Update 43 (27th of October 2020)

Information about Infection disease
COVID-19 (novel coronavirus)

Force Health Protection Branch FHPB (former DHSC) NATO MILMED COE in Munich
27th of October 2020
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In December 2019, a novel coronavirus emerged in Wuhan City, China. Since then the virus spread to 65 countries including Europe and America. Since then the virus showed evidence for human-to-human transmission as well as evidence of asymptomatic transmission. At 30th January 2020 WHO declared a Public Health Emergency of International Concern. The disease was formally named COVID-19 on 11th of February. The virus itself has been named SARS-CoV-2. On 11th of March 2020 WHO characterized the disease as a pandemic.

HIGHLIGHTS/NEWS

- For the third week in a row, the **WHO South-East Asia Region** has registered 6 – 8 % decline in the number of COVID-19 cases, mainly due to a decrease in reported cases from India and Bangladesh.
- **ECDC**: has launched key aspects regarding the introduction and prioritisation of COVID-19 vaccination in the EU/EEA and the UK.
- **ECDC**: In this update, we assess the risk for the general population and vulnerable individuals in relation to the increase in COVID-19 notification rates in the EU/EEA and the UK.
- **WHO**: cautioned against any relaxation of response actions following the recent slight decline in COVID-19 cases, saying the pandemic continues unabated and our response only needs to be strengthened further to curtail virus transmission. WHO is working with countries to take a holistic approach to the preparedness, prevention, control and treatment of all respiratory diseases, including influenza and COVID-19.
- **ECDC**: You will find a new risk assessment for the EU and UK in the risk assessment part of this document.
- **EU Sure project**: The Commission disbursed the first 17 billion euros in aid to finance short-time working benefits during the Corona crisis. As the authority announced, ITA received ten billion euros in loans, ESP six billion and POL one billion. Payments to other countries are to be made in the coming months.

GLOBALLY ↗
43 580 087 confirmed cases
29 270 650 recovered
1 161 232 deaths

EU/EEA and the UK ↗
9 032 528 confirmed cases
3 485 950 recovered
263 551 deaths

USA ↗
(new cases/day 63 384)
8 635 830 confirmed cases
3 428 915 recovered
224 830 deaths

India ↘
(new cases/day 45 148)
7 946 429 confirmed cases
7 201 070 recovered
119 502 deaths

Brazil ↗
(new cases/day 13 493)
5 409 854 confirmed cases
4 526 393 recovered
157 397 deaths

Russia ↗
(new cases/day 17 148)
1 537 142 confirmed cases
1 152 848 recovered
26 092 deaths

France ↗
(new cases/day 26 771)
1 165 278 confirmed cases
111 347 recovered
35 018 deaths

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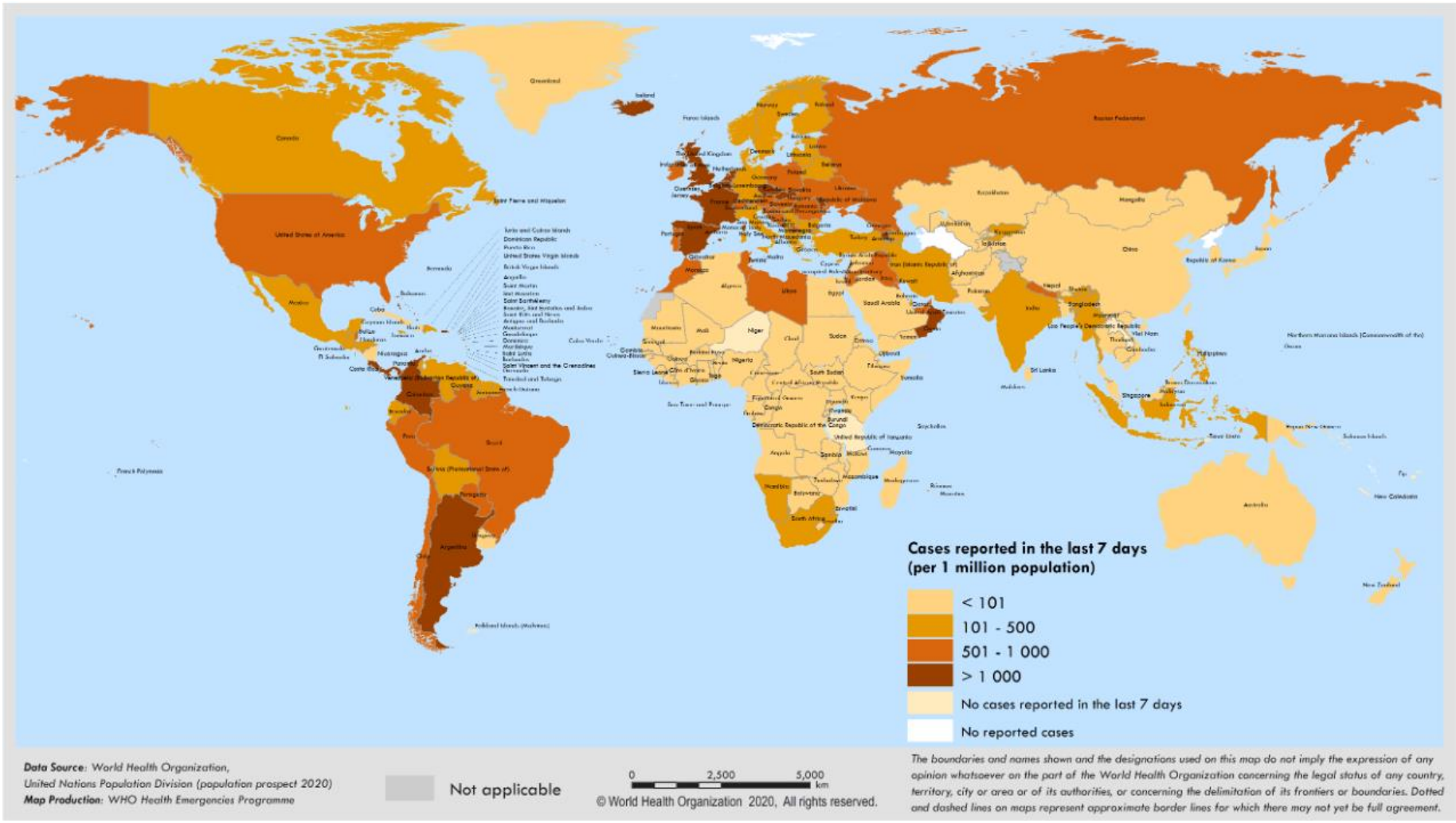
Map of countries with reported COVID-19 cases (last 7 days)



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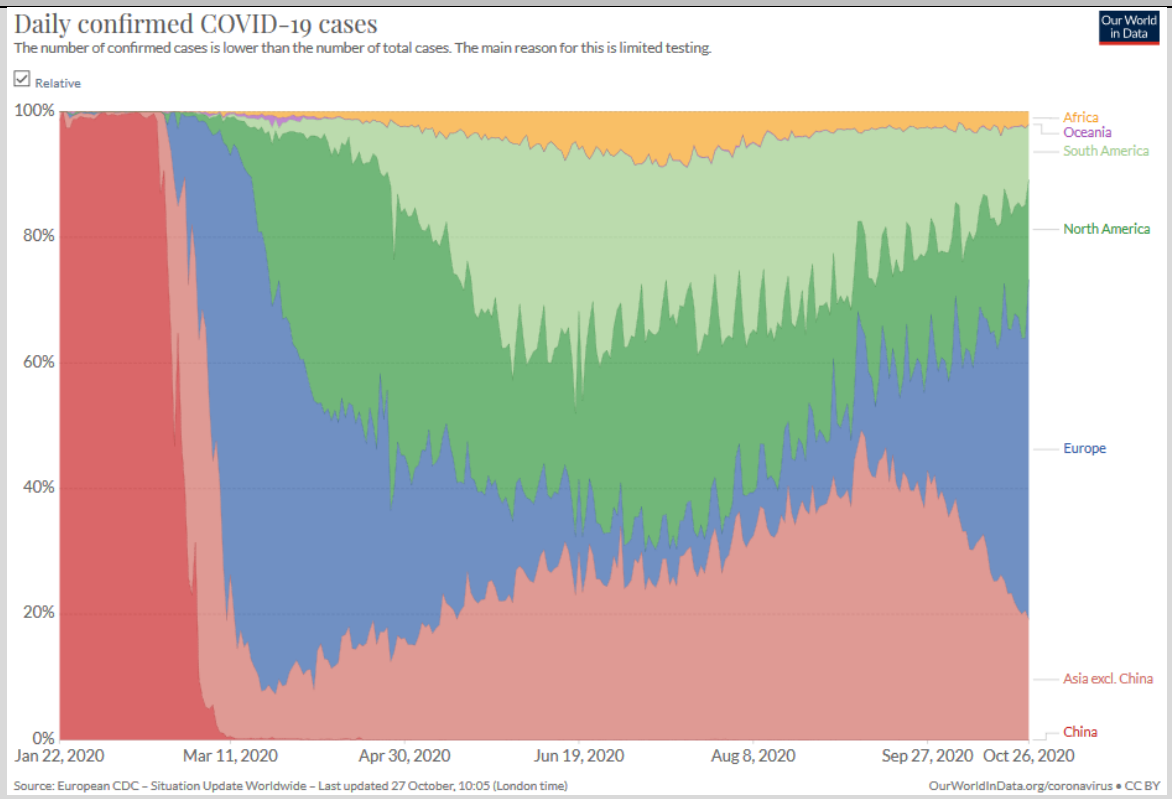
Worldwide Situation

Global Situation



WHO weekly operational update on COVID-19 as of 16th October 2020:

See information about partnership, logistics, health learning, medicines and health products, funding/donors and regional highlights in the document as well as links to Technical guidance and latest publications.

New COVID-19 rapid tests a game changer for Africa

The roll-out of new, World Health Organization (WHO) approved antigen-based rapid diagnostic tests for the novel coronavirus in Africa will significantly boost testing capacity and marks a game changer in the continent's fight against COVID-19.

To control the pandemic countries needs to test in sufficient numbers many African countries have struggled with this challenge. Only 12 countries in the region reaching a key threshold of 10 tests per 10 000 people per week during the past month. They have also often fallen short when compared to other countries of a similar size in a different region. For example, Senegal has significantly boosted its testing capacity but is testing 14 times less than the Netherlands. Nigeria is testing 11 times less than Brazil.

PCR tests, the gold standard, are conducted by most countries in the region. This test requires laboratories, reagents and experts, limiting COVID-19 testing mostly to large cities. People can wait from 48 hours to more than ten days for results as they are sent for laboratory verification.

The new rapid tests are easy to use, cheaper than PCR tests and provide the results in just 15–30 minutes, enabling countries to decentralize testing.

Most African countries are focused on testing travelers, patients or contacts, and we estimate that a significant number of cases are still missed as active case finding in challenging environments, such as crowded urban neighbourhoods and communities in the hinterlands are often not achievable with PCR testing.

Rapid antigen tests are an addition to PCR tests, not a replacement for them, and WHO recommends tests that are above 80% accurate. They are more reliable in patients who are symptomatic, with a high viral load, or a lot of virus in their upper respiratory tract.

Currently there are two tests which WHO has approved for emergency use:

- the “standard Q COVID-19 Antigen Test” by SD Biosensor Inc and,
- the “Panbio COVID-19 Antigen Rapid Test Device” by Abbott.

Both tests determine proteins produced by the SARS-CoV-2 virus, which causes COVID-19.
Bodily fluids are taken from a nasal swab and applied with liquid to a paper strip, where a dye gives the result.

Scenarios for utilization recommended by WHO:

- in suspected outbreaks where there is no access to PCR testing, including in remote, hard-to-reach areas;
- to trace the extent of an outbreak where at least one case is detected through PCR, including in close-contact settings such as prisons;
- among high-risk groups like health workers; and
- in areas with widespread community transmission.

“The widespread use of high-quality rapid testing in Africa can revolutionize the continent’s response to COVID-19,” said Dr Matshidiso Moeti, WHO Regional Director for Africa. “The new, antigen-based rapid diagnostic tests will help meet the huge testing needs in Africa.”

Sources:
https://www.afro.who.int/news/new-covid-19-rapid-tests-game-changer-africa

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Country reports:

LKA: Due to a corona case, the Sri Lankan parliament has been closed for two days to disinfect the buildings and grounds. The measure was decided after a police officer on duty in the complex tested positive for the coronavirus. Further tests in the area of the official are planned, said the parliamentary administration. In the island state with around 22 million inhabitants, 351 new corona cases were recently reported. The hotspot is a textile factory near Colombo, where 4,400 infections have been detected so far - more than half of the total of 7,872 cases since the pandemic began.

CHN: Dozens of new corona cases became known in China over the weekend. According to media information, almost 140 new infections were registered in the city of Kashgar in the north western part of Xinjiang. According to official information, there had been virtually no new local infections in the country of origin of the corona pandemic in the previous weeks. Xinjiang authorities want to test more than four million people in Kashgar Governorate by tomorrow. Numerous flights to and from the region have been cancelled.

AUS: The state of Victoria in southeast Australia is lifting its strict corona lockdown after almost three months. As of Wednesday, shops, bars, cafes and restaurants should reopen in the capital Melbourne and other parts of the region. In addition, citizens are again allowed to leave their homes without restrictions. The strict requirements have been in place since the beginning of August. On Monday, the state had not registered a new infection for the first time since June 9.

VEN: A highly effective agent against the coronavirus has allegedly been discovered in Venezuela. A molecule called DR-10 destroys COVID-19 one hundred percent without causing side effects, the authoritarian President Nicolás Maduro announced in a speech on Sunday. That was the result of a six-month study by the state research institute IVIC. The molecule has already been used to treat hepatitis C, human papillomavirus and Ebola, Maduro said. The process of approval by WHO to offer this treatment to the world has already begun. There is no report from the World Health Organization.

USA: On the second day in a row, a record number of new infections with the coronavirus was recorded. As the Johns Hopkins University announced on Saturday (local time), 88,973 new cases of infection were recorded within 24 hours. The record value of almost 80,000 new infections announced the previous day was thus clearly exceeded again.

IND: The number of daily coronavirus infections has dropped to its lowest level in three months. While new highs are registered almost daily in Europe, the Indian Ministry of Health reported 36,470 new cases within 24 hours. The number was last lower on July 17, when it was a good 35,000 new

	infections. In September, daily increases in infections of almost 100,000 cases were recorded. More than 119,500 infected people have died, 488 of them in the past 24 hours. --- **IRN**: Iran has reported more corona deaths than ever before within a day. According to the Ministry of Health, 346 COVID-19 patients died within 24 hours. Almost 7,000 new infections were registered during the same period. According to health experts, the number of cases is likely to be more than twice as high as stated, because there are still too few test options in Iran. --- **HKG**: the restrictions introduced in July to contain the corona pandemic are being relaxed. After hardly any new infections were reported in the financial metropolis, the beaches are becoming accessible again. In addition, from Friday more people will be allowed to stay in bars and restaurants again.

Situation in Europe	In Europe a considerable further increase in COVID-19 infections have been reported and the current situation represents a major threat to public health. In most countries, notification rates have increased in certain regions, with extremely high levels in some areas. In addition to the substantial increases seen in most countries among younger age groups, notification rates have also increased in older age groups. Reported test positivity has been steadily increasing since August and has shown a marked escalation in recent weeks, pointing to a real increase in rates of viral transmission, rather than just a rise in reported cases attributable to increased testing. Vulnerability to infection remains high, as available data from seroprevalence studies indicate that the level of immunity in the population is <15% in most areas. As the epidemiological situation has worsened across the region, the impact in terms of pressure on healthcare services and mortality has become increasingly evident. Data on hospital and intensive care unit (ICU) admissions and occupancy are incomplete for most EU countries, but available data indicate that the situation is deteriorating, with increasing trends reported in most countries. Recent estimates suggest that levels of hospital and ICU occupancy across the region are now at around a third of the peak that occurred during the spring. Options for treatment of individuals with severe infection remain largely supportive. Many countries have reported increasing death rates, and the overall death notification rate has been rising for over a month. Although case fatality rates are currently lower than they were earlier in the year, due to increased detection among young people and/or improved care for patients with severe COVID-19, there is a high likelihood that these rates will continue to rise. In fact, with high levels of community transmission, the protection of medically vulnerable individuals becomes more difficult and, it is inevitable that more individuals who are not considered medically vulnerable will develop severe disease. The current epidemiological situation in most countries is a serious concern as it poses an increasing risk of transmission, requiring immediate, targeted public health action. Source: https://www.ecdc.europa.eu/en/publications-data/covid-19-risk-assessment-increased-transmission-thirteenth-update --- **COVID-19 Vaccination** ECDC launched a new document obtaining key aspects regarding the introduction and prioritisation of COVID-19 vaccination. The document provides an overview of the key aspects related to the initial phases following the introduction of one or more COVID-19 vaccines in the EU/UK. The aim is to support but not define EU policy on COVID-19 vaccination. Key components for vaccine development on national and EU level: • a robust COVID-19 disease surveillance system; • post-marketing studies on effectiveness and impact; • active and passive monitoring of adverse events following immunisation; • robust and timely vaccination coverage data; • evidence-based decision-making; • legal and regulatory frameworks for vaccines deployment; • vaccine delivery infrastructure and supply chain management; • monitoring of vaccine acceptability and behavioural research; • communication plans; • ethical and equitable access to vaccination. These components the same as usually adopted when a new vaccine is available on the market and integrated into national vaccination schedules. For the SARS-COV-2 virus there are different points that will influence the choices of vaccine development like; Patterns of exposure to SARS-CoV-2, as well as the incidence, burden and geographical distribution of COVID-19. There is currently a lack of certainty and knowledge about the characteristics of COVID-19 vaccines that could become available in the EU/EEA and the UK, as well as remaining gaps in the scientific

knowledge of the virus and the disease. Vaccination plans and strategies will therefore need to be adapted as more information becomes available.

In the beginning the supply of COVID-19 vaccines is likely to be limited, at least initially. Supply capacity, both initially and over time, will thus determine vaccine usage and delivery prioritisation. Deployment will need to be adjusted accordingly to promptly optimise vaccine allocation and ensure vaccine availability to those most in need.

Non-mutually exclusive approaches for vaccine deployment should be considered when building vaccination strategies, taking into account different levels of vaccine supply and stages of the pandemic:

- focusing on selected groups (e.g. individuals at risk of severe COVID-19, essential workers, vulnerable groups);
- vaccinating according to age strata (e.g. all individuals above a certain age);
- targeting groups with an increased risk of exposure and onward transmission of SARS-CoV-2 (e.g. exposure in professional settings, younger adults);
- prioritising geographical regions with high incidence of COVID-19;
- deploying the vaccine to control active outbreaks;
- performing adaptative approaches to be modulated according to circumstances;
- conducting a universal vaccination strategy.

It is anticipated that there will be initial shortage, therefore countries will need to identify priority groups for vaccination. A broader characterisation of these groups will need to further categorise them into different priority tiers. The identification of the priority groups, and of the tiers within them, will depend on several factors, including:

- the disease's epidemiology at the time of vaccine deployment,
- the evidence of risk of severe disease and of exposure to COVID-19,
- and the preservation of essential societal services and equity principles, among others.

In the process of developing an iterative approach for vaccine deployment with varying supply, mathematical modelling may aid public health experts in identifying priority groups for vaccination and in assessing different scenarios and the impact of alternative vaccination strategies. Lessons learned from the 2009 H1N1 influenza pandemic should also be considered.

Source: https://www.ecdc.europa.eu/sites/default/files/documents/Key-aspects-regarding-introduction-and-prioritisation-of-COVID-19-vaccination.pdf

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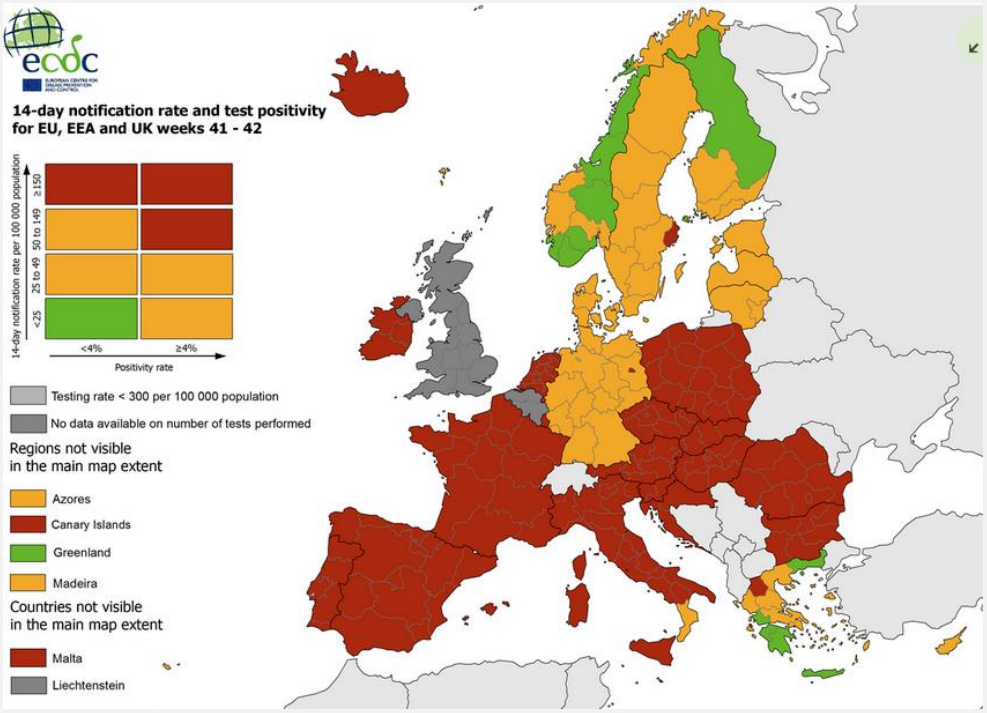
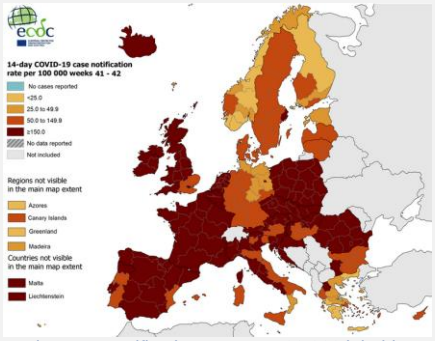
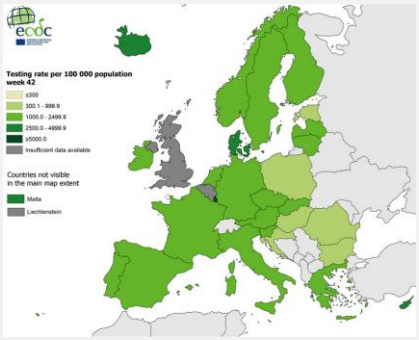
Maps in support of the Council Recommendation on a coordinated approach to the restriction of free movement in response to the COVID-19 pandemic in the EU, as of 22 October 2020 (maps are updated every week by 23:59 on Tuesday)

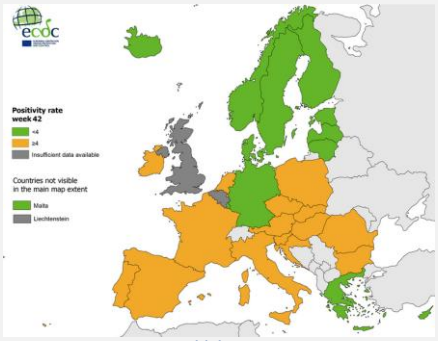




14-day case notification rate per 100 000 inhabitants



Testing rates per 100 000 inhabitants



Positivity rates

ECDC COVID-19 surveillance report Week 41, as of 15 October 2020

Weekly surveillance summary

This summary presents highlights from two separate weekly ECDC surveillance outputs, using data up to the end of the current reporting week (week 42, ending Sunday 18 October 2020).

- The COVID-19 country overview provides a concise overview of the evolving epidemiological situation with the COVID-19 pandemic, both by country and for the European Union/European Economic Area (EU/EEA) and the United Kingdom (UK) as a whole, using daily and weekly data from a range of sources.
- The COVID-19 surveillance report presents the epidemiological characteristics of COVID-19 cases reported to The European Surveillance System (TESSy) to date and assesses the quality of the data.

Trends in reported cases and testing

- By the end of week 42 (18 October 2020), the 14-day case notification rate for the EU/EEA and the UK, based on data collected by ECDC from official national sources from 31 countries, was 249.8 (country range: 35.9–875.1) per 100 000 population. The rate has been increasing for 91 days.
- High levels (at least 60 per 100 000) or sustained increases (for at least seven days) in the 14-day COVID-19 case notification rates compared with the previous week have been observed in 28 countries (Austria, Belgium, Bulgaria, Croatia, Cyprus, Czechia, Denmark, Finland, France, Germany, Hungary, Iceland, Ireland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, the Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden and the UK).
- Based on data reported to TESSy from 20 countries, among people over 65 years of age, high levels (at least 60 per 100 000) or sustained increases in the 14-day COVID-19 case notification rates compared to last week have been observed in 16 countries (Austria, Czechia, Denmark, Hungary, Iceland, Ireland, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Portugal, Romania, Slovenia, Spain and Sweden).
- Notification rates are highly dependent on several factors, one of which is the testing rate. Weekly testing rates for week 42, available for 28 countries, varied from 509 to 7 731 tests per 100 000 population. Luxembourg had the highest testing rate for week 42, followed by Denmark, Iceland, Malta and Cyprus.
- Weekly test positivity was high (at least 3%) or had increased against the previous week in 19 countries (Austria, Bulgaria, Croatia, Czechia, France, Germany, Hungary, Iceland, Ireland, Italy, Malta, the Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain and Sweden).

Primary care

- In the seven countries that reported data from primary care sentinel surveillance for COVID-19 up to week 42, using the systems established for influenza, two detections of SARS-CoV-2 were reported among the 77 patients tested.
- Among 17 countries that reported influenza-like illness (ILI) and/or acute respiratory infection (ARI) syndromic surveillance data up to week 42, using the systems established for influenza, Belgium and Ireland had observed recent increases in consultation rates to levels higher than those reported during the same period for the last two years.

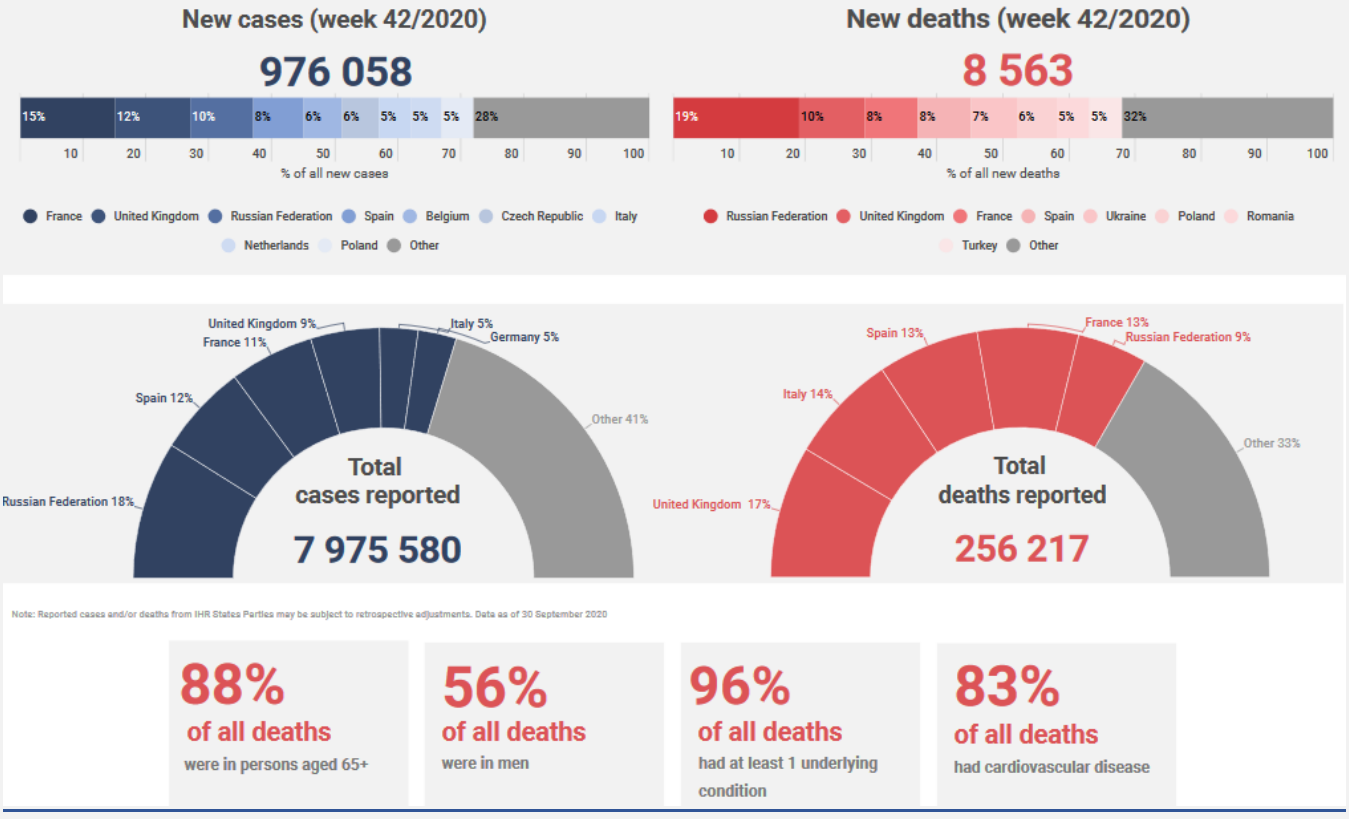
Hospitalisation

- Hospital and/or ICU occupancy and/or new admissions due to COVID-19 were high (at least 25% of the peak level during the pandemic) or had increased compared to the previous week in 21 countries (Austria, Belgium, Bulgaria, Croatia, Czechia, Denmark, Estonia, Finland, France, Greece, Hungary, Ireland, Italy, Latvia, the Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia and the UK). No other increases have been observed, although data availability varies.
- Based on surveillance data reported to TESSy by 23 countries to date, we estimate that 18% (country range: 3–73%) of reported COVID-19 cases have been hospitalised. Data from 15 countries show that in total 7% (country range: 0–61%) of hospitalised patients required ICU and/or respiratory support. However, these proportions vary considerably by age and sex and may be influenced by national policies and practices.

Mortality

- The 14-day COVID-19 death rate for the EU/EEA and the UK, based on data collected by ECDC from official national sources from 31 countries, was 17.4 (country range: 0.0–60.2) per million population. The rate has been increasing for 37 days.
- High levels (at least 10 per million) or sustained increases (for at least seven days) in the 14-day COVID-19 death rates compared to those reported seven days ago are currently being observed in 18 countries (Austria, Belgium, Bulgaria, Croatia, Czechia, France, Hungary, Ireland, Italy, Lithuania, Luxembourg, Malta, the Netherlands, Poland, Portugal, Romania, Spain and the UK).
- Overall pooled estimates of all-cause mortality reported by EuroMOMO for week 42 show a slight increase in excess mortality for the participating countries, limited to a few countries.

[COVID-19 situation update for the WHO European Region (12 – 18 October 2020 Epi week 42)]



Country Reports:

EU: To secure jobs in the Corona crisis, Italy, Spain and Poland received the first 17 billion euros from the new EU program Sure. This was announced by the EU Commission. These are inexpensive loans that can be used to finance short time working programs and help for the self-employed. Specifically, Italy initially received 10 billion euros, the first tranche of a committed sum of 27.4 billion. Spain initially received 6 out of 21.3 billion and Poland received 1 billion out of 11.2 billion. A total of 87.9 billion euros has been agreed to be paid out to 17 countries under Sure. The lid is 100 billion euros. The program is part of a package with aid of 540 billion euros that the EU states agreed on shortly after the pandemic began in spring.

SWE: continues to take its much-discussed special path in dealing with the pandemic. Sweden's chief epidemiologist warns strongly of nationwide corona restrictions. “People can only stick to such strict instructions for a limited time, and timing is critical,” he says. “We mustn't start too early and don't wait too long either.” In the Scandinavian country, there is still no mask requirement, there is no talk of other measures such as a night curfew. The Swedish authorities have tightened some recommendations for dealing with the pandemic, but at the same time the requirements for senior citizens have been relaxed.

CHE: In view of the rapid spread of the coronavirus, the Swiss government has announced further steps to contain the pandemic. The population should be prepared for long-term restrictions. Wednesday will decide on the measures for the next few weeks and months. Switzerland is currently one of the worst affected countries in Europe. According to the Federal Office of Public Health (FOPH), 17,440 people have been infected with the corona virus in Switzerland since Friday - an average of 5813 people in the last three days.

AUT: Austria's Chancellor has issued a second lockdown. However, in Austria the impending collapse of the health system is a legal requirement for a lockdown. However, this is not expected in the near future.

NDL: The number of new corona infections in the Netherlands rose by 10,343 within 24 hours - a new high.

DEU: With 11,409 new infections within 24 hours, the virus started to spread exponentially; some health authorities (Berlin) are no longer able to track all contact persons and limit themselves to risk cases. In the meantime, 272 of 404 German rural districts and urban districts are above the risk threshold postulated by the German Health Institute (RKI). Nationwide, the management of the German Hospital Association declared that non-emergency surgical interventions in particularly stressed regions could soon be postponed.

FRA: The number of new corona infections in France exceeded the 50,000 mark within 24 hours for the first time on Sunday. In total, at least 52,010 people were infected with the new type of corona virus, as the health authorities announced. There were more than 45,000 on Saturday. 116 new deaths have also been reported since Saturday. According to the information, more than 2570 people are currently being treated in intensive care units. At the height of the pandemic in the spring, there were more than 7,000 patients. In the past 24 hours, 1,307 people infected with corona were admitted to hospitals, and a total of 17,784 people with symptoms were in clinics on Monday.

DNK: for the first time since the start of the corona pandemic, more than 1000 new infections have been recorded within one day. At the beginning of the week, new restrictions also came into force. Since Monday, alcohol has not been allowed to be sold after 10:00 p.m. Meetings with more than ten participants are prohibited. From Thursday, the mask requirement, which has already applied in public transport, bars and restaurants, will be extended to all public spaces. Compared to the rest of Europe, Denmark is one of the countries less affected by the corona pandemic.

BEL: Dozens of doctors and nurses in the completely overloaded clinics in the Belgian province of Liège are on duty, despite being infected with the corona virus. "We have to choose between a bad and

	a very bad solution," said Philippe Devos of the Belgian Federation of Medical Unions. The very bad solution is not to treat patients at all. --- **CZE**: Despite exit restrictions, new corona infections in the Czech Republic remain at a dramatically high level. 7,301 confirmed cases were added on Sunday. This is the highest number on a Sunday since the beginning of the pandemic, as there is generally less testing on Sundays. The government is advising on tightening the measures and further restrictions and extending the emergency. --- **RUS**: According to the authorities, the number of corona infections in Russia has risen by 17,347 within 24 hours on Monday. Of these, 5224 cases were recorded in Moscow alone. The number of deaths rose 219 to a total of 26,269. --- **SVK**: In Slovakia, the first phase of an unprecedented test of almost the entire Slovak population for the coronavirus has come to an end. Since Friday, under the direction of the Ministry of Defense, all residents over ten years old in four particularly badly affected districts on the border with Poland have been subjected to a rapid antigen test. The rest of the country should follow on the next two weekends - after all, around five million people. The government in Bratislava sees this project as an example that other European countries could also follow. In the beginning there were personal and organizational problems, but important insights were gained for the more demanding second and third phases. Even in this first phase, "an estimated 6000 potential spreaders of the virus were discovered that would not have been noticed under normal circumstances. --- **SVN**: Slovenia is further restricting the freedom of movement of its citizens due to the rapidly increasing number of corona infections. From Tuesday, residents are no longer allowed to leave their own community without good reason. The regulation initially applies for seven days. It can then be withdrawn in those regions where the contagion numbers are falling. Movements between the twelve regions of the country have not been allowed for a week. A night curfew from 9 p.m. to 6 a.m. has also been in effect for a week. Most of the shops - except for grocery stores - and hotels have been closed since the weekend.

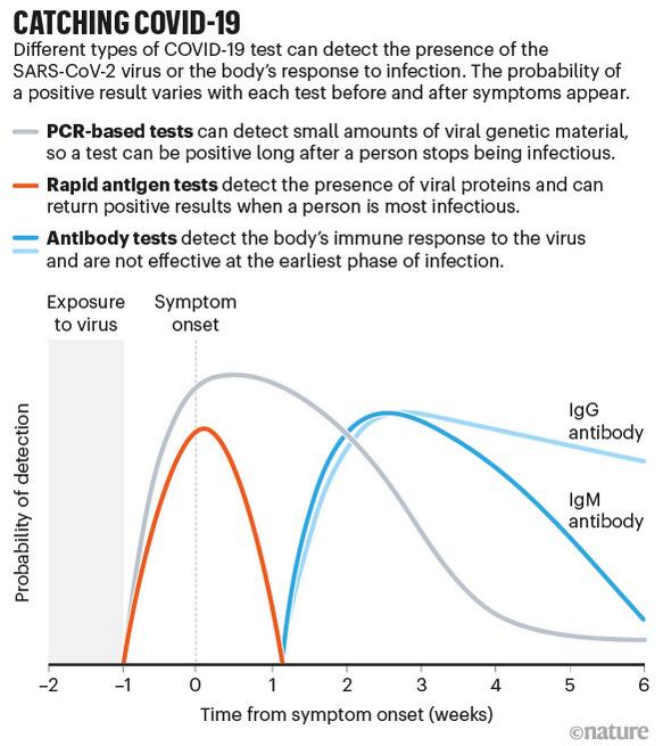
Subject in Focus

Testing for SARS-CoV-2 different ways and reasons

SARS-CoV-2 Serology; Antigen-testing and PCR Testing

Accurate molecular tests for active SARS-CoV-2 infection and subsequent serological tests for the presence of anti-viral antibodies are key tools for fighting the COVID-19 pandemic. PCR-based testing is used to identify infected individuals, and serological testing is necessary to understand the immune response in those who have recovered. Lately there have been new affordable, reliable antigen diagnostic tests recently approved by WHO that can be performed anywhere (even in rural areas) named as a game changer in the fight against COVID-19.

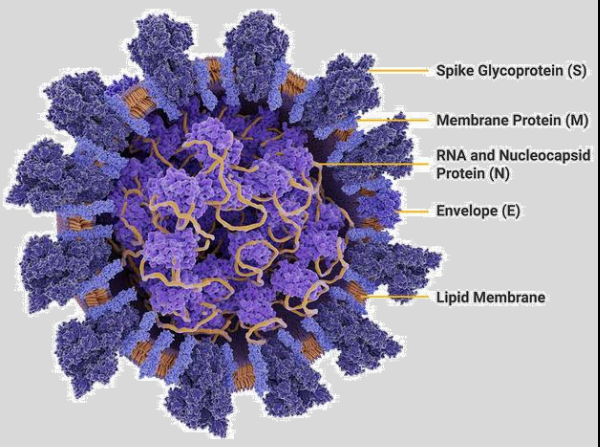
But what are the intent to use which test and in which setting?



SARS-CoV-2 Targets for PCR and Serological Analysis

The SARS-CoV-2 genome encodes multiple structural and non-structural proteins. Structural proteins include the spike (S), envelope (E), membrane (M), and nucleocapsid (N) proteins.

The structure of the viral spike protein was published in Science on February 19, 2020. The spike protein has been shown to be the site of binding to the ACE2 receptor and is of interest as a potential target for neutralizing antibodies and as a target for therapies that could prevent attachment to target cells or internalization of the ACE2 receptor. Several viral proteins have also emerged as potential targets for the use of antiviral and other therapeutic agents.



Antigen and PCR-Based SARS-CoV-2 Testing Methods

Currently, there are two types of diagnostic tests for COVID-19 recommended by WHO:

- Molecular (RT-PCR) tests, which detect the virus' genetic material
- Antigen tests that detect specific proteins on the surface of the virus

Molecular and antigen tests can detect if you have an **active** coronavirus infection.

Molecular and antigen tests are performed using samples taken mostly from the nose and throat using a long swab, or other respiratory specimens.

PCR tests

RT-qPCR based assays designed to amplify SARS-CoV-2-specific sequences are the primary method currently used for detection of active infections. Tests are available targeting various unique SARS-CoV-2 sequences in the N, E, S and RdRp sequences. RT-qPCR tests that use two or more targets are likely to have higher specificity.

SARS-CoV-2 is a positive-sense, single-stranded RNA virus. The genome has been shown to share 79.6% identity with SARS-CoV, and the SARS-CoV-2 virus has been shown to bind to the same ACE2 cell surface receptor.

Antigen-detection

WHO recommend using antigen detection as the method is much simpler and faster to perform than PCR in some settings (see below).

The method relies on direct detection of SARS-CoV-2 viral proteins in nasal swabs and other respiratory secretions using a lateral flow immunoassay (also called an RDT) that gives results in < 30 minutes. Though these antigen detection RDTs are substantially less sensitive than PCR, but they offer the possibility of rapid, inexpensive and early detection of the most infectious COVID-19 cases in appropriate settings if used in the right time frame.

Scenarios for utilization recommended by WHO:

- in suspected outbreaks where there is no access to PCR testing, including in remote, hard-to-reach areas;
- to trace the extent of an outbreak where at least one case is detected through PCR, including in close-contact settings such as prisons;
- among high-risk groups like health workers; and
- in areas with widespread community transmission.

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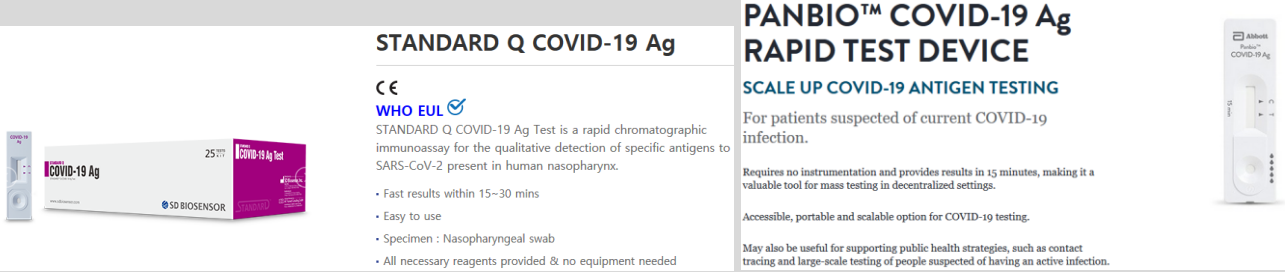
- the “Panbio COVID-19 Antigen Rapid Test Device” by Abbott.



When used on people who were positive for SARS-CoV-2 in a standard PCR test, Abbott’s antigen assay correctly spotted the virus in 95–100% of cases if the samples were collected within a week of the onset of symptoms. But that proportion dropped to 75% if samples were taken more than a week after people first showed symptoms.

Rapid antigen tests are an addition to PCR tests, not a replacement for them, and WHO recommends tests that are above 80% accurate. They are more reliable in patients who are symptomatic, with a high viral load, or a lot of virus in their upper respiratory tract.

If the test result is positive, a confirmation test is not required. However, negative results do not rule out a COVID-19 infection. Therefore, negative results cannot be used as the sole basis for treatment or fundamental decisions, but must be combined with clinical observations, patient history, and epidemiological information. At present, antigen tests are administered by trained professionals.

Guidance from WHO and CDC as well as other countries health institutes say that people who have a negative result from an antigen test should also get a PCR test if they show symptoms, to rule out the possibility that the rapid test missed an infection. The FDA, however, has authorized antigen-based tests only for people who have had symptoms for 12 days or fewer. Tests must be prescribed by a physician and administered by a health-care professional.

Despite some negative effect's antigen tests are currently used in some countries to test the inhabitants in a large scale and are a benefit for countries with rural areas not easy to reach by health workers. The benefit of using antigen-tests need to be monitored in the future and future studies will show if they will have an added value in the fight against COVID-19.

Serological Assays for SARS-CoV-2

Even if PCR is still the gold-standard in detecting SARS-CoV-2 PCR-based methods can only tell us if the virus is present in the patient at the time of sampling. They do not provide any information about past infection or the presence of anti-SARS-CoV-2 antibodies.

Serological assays are needed to answer these important questions about individual exposure, to conduct population screening and surveillance, and ultimately to understand the adaptive immune response to this disease.

Serology tests detect the presence of antibodies in the blood when the body is responding to a specific infection, like COVID-19. In other words, the tests detect the body's immune response to the infection caused by the virus rather than detecting the virus itself. In the early days of an infection when the body's immune response is still building, antibodies may not be detected. This limits the test's effectiveness for diagnosing COVID-19, and this is one reason serology tests should not be used as the sole basis to diagnose COVID-19.

Antibodies are proteins made by the immune system to fight infections like viruses and may help to ward off future occurrences by those same infections. Antibodies can take days or weeks to develop in the body following exposure to a SARS-CoV-2 (COVID-19) infection and it is unknown how long they stay in the blood.

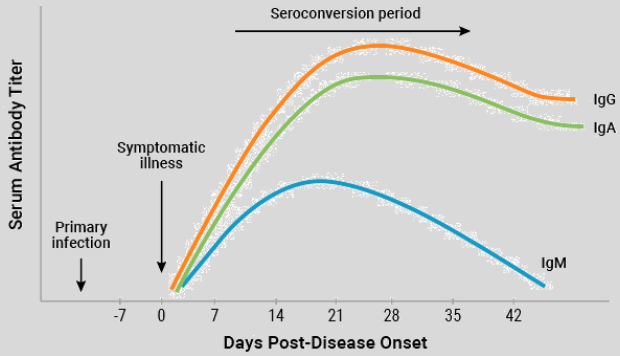


Figure 3. Graphical representation of the estimated antibody titers (IgG, IgA and IgM) produced by COVID-19 patients 6 weeks post-symptom onset (Illustration adapted from Lee et al[37]).

The availability of specific and sensitive serological tests to demonstrate the presence of antibodies to the virus is vital to vaccine development efforts and to understanding whether an individual is safe from re-infection. Antibody tests need to be able to specifically detect antibodies against SARS-CoV-2 with no cross-reactivity to other coronaviruses.

SARS-CoV-2 serological assays used to detect antibodies in the blood (ex: serum or plasma), can be useful:

- for identifying exposed persons who have mounted an immune response but may be asymptomatic,
- show negative results in PCR testing,
- produce a low viral load,
- or present later in the course of disease and
- when respiratory sampling is not possible.

However, SARS-CoV-2 serological assays are not currently recommended for diagnosis or measurement of active infection.

Other areas of potential use for SARS-CoV-2 serologic testing include:

- Generating serologic data in order for researchers to study time-course of disease,
- supporting vaccine development strategies,
- assessing the number of exposed individuals within a population,
- assisting the medical community in understanding the adaptive immune response to SARS-CoV-2,
- identifying eligible donors of convalescent plasma as a possible treatment strategy for critically ill COVID-19 patients.

Presently, numerous serology tests for SARS-CoV-2 antibody detection have been granted Emergency Use Authorization (EUA) by the national agencies, which differ based on:

- their performance characteristics,
- the technological approaches they employ to detect antibodies
- the class of antibodies they are capable of detecting in blood for different SARS-CoV-2 antigens.

For example, some serological assays may only detect IgG, while others detect both IgG and IgM, or all antibody classes. They may also detect different SARS-CoV-2 viral antigens. Some tests have demonstrated greater sensitivity with combined IgG and IgM measurement, and recent meta-analysis demonstrates that using antigens to viral spike (S) versus nucleocapsid (N) proteins may also increase sensitivity of serological tests. The complete utility of these tests has yet to be determined for COVID-19 disease, as the world continues to obtain new information regarding the immune response to SARS-CoV-2.

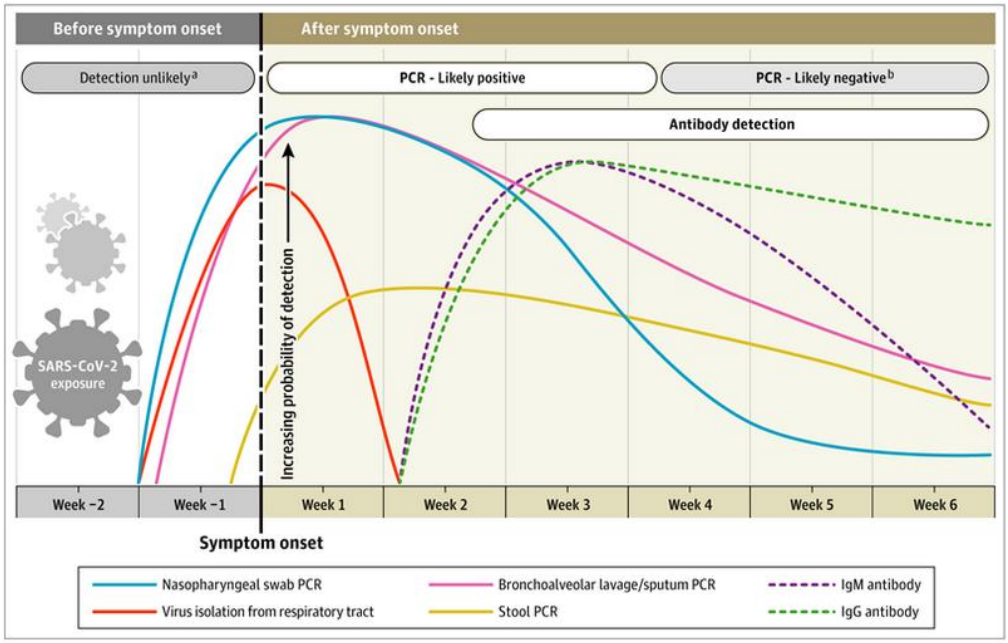
What we know about the SARS-CoV-2 antibody-mediated immune response is derived from a limited number of recent studies which have collected serologic data from COVID-19 patients, using both experimental and commercially available serological assays. From these studies, it has been demonstrated that after 2 weeks post-disease onset, the average seroconversion rate is between 90-100% for IgM-IgG antibodies produced against the SARS-CoV-2 S and N proteins.

Other studies showed IgM and IgG seroconversion occurred in all patients between the third and fourth week of clinical illness onset. Thereafter IgM begins to decline and reaches lower levels by week 5 and almost disappears by week 7, whereas IgG persists beyond 7 weeks.

Conclusion:

In this moment of the knowledge about the SARS-COV-2 virus there are many uncertainties in the nature of the new virus and over time and with more studies we may find new ways of detecting the virus in blood or on molecular level. Until know we need to find a good balance an using the methods available as everyone as it´s limitation and benefits.

Figure. Estimated Variation Over Time in Diagnostic Tests for Detection of SARS-CoV-2 Infection Relative to Symptom Onset



Sources:

- https://www.fda.gov/medical-devices/coronavirus-disease-2019-covid-19-emergency-use-authorizations-medical-devices/eua-authorized-serology-test-performance
- https://www.fda.gov/medical-devices/coronavirus-covid-19-and-medical-devices/antibody-serology-testing-covid-19-information-patients-and-consumers
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- https://science.sciencemag.org/content/367/6483/1260
- https://www.who.int/publications/i/item/antigen-detection-in-the-diagnosis-of-sars-cov-2infection-using-rapid-immunoassays
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MilMed CoE VTC COVID-19 response

Topic	The NATO Centre of Excellence for Military Medicine is putting its expertise and manpower to aid in any way possible during the pandemic. The VTC is for interested participants (experts) to exchange experiences, management regulations and restrictions due to COVID-19. We would like to propose just one of the most important topics in the next iteration. We will have some experts giving a short briefing and then afterward we will have time for questions and experiences as well as a fruitful discussion. **Topics former VTCs:** • Regulations on the public, military and missions abroad. Medical Treatment Facilities: how equipped they are, is there pooling / isolation of COVID-19 patients in separate facilities. • Testing strategies • Aeromedical evacuation • De-escalation strategy and measures • Collateral damage of COVID-19 emphasing Mental Health Aspects and other non COVID related diseases • Immunity map, national strategies to measure and evaluate the immunity level" • Mental Health • Treatment of mild symptomatic cases of COVID-19 • Transition home office back to the office • COVID-19 Second Wave prediction and preparedness based on facts/experiences, modelling and simulation • Perspectives of the current COVID-19 vaccine development • National overview on current COVID-19 situation • Long term effects of COVID-19 and the impact on force capability • Overview on current COVID-19 situation in Missions • Civil – military cooperation in view of COVID-19
Civil – military cooperation in view of COVID-19	Briefer from DEU, BEL, ESP and CZE reported. The **German Briefer** give an overview about the evaluation of outbreak management as well as introduced the for the Model Munich as an way of civil-military cooperation in knowledge management & control. They designed a matrix based on the WHO framework for the Strategic preparedness and response plan. The Dashboard Munich-Knowledge management & control tool includes data for Epidemiology, Patient care, Laboratory/Testing, Risk communication, Execution and current Studies. --- The Briefer from **Czech Republic** talked about the COVID-19 Epidemic Countermeasures, the military medicine capabilities and capacities in CZE, the CZE MoD Support to civilian organisations and the potential to expand. --- **ESP** introduce the Balmis Operation, talked about the Armed Forces activities and about the Military medical role during Op. Balmis. --- **The BEL** Briefer talked about the development of courses of action, Procedures and protocols. --- Next VTC will be on Wednesday 4th of November with the topic "**Immunity development versus reinfections of COVID-19".**

Recommendations

Recommendation for international business travellers As of 19th October 2020	Many countries have halted some or all international travel since the onset of the COVID-19 pandemic but now have re-open travel some already closed public-travel again. This document outlines key considerations for national health authorities when considering or implementing the gradual return to international travel operations. The decision-making process should be multisectoral and ensure coordination of the measures implemented by national and international transport authorities and other relevant sectors and be aligned with the overall national strategies for adjusting public health and social measures. WHO Public health considerations while resuming international travel. **Travel has been shown to facilitate the spread of COVID-19 from affected to unaffected areas. Travel and trade restrictions during a public health event of international concern (PHEIC) are regulated under the International Health Regulations (IHR), part III.** The majority of measures taken by WHO Member States relate to the denial of entry of passengers from countries experiencing outbreaks, followed by flight suspensions, visa restrictions, border closures, and quarantine measures. Currently there are exceptions foreseen for travellers with an essential function or need. **In the case of non-deferrable trips, please note the following** • Many airlines have suspended inbound and outbound flights to affected countries. Contact the relevant airline for up-to-date information on flight schedules. • Check your national foreign office advices for regulations of the countries you´re traveling or regulations concerning your country. • Information's about the latest travel regulations and De-escalation strategy measures you can find at IATA and International SOS. For Europe you will find more information here. **Most countries implemented strikt rules of contact reduction:** • Everyone is urged to reduce contacts with other people outside the members of their own household to an absolutely necessary minimum. • In public, a minimum distance of 1.5 m must be maintained wherever possible. • Staying in the public space is only permitted alone, with another person not living in the household or in the company of members of the own household (for most countries, please check bevor traveling). • Follow the instructions of the local authorities. **Risk of infection when travelling by plane:** The risk of being infected on an airplane cannot be excluded, but is currently considered to be low for an individual traveller. The risk of being infected in an airport is similar to that of any other place where many people gather. If it is established that a COVID-19 case has been on an airplane, other passengers who were at risk (as defined by how near they were seated to the infected passenger) will be contacted by public health authorities. Should you have questions about a flight you have taken, please contact your local health authority for advice. **General recommendations for personal hygiene**, cough etiquette and keeping a distance of at least one metre from persons showing symptoms remain particularly important for all travellers. These include: • Perform hand hygiene frequently. Hand hygiene includes either cleaning hands with soap and water or with an alcohol-based hand rub. Alcohol-based hand rubs are preferred if hands are not visibly soiled; wash hands with soap and water when they are visibly soiled; • Cover your nose and mouth with a flexed elbow or paper tissue when coughing or sneezing and disposing immediately of the tissue and performing hand hygiene; • Refrain from touching mouth and nose; See also: https://www.who.int/emergencies/diseases/novel-coronavirus-2019/advice-for-public • If masks are to be worn, it is critical to follow best practices on how to wear, remove and dispose of them and on hand hygiene after removal.

- WHO information for people who are in or have recently visited (past 14 days) areas where COVID-19 is spreading, you will find here.

Travellers who develop any symptoms during or after travel should self-isolate; those developing acute respiratory symptoms within 14 days upon return should be advised to seek immediate medical advice, ideally by phone first to their national healthcare provider.
Source: WHO and ECDC

European Commission:

On 13 May, the European Commission presented guidelines and recommendations to help Member States gradually lift travel restrictions, with all the necessary safety and precautionary means in place.

On 13 October, EU Member States adopted a Council Recommendation on a coordinated approach to the restriction of free movement in response to the COVID-19 pandemic.

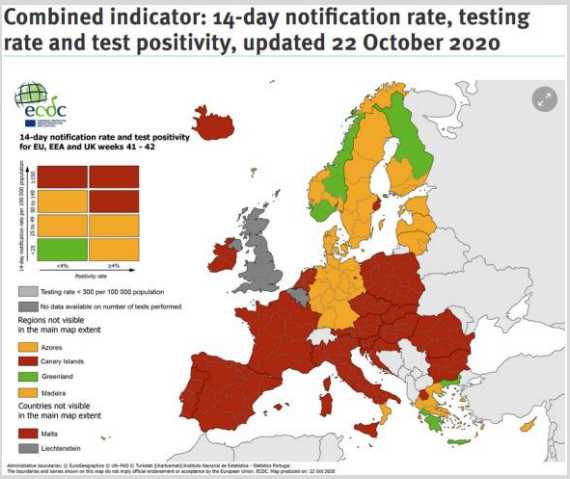
1. Common criteria

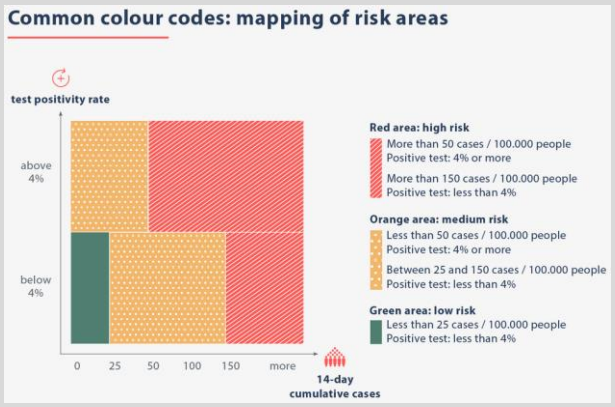
- **the notification rate** (the total number of newly notified COVID-19 cases per 100 000 population in *the last 14* days at regional level)
- **the test positivity rate** (the percentage of positive tests among all tests for COVID-19 infection carried out during the last week)
- **the testing rate** (the number of tests for COVID-19 infection per 100 000 population carried out during the *last week*)

2. A common map
The ECDC will publish a map of EU Member States, broken down by regions, which will show the risk levels across the regions in Europe using a traffic light system. See also "Situation in Europe".

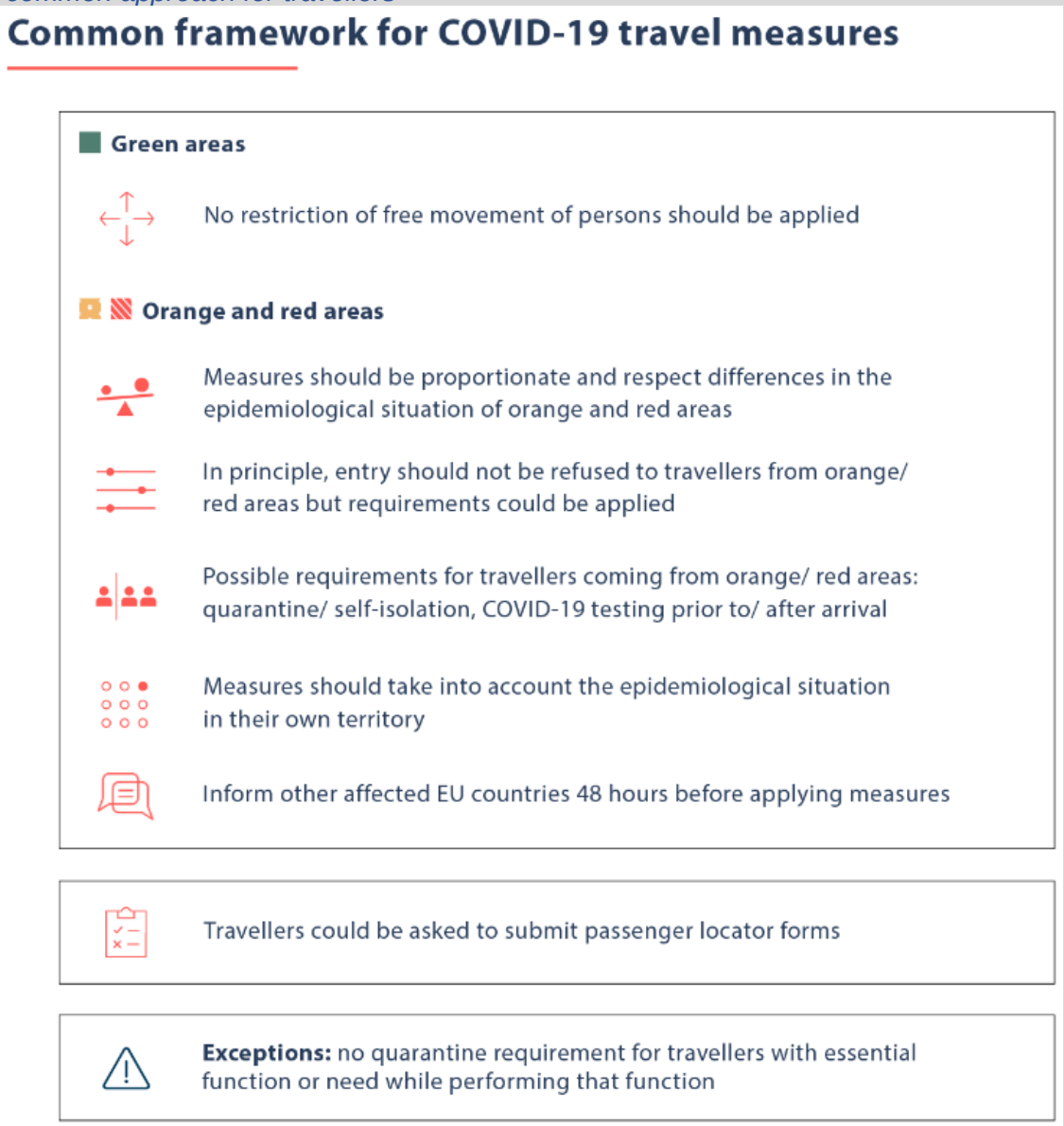
Areas are marked in the following colours:

- **green** if the 14-day notification rate is lower than 25 cases per 100 000 and the test positivity rate below 4%;
- **orange** if the 14-day notification rate is lower than 50 cases per 100 000 but the test positivity rate is 4% or higher or, if the 14-day notification rate is between 25 and 150 cases per 100 000 and the test positivity rate is below 4%;
- **red** if the 14-day notification rate is 50 cases per 100 000 or higher and the test positivity rate is 4% or higher or if the 14-day notification rate is higher than 150 cases per 100 000;
- **grey** if there is insufficient information or if the testing rate is lower than 300 cases per 100 000.





3. A common approach for travellers



4. Clear and timely information to the public about any restriction

As a general rule, information on new measures will be published 24 hours before they come into effect.

All information should also be made available on Re-open EU, which should contain a cross-reference to the map published regularly by the European Centre for Disease Prevention and Control.

More information about traveling in the EU by the European Commission you will find here:
https://ec.europa.eu/info/live-work-travel-eu/health/coronavirus-response/travel-and-transportation-during-coronavirus-pandemic_en
https://www.consilium.europa.eu/en/policies/coronavirus/covid-19-travel-and-transport/

Risk Assessment	
Global	• Because of global spread and the human-to-human transmission the **moderate to high** risk of further transmission persists. • Travellers are at risk of getting infected worldwide. It is highly recommended to avoid all unnecessary travel for the next weeks. • Individual risk is dependent on exposure. • National regulation regarding travel restrictions, flight operation and screening for single countries you will find here. • Official IATA changed their travel documents with new travel restrictions. You will find the documents here. • Public health and healthcare systems are in high vulnerability as they already become overloaded in some areas with elevated rates of hospitalizations and deaths. Other critical infrastructure, such as law enforcement, emergency medical services, and transportation industry may also be affected. Health care providers and hospitals may be overwhelmed. • Asymptomatic persons as well as infected but not sickened persons could be a source of spreading the virus. Therefore, no certain disease-free area could be named globally.
Europe As of 23rd of October 2020	ECDC assessment for EU/EEA, UK as of 23 October 2020: Under the current classification system, based on epidemiological indicators, the epidemiological situation in countries is classified as *stable*, *of concern* or of *serious concern*. The majority of countries in the European region are currently classified as experiencing an epidemiological situation of **serious concern** due to the increasing case notification rates and/or test positivity≥3% as well as the high notification rates in the older age groups and/or high mortality rates. Countries have implemented various non-pharmaceutical interventions, but these have not been sufficiently effective in controlling transmission due to several factors: • adherence to the measures was sub-optimal; • the measures were not implemented quickly enough; • or the measures were insufficient to reduce exposure. As a result, the epidemiological situation is now rapidly deteriorating in most countries. **There are currently only six countries in the region that are classified as experiencing a *stable epidemiological situation*.** • In countries where the epidemiological situation is stable: • the **probability of infection** for the population is **generally low** but **the impact of infection** still **varies** depending on the individuals affected; • the risk for the **general population** in these countries is **low;** • for **vulnerable individuals**, including the elderly and people with underlying medical conditions, the risk is **moderate**. Nevertheless, in these six countries, there is still ongoing transmission and the situation must be closely monitored. **Based on the latest available data to ECDC, there are currently no countries categorised as having an epidemiological situation '*of concern*'.** **In countries where the epidemiological situation is of serious concern:** • there is a **high risk** to the **general population**, • and for **vulnerable individuals** the COVID-19 epidemiological situation represents a **very high risk**. In these countries the continuously increasing trend in notification rates calls for strong public health action in order to prevent the imminent risk that health care systems will be overwhelmed, rendering them unable to provide safe, adequate care.

References:

- European Centre for Disease Prevention and Control www.ecdc.europe.eu
- World Health Organization WHO; www.who.int
- Centres for Disease Control and Prevention CDC; www.cdc.gov
- European Commission; https://ec.europa.eu/info/live-work-travel-eu/health/coronavirus-response/travel-and-transportation-during-coronavirus-pandemic_en
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