the interlinked aspects of contact-tracing by means of a centralised secured database.

SARS-CoV-2 testing strategy and prioritisation

In Belgium, an order of priority for testing has been established, outlined for different scenarios. As of September 2020, the three scenarios were as follows: 'Pre-alarm', 'Alarm' and 'Epidemic' with a 14-day cumulative incidence of < 5 cases/100 000 inhabitants, of 15-50/100 000 and of > 50/100 000, respectively (Annex 1). For each scenario, specific groups of people were defined and ranked according to the epidemiological context and their vulnerability. The scenarios have been updated since, as the epidemiological situation changed, and following the same principle of prioritisation [15-18]. At the end of 2021, due to highly increased requests for PCR testing, Belgium temporarily lifted the systematic testing of high-risk contacts, to prioritise testing for the most vulnerable groups. Considering that the epidemiological situation can rapidly change, and laboratories may become overwhelmed, such prioritisation of testing based on the epidemiological situation is a rational approach, if prioritisation is indeed implemented, evaluated, and updated, as necessary.

Considering the current epidemiological situation, it is prudent to add clear guidance for further prioritisation of testing in the case of very high incidence, such as 14-day notification rates of 500 cases/100 000 inhabitants or higher, to ensure continued ability to test without overwhelming testing resources. If the availability of timely and accurate results is threatened, such as when testing demands outstrip capacity, the value of testing for case confirmation and control of transmission is reduced. There are a number of situations that should indicate the need to revaluate testing strategies, such as: when there is a backlog and it is no longer possible to turn around results within 24 to 48 hours; when the demand for laboratory reagents is at risk of exceeding the capacity for supply; when the number of incoming samples exceeds the capacity for safe pre-testing storage; or if laboratories are otherwise unable to perform their duties (e.g. staff being in quarantine). During sustained and pervasive community transmission, testing as outlined in the 'Epidemic' scenario may run the risk of meeting the above-described situations and testing may need to be further prioritised to preserve capacity for vulnerable groups and essential workers, which for the best impact would need to be clearly defined. Ideally, preventive solutions should be implemented in advance of situations with limited testing capacities; depending on the epidemic situation and possibilities for surge capacity, prioritisation of testing can be given to those at risk of severe disease, vulnerable populations, healthcare and emergency services or other individuals related to high-risk settings [13]. As the COVID-19 situation is rapidly evolving, testing strategies need to be regularly updated based on the epidemiological situation. The ECDC guidance on SARS-CoV-2 testing strategy is currently being revised.

As countries will transition beyond the acute phase of the pandemic, widespread PCR testing of all symptomatic COVID-19 cases may not remain feasible going forward, especially in situations with sustained community transmission. In the long-term, testing strategies should move away from widespread RT-PCR screening testing and towards more surveillance, objective-driven and outbreak-specific testing. Diagnostic testing will need to focus on diagnostic relevance, such as being reserved for timely testing of people with compatible symptoms and risk factors for severe COVID-19, and people who have contact with vulnerable populations such as healthcare workers in acute and long-term care settings. In the longer term, for surveillance purposes, testing to continue monitoring disease trends and detect early signals of emergence or introduction of new variants, can follow targeted and representative sentinel sampling approaches (details below in section 4.2.2). Going forwards in the long-term, isolation of positive cases should continue to be implemented as it should be for other respiratory viruses such as influenza and RSV, however as countries transition out of an acute emergency, quarantine guidance for asymptomatic contacts may be adapted.

Choice of test to detect SARS-CoV-2 infection

Throughout the pandemic, nucleic acid amplification tests (NAAT), predominantly RT-PCR, have remained the gold standard for detecting SARS-CoV-2 infection, as they are characterised by both high sensitivity and specificity in detecting viral ribonucleic acid (RNA). However, rapid antigen detection tests (RADT) are easy to use and offer rapid results at lower cost and hence, have been increasingly used in EU/EEA countries. Since December 2020, the EU case definition for COVID-19 includes the detection of antigens in the clinical specimens and therefore the use of RADT as a diagnostic method [10]. The Belgian health Authorities follow these guidelines [5].

The choice of RADT should be based on the Health Security Committee common and updated list of COVID-19 RADT and on independent evaluations of the tests [19].

During times of high incidence, when RT-PCR testing capacities reach their limits, the use of RADT has a positive impact, as RADT can detect the most infectious cases reliably. However, testing asymptomatic individuals with RADT is beyond the scope of their design. Due to the exceptional circumstances of sustained wide-spread transmission, RADT can be used as a tool to control COVID-19 transmission. While self-tests should be restricted for the use of guiding personal behaviour and not as a replacement for official confirmation of SARS-CoV-2 infection (discussed further below), professionally administered RADT can be the basis for the proof of a negative result.

Self-tests

According to official procedures published on the Sciensano website, fully vaccinated high-risk contacts are tested only once (by RT-PCR) three to six days after contact and remain in quarantine until then. However, if the test result has not been obtained on day four, they can end the quarantine provided they perform a daily self-test, which must give a negative result, until the result of the PCR test is known. Positive self-administered RADT must be confirmed with a second test performed by qualified personnel.

As of 10 January 2022, vaccinated people who have not received a vaccine or booster in the last five months or unvaccinated individuals must be quarantined after high-risk contact. They may be released from quarantine from day four or day seven respectively, if they present no symptoms, and have daily negative self-tests up to and including day seven and day 10, respectively.

RADT self-tests can offer advantages when used to complement professionally administered RADT or RT-PCR as they can improve accessibility to testing [11]. They allow individuals to obtain results quickly, which could support the early detection and subsequent isolation of infectious cases, and hence reduce further community transmission. However, shifting the responsibility of reporting test results from health professionals and laboratories to individuals could lead to underreporting, and make response measures such as contract tracing, quarantine of contacts, and monitoring of disease trends over time even more challenging. ECDC recommends that RADT performed by qualified personnel can be an acceptable basis for a formal certificate, while self-RADT should not be used for issuing any certificate. Currently, ECDC does not consider self-testing by RADT to be adequate for release from quarantine [20]. However, as the epidemiological situation is evolving quickly, ECDC is closely monitoring emerging evidence and may revise its guidance accordingly.

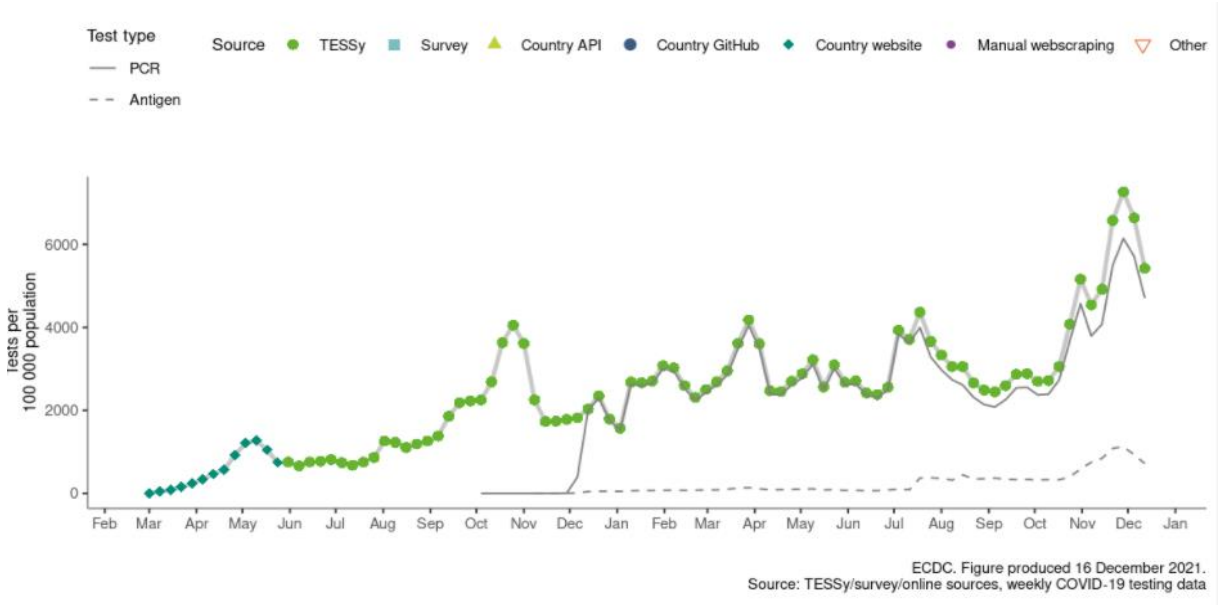
SARS-CoV-2 testing to monitor incidence and surveillance trends

Emergency surveillance

Belgium reports weekly COVID-19 aggregate surveillance data to TESSy according to the ECDC COVID-19 reporting protocol [3], including the number of COVID-19 cases and deaths and the number of tests by method, age, and region.

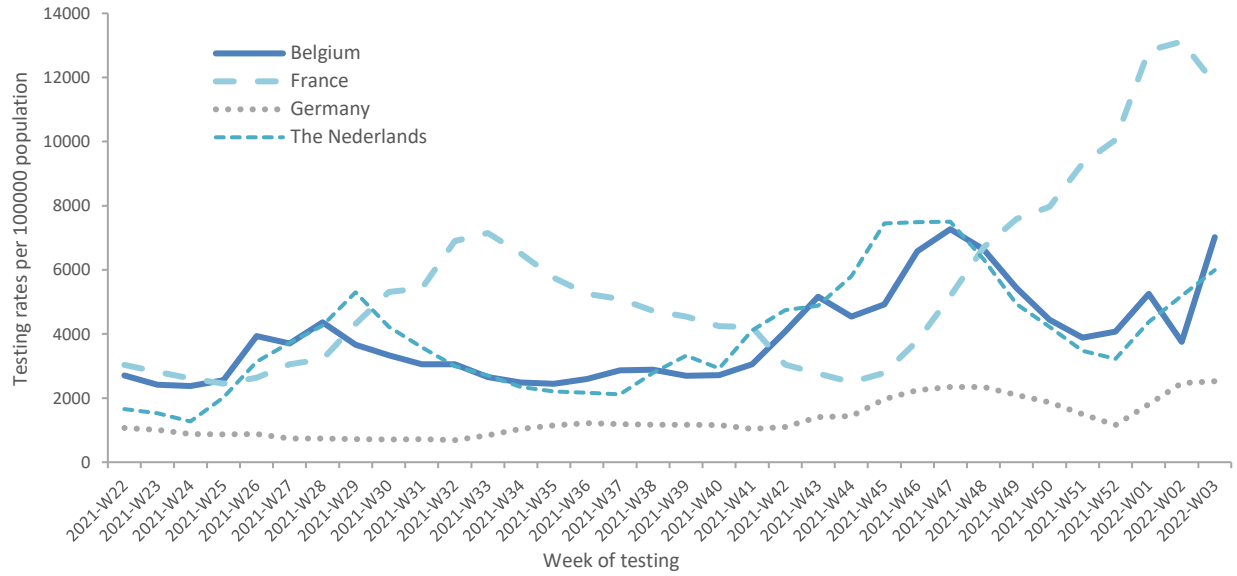
The weekly testing rate for Belgium increased over 2020 and reached 2 000 cases per 100 000 population in the Autumn of 2020. This rate then fluctuated between 2 000 and 4 000 until November 2021 and has been above 4 000 since then. Until August 2021, nearly all tests reported were RT-PCR. Since then, the proportion of RADT increased but RT-PCR still account for most tests. This is in line with the ECDC COVID-19 surveillance guidance, which invites countries to prioritise RT-PCR tests for surveillance purposes, especially if there is a sentinel surveillance system [12]. Since November 2021, the number of tests performed was reported to TESSy by type of laboratory test.

Figure 1. Weekly SARS-CoV-2 testing rate per 100 000 population, type of laboratory method, and data source, Belgium, January 2020 to December 2021



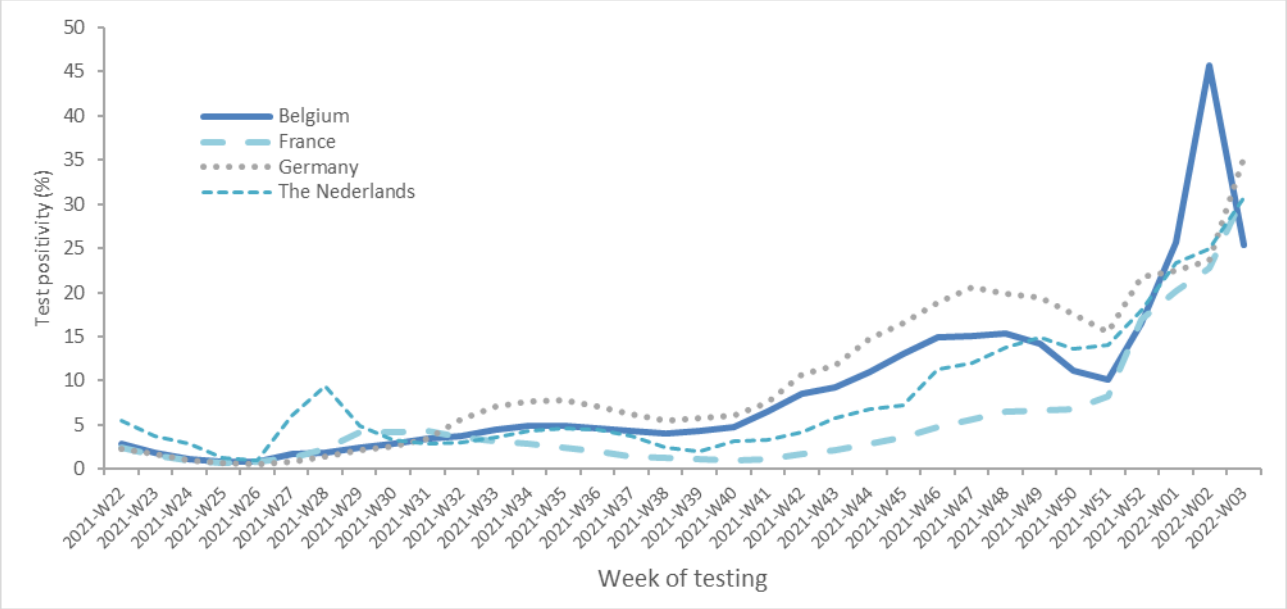
Since June 2021, testing rates reported by Belgium were comparable to those reported by neighbouring countries, such as France or the Netherlands, and higher than those reported by Germany (Figure 1). Similarly, test positivity was comparable to that observed in these countries, below 5% until week 40-2021 and then increasing in relation to the upsurge in transmission in Autumn 2021 (Figure 3). Since Belgium does not report case-based data to TESSy, it is not possible to calculate test positivity by type of laboratory test using TESSy data. In countries with available information, test positivity is usually higher for RT-PCR tests compared with RADT, since RT-PCR is mostly used in symptomatic cases while RADT is used for screening purposes, e.g. pre-travel testing. Information provided by Belgian colleagues suggested a similar situation in Belgium with higher test positivity for RT-PCR tests compared to RADT. The weekly COVID-19 bulletin published by Sciensano reports that most testing is performed by clinical laboratories [21] as opposed to pharmacies or other testing centres outside the healthcare system. In 2021, testing intensity followed similar patterns across age groups over time, with the highest testing rates in people 20–39-year-old and the lowest in people aged 65 years and older. An increasing proportion of testing of symptomatic patients (i.e. possible COVID-19 cases) in pharmacies has been observed since week 44 of 2021; in fact before week 44, most testing performed in pharmacies was done in asymptomatic people prior to travel or activities for which a test may be requested.

Figure 2. Weekly SARS-CoV-2 testing rate per 100 000 population, Belgium, France, Germany, the Netherlands, June 2021 to January 2022.



In conclusion, the testing strategy for surveillance purposes seems to be adequate with testing indicators comparable to neighbouring countries. Since Belgium does not report case-based data to ECDC, its data do not contribute to some of the European surveillance objectives, such as the description of severe cases or the monitoring of the vaccine impact. Recent changes in testing behaviour may impact surveillance data.

Figure 3. Weekly test positivity, Belgium, France, Germany, the Netherlands, June 2021 to January 2022



Routine surveillance

As mentioned above, widespread testing of all symptomatic COVID-19 cases will not remain feasible and cost-effective going forward, in particular in the context of widespread community transmission. As a strategy towards transitioning from emergency surveillance to more sustainable, objective-driven routine surveillance systems, it is important that testing for such purposes relies on surveillance by healthcare providers, in particular sentinel surveillance that is similar or aligned to syndromic surveillance routinely implemented for seasonal influenza monitoring. A targeted and representative sentinel sampling approach, with well-defined denominator data, will still allow the monitoring of disease incidents and detection of early signals of emergence or introductions of new variants, whilst making a sustainable use of resources. Details on options for primary care as well as secondary or tertiary care-based surveillance are provided in the ECDC COVID-19 surveillance guidance [12]. The sentinel surveillance systems should ideally allow for the integrated surveillance of COVID-19, influenza and other respiratory pathogens that are likely to co-circulate. Although many countries already have influenza surveillance systems, these may not be sufficiently sensitive and representative to enable joint COVID-19 surveillance. Therefore, as an option for sustainable and representative SARS-CoV-2 testing, countries could consider expanding the coverage of their sentinel systems, to improve sensitivity and to ensure collection of sufficient specimens for representative viral genomic surveillance characterisation. Please refer to the ECDC surveillance guidance for further details [12].

Efforts are ongoing in Belgium for the deployment of a comprehensive syndromic surveillance system. The objective is to adapt existing sentinel surveillance networks for respiratory infections to include syndromic surveillance for COVID-19 as well as to include collection of clinical data related to symptoms and complications of COVID-19. Ambulatory care is covered (for acute respiratory infections - ARI) as well as hospital settings (for severe acute respiratory infections - SARI) and nursing homes. Currently, all samples taken in the framework of sentinel surveillance are tested for influenza, SARS-CoV-2 and a multiplex of 16 other respiratory viruses. Additionally, all SARS-CoV-2 positive samples are subject to sequencing for genomic surveillance.

Syndromic surveillance at the level of GPs, emergency departments and intensive care units are considered as the initial priorities. Currently, how to best integrate these sentinel networks with the established COVID-19 surveillance is being explored, including how to best continue the use of technical achievements developed during the COVID-19 pandemic such as the use of e-forms and online tools for the prescription of tests. Additionally, standardisation of data collection forms, including for the collection of patient, clinical and vaccination information would allow for studies on vaccine effectiveness to be conducted.

Belgium should consider continuing these plans to expand the coverage of syndromic sentinel surveillance system in ambulatory and healthcare settings and ensure sustained funding for continuous (year-long) and quality sentinel surveillance.

Screening for COVID-19 to identify clusters and mitigate the impact for healthcare and other high-risk settings

SARS-CoV-2 testing for contact tracing

ECDC advises that, wherever possible, all contacts of COVID-19 cases should be tested immediately after identification as a contact and with follow-up testing, depending on vaccination status and as resources allow. However, the policy for testing contacts should carefully consider the epidemiological situation and testing resources. ECDC acknowledges that countries may need to take a more pragmatic approach when resources are limited [20]. When there is widespread community transmission and high or extreme pressure on healthcare systems, as mentioned above, testing of contacts should not compromise the ability to test high-priority groups, such as high-risk and vulnerable individuals.

In Belgium, when testing capacity allowed, the practice of testing high-risk and symptomatic low-risk contacts by RT-PCR has contributed to early identification of secondary cases among contacts. This is, however, not sustainable during times of sustained community transmission. The adaptation of the testing policy for situations when there is a high number of cases and extreme pressure on the healthcare system, such as to reprioritise indications for testing and make use of RADT, represent a more sustainable alternative. Belgium has followed this approach with an adapted strategy implemented as of 10 January 2022. For further considerations, see the section on self-testing

Screening of vulnerable individuals and high-risk settings

The Belgian policy prioritises testing of vulnerable people, as well as individuals in high-risk settings such as newly admitted patients in hospitals, nursing homes and residential care facilitates, people aged 65 or older or patients presenting with comorbidities. Healthcare workers and those in close contact with vulnerable people are also prioritised. Belgian authorities have significantly increased SARS-CoV-2 testing capacities, both by means of RT-PCR and RADT. Despite increased testing capacities, attention should be given to evaluate and ensure that vulnerable persons and high-risk circumstances still keep benefitting from reliable and timely laboratory testing (RT-PCR), even when testing capacities are challenged, such as during periods of very high widespread community transmission.

Screening travellers

Except for countries and areas that have achieved consistent and sustained control of the virus, screening of travellers is not considered a cost-effective strategy for substantially preventing the cross-border transmission of COVID-19 [1]. Belgium does not impose testing nor quarantine to travellers coming from 'green' or 'orange' zones [22].

Concerning 'red' countries and 'very high-risk zones for VOC', a complex algorithm aligned with the common measures to travel in the EU [23] has been developed to guide the testing of international travels [22,24]. The algorithm is integrated into the Passenger Locator Form procedure, which specifies to the submitting traveller whether testing is required and, in such case, provides a unique identifying code to do so and to activate contact-tracing when there is a positive result. According to official guidelines and since 1 November 2021, travellers who need to be tested after arrival can also be tested with a RADT instead of an RT-PCR. This can be done in a triage and collection centre as well as in a pharmacy [22].

As symptomatic individuals should refrain from travelling, travellers can be assumed to belong mostly to a low prevalence subpopulation, with variable but lower probability of SARS-CoV-2 infection compared to the general population. RADT tests performed before travelling can be used to prevent transmission during the travel and in transit [25]. However, due to their lower sensitivity, RADT should not be the test of choice for screening incoming travellers to prevent virus (re-) introduction in regions/countries that have achieved zero or very low levels of transmission, nor to monitor the introduction and mitigate the further spread of VOCs at the place of arrival [25]. In these situations, RT-PCR should be used to reduce the risk of false negative results.

For asymptomatic individuals with a positive RADT result, testing should be confirmed, preferably by a second method (e.g., RT-PCR) or, if not available, with another RADT of a different brand, as is the practice in Belgium. When considering the adoption of RADT for screening travellers, several considerations require attention. Please refer to the guidance developed jointly by ECDC and EASA on travel-related measures for air travel [25].

In times of high pressure for laboratory capacity, Belgium could reconsider their requirements for testing of travellers, as testing of international travellers should not compromise the ability for timely testing of priority groups.

Genomic surveillance of SARS-CoV-2 and detection of variants

Reports for genomic surveillance of SARS-CoV-2 in Belgium are released weekly by the National Reference Laboratory (UZ Leuven & KU Leuven) [9]. The reports are comprehensive and cover current findings on VOCs in Belgium as well as detailed studies on emerging variants. In addition, the genomic findings are put into a larger context by including further data sources such as RT-PCR results or vaccination status. Sequences are reported weekly to GISAID EpiCoV™, with a generally satisfactory level of metadata, including information on sub-national location. Since the beginning of June 2021 to the end of 2021, approximately 47 000 sequences were deposited in GISAID EpiCoV with sequence data from samples originating from locations throughout the country. ECDC recommends that sequence results are reported according to the sampling category. This was analysed for a subset of sequences submitted to GISAID EpiCoV from 1 June to 1 July 2021 and this metadata was available for 53% of submitted sequences (1 184/3 531). The sequencing conducted and reported met the ECDC recommended volumes, to detect a variant with recommended precision at prevalence of 5%, and during the study period, sequencing was conducted at a volume sufficient to estimate variant proportions between >1% and 2.5%, such as from week 34 to week 43 in 2021, or even variant proportions ≤1%, such as from week 47 to week 51 in 2021. Such a genome sequencing volume is generally similar to neighbouring countries (see Annex 4).

Conclusions and options for improvement

Belgium has developed strong concerted mechanisms and good practice with regards to the development and implementation of rapidly adaptable SARS-CoV-2 national testing strategies. These are considered with an objective of country-wide efficacy and equal access while allowing for flexibility where the local epidemiology and context requires it. Such mechanisms lean upon extraordinary bodies set up specifically in response to the public health emergency. As circulation of SARS-CoV-2 is expected to continue for the foreseeable future, Belgium should consider ensuring a continued and sustainable testing capacity able to monitor representative trends, to detect emerging changes at an early stage and to adapt to changing testing requirements in an evolving epidemiological situation.

Belgium exhibits good practice in its frequent and regular analysis of test indications and results. This enables the testing policy to be built on a strong evidence-base and for ongoing adaption to the evolving situation. The practice also makes it possible to monitor the impact of investment made with regards to SARS-CoV-2 testing. Although comprehensive epidemiological data are being collected, public health experts have reported that information on test indications has an initial completeness of about 75%, reaching very high completeness only after few weeks from initial data reporting, suggesting that these data may not be made fully available to Belgian public health research centres and institutions for early, rapid analysis. Since such an analysis is performed to monitor and adapt testing strategies, rapid and complete data sharing is desirable in this domain and could therefore be improved.

The strategy for prioritisation of testing was developed at an early stage of the pandemic and has been updated based on the epidemiological situation. It is advisable that Belgium continue to review, revise, and implement testing indications based on the epidemiological situation and to cover situations where there is a very high incidence, such as 14-day notification rates of 500 cases/100 000 inhabitants or higher, in order to preserve timely and reliable testing (RT-PCR) for defined high-risk and vulnerable groups.

To support a strategy towards transitioning from emergency surveillance to more sustainable, objective-driven routine surveillance, a sentinel surveillance similar or aligned to the syndromic surveillance routinely implemented for seasonal influenza monitoring could be utilised. Belgium should also consider continuing plans to maintain, further expand and adequately fund the coverage of its sentinel system, to improve sensitivity and to ensure collection of sufficient data for monitoring disease incidence and representative viral genomic surveillance.

Belgium should consider continuing to use RADT with consideration of the EU case definition for COVID-19, the Health Security Committee common and updated list of COVID-19 RADT and based on independent evaluations of the tests. Due to the exceptional circumstances of sustained wide-spread transmission, the use of (repeated) self-administrated RADT is a tool for control of COVID-19 transmission but should be restricted for the use of guiding personal behaviour and preventing transmission during private gatherings. Moreover, and especially in the perspective of other infectious diseases, great caution should be given to the principle of accessing and using such self-administrated RADT by untrained individuals, as medical counselling is necessary to accompany clinical diagnostic.

In times of high challenge for laboratory capacity, Belgium could reconsider their requirements for testing of travellers, as testing of international travellers should not compromise the ability for timely testing of priority groups.

Limitations

There is currently no defined framework for evaluating testing policies in EU Member States. As a reference for this exercise, ECDC used the published ECDC guidance on testing and available insights from other EU Member States' practices, policies and strategies. Moreover, the ECDC work in the area of testing is mainly focussed on technical and public health aspects, less on the related political, financial and socio-economic aspects.

The timeframe and circumstances for addressing this specific request did not allow for ECDC to perform an in-depth analysis such as those provided in the framework of a country visit, but provided observations and feedback focusing on the main principles and practices of the Belgian testing policy. This report does not comment on SARS-CoV-2 testing for clinical purposes, nor on cost-benefit performances.

This request reached ECDC just few days before the Omicron variant was designated as variant of concern. As of 19 January, substantial uncertainties remain regarding optimal testing strategies for this evolving situation. ECDC is currently monitoring the situation and recommendations will be updated as new evidence arises.

Contributing ECDC experts

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Annexes

Annex 1. Prioritisation of SARS-CoV-2 testing by level of epidemic alert, as of September 2020

Order of priority	'Pre-alarm' Cumul Inc 14d < 15/100.000	'Alarm' Cumul Inc 14d 15-50/100.000	'Epidemic' Cumul Inc 14d > 50/100.000
1	Symptomatic	Symptomatic	Hospitalised symptomatic
2	Cluster investigation in collectivity	Cluster investigation in collectivity	Cluster investigation in collectivity
3	Close contacts two tests	Close contacts one test	Symptomatic HCWs
4	New entry in a nursing home	New entry in a nursing home	New entry in a nursing home
5	Non COVID-19 hospitalisations in risk services	Non COVID-19 hospitalisations in risk services	Non hospitalised symptomatic belonging to risk group for severe disease
6	New entry in a residential collectivity other than nursing home	New entry in a residential collectivity other than nursing home	Non COVID-19 hospitalizations in risk services*
7	Returning travellers from red zone	All new non COVID-19 hospitalisations	New entry in a residential collectivity other than nursing home
8	Returning travellers from orange zone	Close contacts second test	All new non COVID-19 hospitalisations
9	Pre-travel request**	Returning travellers from red zone	All symptomatic
10		Pre-travel request**	Close contacts one test

Source: Provided by Sciensano.

Annex 2. Summary of changes to the Belgian SARS-CoV-2 testing strategy since March 2021 as of 31 December 2021

March 2021

- Protocol developed for repetitive testing at the workplace

Indicatie	Aanbevolen staal	Aanbevolen test	Type aanbeveling
Symptomatische persoon			
Symptomen<=5 dagen	Naso-faryngeale of keel-neuswisser	Ag RDT	In triage centra, huisartspraktijk en spoedgevallendienst
Symptomen>5 dagen of dringende hospitalisatie **of volledig gevaccineerd**	Naso-faryngeale of keel-neuswisser	PCR	Altijd aanbevolen
Asymptomatische contacten			
Hoog-risico contact, direct na identificatie	Naso-faryngeale of keel-neuswisser	PCR	Indien laatste contact<=3 dagen
Hoog-risico contact, 7 dagen na laatste contact	Naso-faryngeale of keel-neuswisser	PCR	Indien quarantaine vroegtijdig (<10 dagen) gestopt wordt, of indien eerste test niet uitgevoerd
Laag-risico contacten (andere dan in een cluster)	**Naso-faryngeale of keel-neuswisser**	**PCR**	**Indien de test capaciteit het toelaat**
Asymptomatische reizigers			
Terugkerende/aankomende reiziger uit rode zone	Naso-faryngeale of keel-neuswisser	PCR	Zo snel mogelijk, en 7 dagen na terugkeer
Cluster onderzoek			
Laag-risico contacten in school cluster	Naso-faryngeale of keel-neuswisser	Ag RDT	Enkel in middelbare scholen
Laag-risico contacten in bedrijf cluster	Naso-faryngeale of keel-neuswisser	Ag RDT	Alle clusters in een bedrijfsomgeving
Herhaald screenen			
Herhaald testen personeel WZC en thuisverplegers	Speeksel	PCR	**Indien vaccinatiegraad bewoners <90% of personeelsleden <70%**
Herhaald testen andere populaties	Speeksel	PCR	Optioneel en enkel indien aan bepaalde voorwaarden voldaan
	Keel-neuswisser	**Ag RDT**	
Eenmalige screening			
Ziekenhuisopname niet-COVID patiënt	Naso-faryngeale of keel-neuswisser	PCR	Volgens de bestaande richtlijnen voor ziekenhuizen[3]
Nieuwe bewoners WZC	Naso-faryngeale of keel-neuswisser	PCR	Aanbevolen in functie van epidemiologische situatie
Bezoekers WZC	Naso-faryngeale of keel-neuswisser	Ag RDT	Optioneel en **enkel indien vaccinatiegraad bewoners <90%**
Andere situaties	Naso-faryngeale of keel-neuswisser	Ag RDT	Optioneel en enkel indien aan bepaalde voorwaarden voldaan
Op basis van zelf-risico analyse			
Thuis zelftesten	**Diepe neuswisser**	**Ag RDT**	**Optioneel en enkel indien aan bepaalde voorwaarden voldaan**
Andere situaties	**Naso-faryngeale of keel-neuswisser**	**PCR of Ag RDT**	

Most important changes:

- Differentiation between fully vaccinated and non-fully vaccinated for testing in nursing homes
- Testing of low-risk contacts if sufficient test capacity (but never implemented)
- Self-testing at home introduced (indications for self-testing defined in May 2021).

April 2021

- Pre-event screening introduced (pilot projects); guidelines developed for the validity period of a negative PCR and negative Ag RDT.

May-June 2021

- Indications for the use of nasal swabs and saliva specimens defined
- Preventive screening and self-testing no longer considered useful in fully vaccinated people.

July 2021

- Testing with RADT in pharmacies for:
  - Departing travellers
  - Covid Safe Ticket
- No longer a need for a second test in fully vaccinated high-risk contacts and fully vaccinated travellers returning from a non-EU/Schengen red country.

August 2021

- Reintroduction of a second test in fully vaccinated high-risk contacts and fully vaccinated travellers returning from a non-EU/Schengen red country.

October 2021

Test strategy was updated

- To relieve pressure on general practitioners a self-assessment tool and broader testing at pharmacies were introduced, and avoid that high-risk contacts or travellers have to pass by general practitioner
- New test strategy proposed for returning travellers, but not accepted. Agreed that returning travellers can be tested with RADT.

November 2021

- Introduction self-assessment tool
- Testing with Ag RDT in pharmacies for:
  - People with mild symptoms
  - Returning travellers.

Annex 3. Test indications summary table, as of 10 December 2021

Procedures

- Managing a COVID-19 case
- Testing
  - Indications
  - Results interpretation
  - Test prescription
  - Sample collection
  - Declaration
  - Where to find the results
  - Summary table
- Isolation
- Contacts at risk
- Quarantine
- Follow-up of contacts in reception settings and at school
- Travelers
- Prevention measures and organization of the consulting room
- Specific recommendations for certain professions
- Decision trees
- History of changes
- Archives
- Vaccination
- Risk groups

External documents

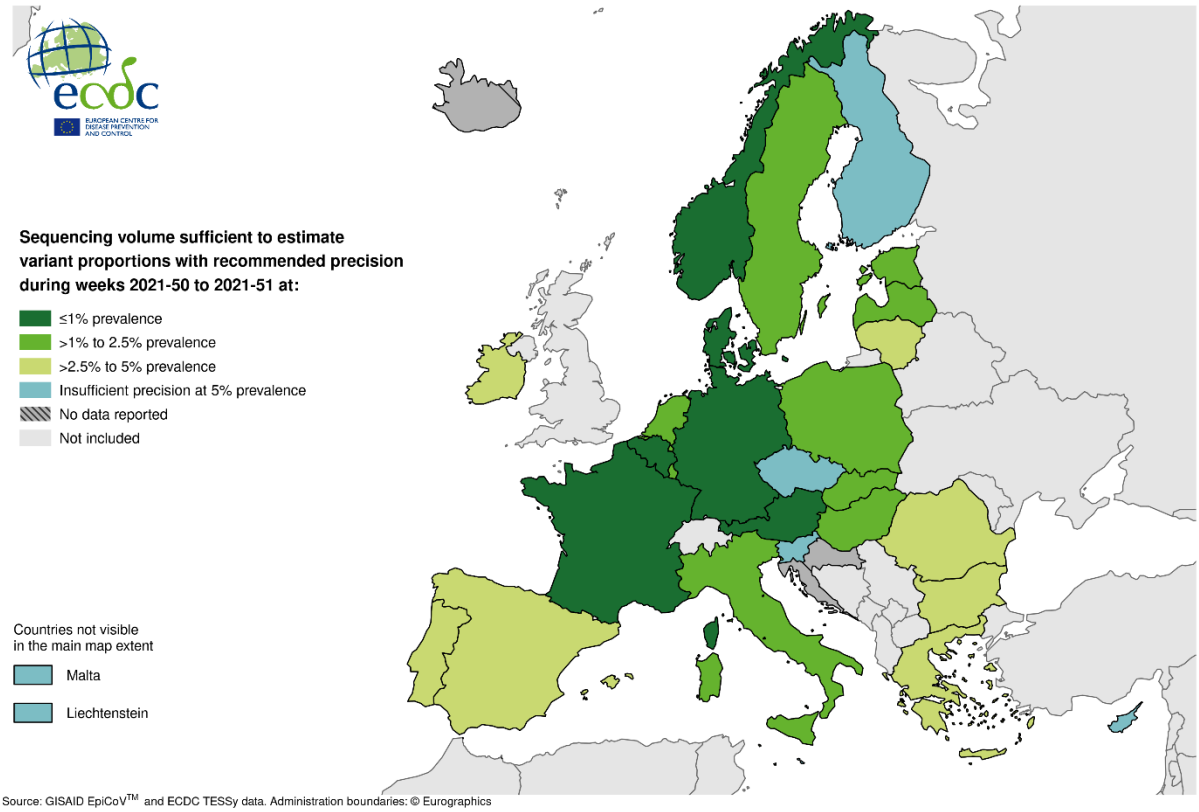
Summary table

Indication	Recommended sample	Recommended test	Recommendation type	Fully vaccinated people
Symptomatic people				
Symptoms <= 5 days	Nasopharyngeal or nose / throat or nasal swab *	Ag RDT *	In triage centers, general practices and emergency departments	Same measures as for unvaccinated people
Symptoms> 5 days or urgent hospitalization	Nasopharyngeal or nose / throat swab	PCR	Always recommended	Same measures as for unvaccinated people
Close contacts				
Close contact, immediately after identification	Nasopharyngeal or nose / throat swab	PCR	If last contact <= 3 days	Same measures as for unvaccinated people
Close contact, 7 days after last contact	Nasopharyngeal or nose / throat swab	PCR	If the quarantine is stopped prematurely (<10 days) or if the first test is not performed	Same measures as for unvaccinated people
Low risk contacts (other than in a cluster)	Nasopharyngeal or nose / throat swab	PCR	If the testing capacity allows it **	N / A (after vaccination, a *low risk contact is* no longer considered a risky contact)
Asymptomatic travelers				
Departing traveler	Nasopharyngeal or nose / throat swab	PCR or Ag RDT	If required by the destination country and in accordance with its guidelines	Screening not necessary unless requested by the destination country
Traveler on arrival	Nasopharyngeal or nose / throat swab	PCR	The testing scheme depends on the area of origin and the type of traveler, see traveler procedure	
Investigation of a cluster				
In the event of the appearance of a cluster (two or more linked cases), the responsible physician may decide to carry out more extensive tests (including on low-risk contacts). You will find more information on the recommendations for tests in reception settings and at school here .				
Periodic screening				
Periodic testing of MRS staff and home nurses	Saliva	PCR	If the vaccination rate of residents <90% or staff <70%	No longer useful
Periodic tests on other populations	Saliva	PCR	Optional and only if certain conditions are met. No longer useful if virus circulation is low (alarm level 1)	No longer useful
	Nose / throat swab	Ag RDT		
Spot screening				
Hospital admission of a non-COVID patient	Nasopharyngeal or nose / throat swab	PCR	According to existing guidelines for hospitals	If there is a high risk of an undetected infection (eg transplant)
New MRS residents	Nasopharyngeal or nose / throat swab	PCR	Recommended according to the epidemiological situation	Same measures as for unvaccinated people
MRS visitors	Nasopharyngeal or nose / throat swab	Ag RDT	Optional, if residents' vaccination rate <90%	No longer useful
Other situations	Nasopharyngeal or nose / throat swab	PCR or Ag RDT	Optional and only if certain conditions are met	No longer useful
Based on a risk self-analysis				
Self-test at home	Nasal swab (anterior or mid-turbinate)	Ag RDT	Optional and only if certain conditions are met	No longer useful, except in risky situations
Other situation	Nasopharyngeal or nose / throat swab	PCR or Ag RDT		No longer useful

* A PCR test is also possible. In this case, a supervised saliva sample is also acceptable. An anterior or mid-turbinate nasal swab is also possible if the patient experiences too much discomfort with a nasopharyngeal or nose / throat swab.

** Currently, the test capacity is considered insufficient to routinely test low risk contacts.

Annex 4. Overview of sequencing volume sufficient to estimate variant proportions with recommended precision during weeks 2021-50 to 2021-51 based on sequencing volumes in EU/EEA Member States.



Data are sourced from TESSy or the GISAID EpiCoV database