An update on
Testing strategies for COVID-19

THE LATEST ON THE COVID-19 GLOBAL SITUATION
& HOW TO USE TESTING TO ACHIEVE PUBLIC HEALTH MEASURES
## Overview

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Current global situation
As of 11 January 2021, 10:00AM CEST

• > 88 million cases
  • 5 countries with highest cumulative number of cases
    - United States of America
    - India
    - Brazil
    - Russian Federation
    - France

• > 1,9 million deaths
  • 5 countries with highest cumulative number of deaths
    - United States of America
    - Brazil
    - India
    - Mexico
    - The United Kingdom
Current global situation
Cases reported to WHO as of 00 January 2021, 10:00AM CEST

* Data are incomplete for the current week. Cases depicted by bars; deaths depicted by line
COVID-19 cases reported in the last 7 days
Per million population

FROM 04 to 10 JANUARY 2021, 10:00 AM CEST
COVID-19 deaths reported in the last 7 days
Per million population
FROM 04 to 10 JANUARY 2021, 10:00 AM CEST
COVID-19 TESTING

How to use testing to achieve public health goals

• **Testing is part of a comprehensive strategy** to suppress SARS-CoV-2 transmission and save lives

• **Testing should be strategic**, make the best use of available resources and link to clear public health goals

> You cannot fight a fire blindfolded. And we cannot stop this pandemic if we don’t know who is infected.

Tedros Adhanom Ghebreyesus
Director-General, World Health Organization
16 March 2020
Diagnostic tests for COVID-19

**RT-PCR*/NAAT**
**Molecular test**
Detects genetic material of the virus
- To diagnose a current SARS-CoV-2 infection
- Uses respiratory tract sample
- Identifies asymptomatic cases
- Approximately 1 day for results depending on context

**Antigen rapid diagnostic test (RDT)**
Detects viral proteins (antigens)
- To diagnose a current SARS-CoV-2 infection
- Uses respiratory tract sample
- Results within 30 minutes
- Performance best in first 5-7 days of symptoms

**Serologic test**
Detects human antibodies against the virus
- Measures the immune response to an infection
- Uses blood
- Informs who has been infected previously
- COVID-19 patients develop antibodies about 10-30 days after symptoms start

* RT-PCR: real-time reverse-transcription polymerase chain reaction
** NAAT: Nucleic acid amplification tests

[https://www.who.int/publications/i/item/diagnostic-testing-for-sars-cov-2](https://www.who.int/publications/i/item/diagnostic-testing-for-sars-cov-2)
Detection of SARS-CoV-2 relative to symptom onset

Figure. Estimated variation over time in diagnostic tests for detection of SARS-CoV-2 infection relative to symptom onset

Source: adapted from Sethuraman et al 2020


Testing can identify symptomatic & asymptomatic COVID-19 cases
Testing informs clinical management and supports contact tracing

**SYMPTOMS**

- RT-PCR*
  - RT-PCR negative***
  - RT-PCR positive

**NO SYMPTOMS**

- RT-PCR*
  - RT-PCR positive
  - RT-PCR negative***

**Isolate & treat**
Duration of isolation: at least 10 days after symptom onset + 3 days after disappearance of symptoms

**TRACE CONTACTS**

- Test again if symptoms occur***

**Inform patient about when and where to seek health care and assure access to health for all**

***Repeat test per national guidance

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*In settings of wide spread community transmission & where there is no or limited NAAT capacity, a RDT meeting minimum performance criteria could be used

**Inform patient about when and where to seek health care and assure access to health for all

***Repeat test per national guidance

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https://www.who.int/publications/i/item/antigen-detection-in-the-diagnosis-of-sars-cov-2infection-using-rapid-immunoassays
https://www.who.int/publications/i/item/diagnostic-testing-for-sars-cov-2
https://www.who.int/publications/i/item/clinical-management-of-covid-19
How to identify those who are infected & break the chains of transmission

**Testing is important to identify those who are infected** so that cases can be isolated, onward transmission prevented and their contacts traced

- Contacts of positive cases should quarantine for 14 days*
- Contacts in quarantine should be monitored and supported
- If a contact shows symptoms during quarantine, the contact should be tested for SARS-CoV-2 infection. If feasible and capacities allow, consider testing a subset of asymptomatic contacts as well
- Some countries have shortened the recommended 14 day quarantine period for contacts and/or test contacts before release. Countries will need to balance the risks and benefits of early release from quarantine

* Incubation period of SARS-CoV-2 infection is 1-14 days


Protecting the health system

- **Health workers** account for around 7.7% of COVID-19 cases reported to WHO\(^1\)

- Health workers can be infected with SARS-CoV-2 while at their work or at the community level

- **Testing is a key strategy**
  - To treat and isolate cases when positive
  - To reduce the risk of transmission to patients, co-workers, visitors and their contacts outside the health facility

- A **national and/or local surveillance and testing strategy** for health workers should be developed and implemented

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Source: WHO
## Scenarios and testing strategies for health workers

WHO recommends health workers be prioritized for testing

<table>
<thead>
<tr>
<th>Health-care Setting</th>
<th>Transmission scenario</th>
<th>Possible testing strategy target (where resources allow)</th>
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| Acute care          | No cases or Sporadic cases | • Symptomatic health workers  
                      |                       | • Health worker identified as a contact of a SARS-CoV-2 case  
                      |                       | • Health workers associated with transmission to or from a patient or resident or with an outbreak investigation |
|                     | Clusters or community transmission | • Symptomatic health workers  
                      |                       | • Health worker identified as a contact of a SARS-CoV-2 case  
                      |                       | • Health workers associated with transmission to or from a patient, a cluster, or with an outbreak investigation  
                      |                       | • Health workers working in any clinical area; identifying priority areas based on risk assessment (e.g. triage, emergency services or COVID-19 wards) where resources are limited  
                      |                       | • All health workers who work in COVID-19 services or facilities |
| Long-term care      | All transmission scenarios | • Symptomatic health workers  
                      |                       | • Health workers identified as a contact of a SARS-CoV-2 case  
                      |                       | • Testing of all health workers when a positive case of SARS-CoV-2 is identified in a resident or staff member  
                      |                       | • Routine testing of health workers, if feasible |

[https://www.who.int/publications/i/item/10665-336265](https://www.who.int/publications/i/item/10665-336265)
Testing for COVID-19 in the context of international travel

- Many countries test international travelers for SARS-CoV-2 prior to travel, at points of entry or after travel
- **WHO does not recommend testing for healthy travelers**, particularly where resources may be limited and/or diverted from high-risk groups and settings. Countries with sufficient resources that decide to implement testing of travelers, should do so based on risk assessment
- The risk assessment should consider the local epidemiological situation, health system capacities, volume of travel and arrangements for follow-up of incoming travelers who test positive
- **Testing does not replace public health & social measures for epidemic control**
- **Negative results from pre-travel testing cannot guarantee that travelers are free from infection** at the time of travel
- Negative results may generate a false sense of security and disregard the precaution measures during travel and at arrival
- **WHO does not recommend the issuance of so-called ‘immunity passports’**

Why SARS-CoV-2 outbreak investigations are necessary

Outbreaks of SARS-CoV-2 have been reported in different settings. Clusters and localised outbreaks should be investigated to:

- Break the chains of transmission
- Understand transmission patterns
- Decide on best public health measures to be implemented
- Support effective communication & community engagement
The role of Ag-RDT in outbreak investigations

RDTs can be used to:

• **Respond to suspected outbreaks**
  - This will trigger the early implementation of public health measures to stop transmission
  - A cluster of positive tests is highly suggestive of a SARS-CoV-2 outbreak

• **Support outbreak investigations**
  - To screen and isolate positive cases, when outbreaks are confirmed by PCR

[Source: David L. Ryan / The Boston Globe/Getty Images]

[Source: Manan Vatsayana/ AFP/ Getty Images]

https://www.who.int/publications/i/item/antigen-detection-in-the-diagnosis-of-sars-cov-2infection-using-rapid-immunoassays
COVID-19 protection measures

Protect yourself & others

- Wear a mask
- Keep your distance
- Wash your hands frequently
- Cough & sneeze into your elbow
- Ventilate or open windows
WHO resources

- Overview of Public Health and Social Measures in the context of COVID-19 Interim guidance, 18 May 2020

- Considerations for implementing and adjusting public health and social measures in the context of COVID-19 Interim guidance, 4 November 2020

- Diagnostic testing for SARS-CoV-2 Interim guidance, 11 September 2020
  [https://www.who.int/publications/i/item/diagnostic-testing-for-sars-cov-2](https://www.who.int/publications/i/item/diagnostic-testing-for-sars-cov-2)

- EPI WiN update n°23 : Diagnostics and testing CORONAVIRUS (COVID-19)

- Monto, Cowling and Pereis. Coronaviruses. R.A. kaslow et al. (eds.), Viral infections in humans

- Interpreting Diagnostic Tests for SARS-CoV-2
  [https://jamanetwork.com/journals/jama/fullarticle/2765837](https://jamanetwork.com/journals/jama/fullarticle/2765837)

- EPI WiN update n°41 : What we know about COVID-19 and influenza
WHO resources, cont.

- Antigen-detection in the diagnosis of SARS-CoV-2 infection using rapid immunoassays Interim guidance
  11 September 2020

- Clinical management of COVID-19 interim guidance
  27 May 2020
  https://www.who.int/publications/i/item/clinical-management-of-covid-19

- Contact tracing in the context of COVID-19 interim guidance
  10 May 2020

- Keep health workers safe to keep patients safe: WHO News release
  17 September 2020

- Prevention, identification and management of health worker infection in the context of COVID-19
  Interim guidance
  30 October 2020
  https://www.who.int/publications/i/item/10665-336265

- COVID-19 diagnostic testing in the context of international travel
  Scientific brief
  16 December 2020

- ‘Immunity passports’ in the context of COVID-19
  Scientific brief
  24 April 2020