

## Coronavirus disease 2019 (COVID-19)

### Background

- On 31 December 2019, WHO was alerted to a cluster of pneumonia cases in Wuhan, China, which investigations subsequently confirmed to have been caused by a new coronavirus).
- COVID-19 is a new disease, caused by a new virus named SARS-CoV-2 (11 February 2020) which is genetically related to Severe Acute Respiratory Syndrome (SARS) of 2003 and Middle East Respiratory Syndrome (MERS).
- The virus spreads rapidly, and outbreaks can grow at an exponential rate. On the 30 January 2020, the WHO Director General declared COVID-19 a Public Health Emergency of International Concern (PHEIC) and on 11 March 2020, WHO officially declared COVID-19 as a pandemic.
- As of 22<sup>nd</sup> April 2020, the virus had rapidly spread to over 210 countries including 46 countries in the WHO Africa region. Over 2.4 million cases and nearly 170,000 deaths have been reported globally in 5 months.
- According to data from countries affected early in the pandemic, about 40% of cases will experience mild disease, 40% experience moderate disease including pneumonia, 15% of cases experience severe disease, and 5% of cases are critical.
- Most estimates of the incubation period for COVID-19 range from 1-14 days, most commonly around five days
- The crude clinical case fatality is currently over 3%, increasing with age and rising to approximately 15% or higher in patients over 80 years of age.
- Morbidity associated with COVID-19 is also very high. Underlying health conditions that affect the outcome include obesity, diabetes mellitus, cardiovascular conditions such as hypertension, respiratory, conditions that affect the immune system, including cancer
- At present, there are no therapeutics or vaccines proven effective to treat or prevent COVID-19, although national governments, WHO and partners are working urgently to coordinate the rapid development of medical countermeasures. Non-pharmaceutical interventions (NPIs) are the only set of pandemic countermeasures that are readily available in all countries so far.
- Under the IHR (2005), a State Party is required to notify WHO immediately of the first occurrence of COVID-19 (Annex 2, IHR).

### Surveillance goals

#### Primary goals:

- provide epidemiological information to conduct risk assessments at the national, regional and global level and to guide preparedness and response measures
- Monitor the course of the pandemic with focus on the geographical spread, trend, transmissibility, seriousness and impact of the COVID-19 within the country, regionally and globally

### Objectives

- Limit human- to- human transmission of COVID-19 through prevention of cases by applying regular hand hygiene, respiratory etiquette and individual-level physical distancing with involvement of all sectors and communities.
- Control sporadic and clusters of cases and prevent community transmission by early finding and rapid isolation of all cases, providing them with appropriate care, and tracing, quarantining, and supporting all contacts.
- Suppress community transmission through strong and contextualized sensitization and risk communication packages and context-appropriate NPI measures such as infection prevention and control measures, and appropriate and proportionate restrictions on non-essential domestic and international travel, and rapid identification and isolation of cases and quarantining of contacts.
- Control of the pandemic by slowing down the transmission and reducing mortality associated with COVID-19 through provision of appropriate clinical care for those affected by COVID-19, ensuring the continuity of essential health and social services, and protecting frontline workers and vulnerable populations (chronic non-communicable diseases, elderly, migrants, refugees and displaced populations, prisoners, etc.).
- Promote operational research through development and use of safe and effective vaccines and therapeutics that can be delivered at scale and that are accessible based on need in line with national regulations and ethics.

### **Standard case definition**

The case definitions are based on the current information available and might be revised as new information accumulates. Countries may need to adapt case definitions depending on their own epidemiologic situation.

### **Contact**

A contact is a person who experienced any one of the following exposures during the 2 days before and the 14 days after the onset of symptoms of a probable or confirmed case:

- Face-to-face contact with a probable or confirmed case within 1 meter and for more than 15 minutes;
- Direct physical contact with a probable or confirmed case;
- Providing direct care for probable or confirmed COVID-19 patients without using proper personal protective equipment, working with health care workers infected with novel coronavirus, visiting patients or staying in the same close environment with a COVID-19 patient.
- Working together in close proximity or sharing the same classroom environment with a COVID-19 patient
- Traveling together with COVID-19 patient in any kind of conveyance
- Living in the same household as a COVID-19 patient within a 14-day period after the onset of symptoms of the case under consideration.
- Any other situations as indicated by local risk assessment

### **Suspect case**

- A patient with acute respiratory illness (fever and at least one sign/symptom of respiratory disease, e.g., cough, shortness of breath), AND a history of travel to or residence in a location

reporting community transmission of COVID-19 disease during the 14 days prior to symptom onset. **OR**

- A patient with any acute respiratory illness AND having been in contact with a confirmed or probable COVID-19 case (see definition of contact) in the last 14 days prior to symptom onset; **OR**
- A patient with severe acute respiratory illness (fever and at least one sign/symptom of respiratory disease, e.g., cough, shortness of breath; AND requiring hospitalization) AND in the absence of an alternative diagnosis that fully explains the clinical presentation.

#### **Probable case**

- Any suspect case for whom testing for COVID-19 is inconclusive or is tested positive using a pan-coronavirus assay and without laboratory evidence of other respiratory pathogens. **OR**
- A suspect case for whom testing could not be performed for any reason **OR**
- Any suspect case or death with epidemiologic link to confirmed cases or outbreak. **OR**
- Any suspect case with typical appearance of COVID-19 in Chest Computed Tomography (CT) **or** chest x-rays.

#### **Confirmed case**

- An individual (contact or suspect case) with a laboratory-confirmed COVID-19 by real-time reverse-transcription polymerase chain reaction (rRT-PCR). **OR**
- A suspect case with a strong epidemiological link to COVID-19 patient and detection of antigen using validated/adequate direct SARS-CoV-2 antigen detection tests. **OR**
- A suspect case with a strong epidemiological link to COVID-19 patient and detection of exposure to virus (Antibodies – IgM and/or IgG, IgA) using validated/adequate serology tests (indirect antibody detection tests).

#### **Respond to suspected case**

- Collect and transport laboratory specimens from case-patient and from symptomatic contacts and arrange for laboratory testing.
- Expedite the diagnosis.
- Isolate, treat and manage the patient according to national guidelines.
- Review clinical history and exposure history during 1-14 days before disease onset using the national protocols.
- Practice infection control precautions for suspected, probable and confirm cases immediately and enhance Standard Precautions throughout the health care setting.
- Conduct active searches for additional cases.
- Identify, sensitize/educate and follow-up close contacts of case-patient.
- Report case-based information immediately to the appropriate levels. Prepare line- list of the initial case(s).

#### **Respond to COVID-19 alert**

Response to COVID-19 alert in a district.

- Establish an alert management system e.g call center with hotlines
- Verify the alerts to determine if they meet the standard case definition for COVID-19
- Respond as for suspected case if they meet the standard case definition

- Record all alerts in an alert/rumor log sheet.
- Provide epidemiological information to conduct risk assessment at the national, regional and global level.
- Conduct epidemiological investigation to identify risk factors for infection and populations at risk for severe disease.

**Respond to action threshold**

If a single case or several cases are confirmed in a district:

- Maintain strict acute respiratory disease infection control practices throughout the epidemic.
- Mobilize the community for early detection and care of cases and conduct community education about how the disease is transmitted and how to implement infection control in the home care setting and during funerals. Conduct community education on how COVID-19 is transmitted and on how to implement infection prevention and control measures in home and community settings.
- Conduct case contact follow-up and active searches for additional cases or deaths that may not come to the health care setting.
- Request additional help from other levels as needed.
- Distribute laboratory specimen collection kits to health care facilities
- Establish treatment unit to handle additional cases that may come to the health center in line with the national protocols.
- Maintain strict acute respiratory disease infection control precautions and establish an isolation ward to manage additional cases who may present for care.
- Identify high risk populations.
- Assess effectiveness of public health interventions

**Contact Tracing**

Identify all social, familial, work, and health care worker contacts who have had contacts with a confirmed case from 2 days before symptom onset of the case and up to 14 days after their symptom onset. Create a line list, including demographic information, date of first and last common exposure or date of contact with the confirmed or probable case, and date of onset if fever or respiratory symptoms develop. The common exposures and type of contact with the confirmed or probable case should be thoroughly documented for any contacts who become infected with COVID-19.

**Management of case(s) and contacts**

- COVID-19 case(s)**
- All patients with suspected COVID-19 who have severe acute respiratory infection should be triaged and isolated at the first point of contact with the health care system. Emergency treatment should be started based on disease severity.
  - For those presenting with mild illness, hospitalization may not be required unless there is concern about rapid deterioration. If there is only mild illness, providing care at home may be considered, if available and strict Infection Prevention and control precautions and clear instructions

	<p>regarding when to seek medical care with instruction on when to seek medical advice;</p> <ul style="list-style-type: none"> <li>Parameters to monitor at home should include temperature, shortness of breath or exercise intolerance, peripheral oxygen saturation (SpO<sub>2</sub>) monitoring.</li> <li>Moderate to severe and critical cases must be admitted for management. Admitted cases must be monitored for early identification of deterioration and appropriate treatment offered as per national treatment protocol for moderate to severe COVID-19 patients</li> <li>Oxygen is the mainstay of therapy for those whose SpO<sub>2</sub> drops according guidelines.</li> <li>Recovered patients may be discharged if 2 RT-PCR taken at least 24 hours apart are negative with clinical recovery (temperature resolved for more than 48 hours and no need for oxygen therapy).</li> </ul> <p><b>Contacts</b></p> <ul style="list-style-type: none"> <li>For contacts of a suspected COVID-19 case, at a minimum, health authorities need to encourage respiratory etiquette and hand hygiene and may encourage, depending on the epidemiological context and resources available, self-monitoring for symptoms, social distancing, or quarantine.</li> <li>For contacts of a laboratory-confirmed COVID-19 case, WHO recommends that such persons be quarantined for 14 days from the last time they were exposed to a COVID-19 patient.</li> </ul>
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**Analyze and interpret data**

**Reporting:** National authorities need to report probable and confirmed cases of COVID-19 to WHO within 48 hours of identification. Report using the Individual Case Reporting Form and consider transitioning to the aggregate Daily/Weekly Reporting Form if the number of cases increases and resources are no longer available for individual case reporting.

- Time:** Graph cases and deaths daily/weekly/monthly. Construct an epidemic curve during the epidemic/pandemic.
- Place:** Plot locations of case households and work sites using precise mapping.
- Person:** Immediate case-based reporting of cases and deaths. During the epidemic, count and report cases and deaths. Analyze age and sex distribution. Assess risk factors immediately.

The provision of the epidemiological information using the detailed line list is aimed to guide response measures.

**Laboratory confirmation**

<b>Diagnostic test</b>	<ul style="list-style-type: none"> <li>Routine confirmation of cases of COVID-19 is based on detection of unique sequences of virus RNA by Nucleic acid amplification tests</li> </ul>
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	<p>(NAAT) such as real-time reverse-transcription polymerase chain reaction (rRT-PCR).</p> <ul style="list-style-type: none"> <li>• GeneXpert and other automated platforms under development.</li> <li>• <b>Direct antigen</b> detection based on sensitivity.</li> <li>• <b>Serological testing</b> (indirect antibody detection tests) can aid investigation of an ongoing outbreak and retrospective assessment of the attack rate or extent of an outbreak.</li> <li>• <b>Viral sequencing</b> to providing confirmation of the presence of the virus, regular sequencing of a percentage of specimens from clinical cases can be useful to monitor for viral genome mutations that might affect the performance of medical countermeasures, including diagnostic tests. Virus whole genome sequencing can also inform molecular epidemiology studies.</li> <li>• <b>Viral culture</b> is not recommended as a routine diagnostic procedure.</li> <li>• GeneXpert equipment for HIV and TB diagnosis at the national and sub-national levels. If these are made available, they will contribute significantly to decentralization of COVID-19 laboratory confirmation. Although, the Rapid diagnostic tests (RDTs) are being considered by some countries in the Region, these rapid tests are not yet validated for a specific COVID-19 testing. Once this is finalized it could be a good complement for screening contacts or suspected cases in hard to reach areas.</li> </ul>
<p><b>Specimen</b></p>	<p>Although respiratory samples have the greatest yield, the virus can be detected in other specimens, including stool and blood.</p> <p>At minimum, respiratory material should be collected:</p> <ul style="list-style-type: none"> <li>• upper respiratory specimens: nasopharyngeal or oropharyngeal swab or wash in ambulatory patients</li> <li>• and/or lower respiratory specimens: sputum (if produced) and/or endotracheal aspirate or bronchoalveolar lavage in patients with more severe respiratory disease.</li> </ul> <p>Note: If there is a high risk of generating aerosols, adhere strictly to infection prevention and control procedures.</p> <p>In case of patients who are deceased, consider autopsy material including lung tissue.</p> <p>In surviving patients, paired serum (acute and convalescent) can be useful to retrospectively define cases as serological assays become available.</p>
<p><b>When to collect</b></p>	<p>The decision to test (testing strategy) should be based on clinical and epidemiological factors and linked to an assessment of the likelihood of infection. It could be also adapted based on scale of transmission in a district</p>

	<p>(No Cases, sporadic cases and transmission chains, clusters of cases and Community-wide transmission) and on health systems capacity, resourcing and context (High-capacity settings, mid-capacity settings, low-capacity settings and humanitarian settings). In this regard, the approach to COVID-19 testing in each country may change as the outbreak evolves. However, for testing of individuals, it is crucial to maximize the effect of public health measures and diagnostic reagents.</p> <ul style="list-style-type: none"> <li>• Suspected cases should be screened for the virus with nucleic acid amplification tests (NAAT), such as RT-PCR.</li> <li>• Testing of asymptomatic or mildly symptomatic contacts can be considered in the assessment of individuals who have had contact with a COVID-19 case.</li> </ul> <p>The following should be prioritized in settings of limited resources and community transmission:</p> <ul style="list-style-type: none"> <li>• Individuals who are at risk of developing severe disease and vulnerable populations, who will require hospitalization and advanced care for COVID-19.</li> <li>• Symptomatic health workers including emergency services and non-clinical staff.</li> <li>• The first symptomatic individuals in a closed setting (e.g. schools, long-term living facilities, prisons, hospitals) to ensure containment measures. Other individuals with symptoms related to the closed settings may be considered probable cases and isolated without additional testing if testing capacity is limited.</li> <li>• High risk contacts and quarantined persons.</li> </ul> <p>If testing for COVID-19 is not yet available nationally or the laboratory has lack of reagents and supplies, specimens should be referred or kept until the items are available..</p>
<p><b>How to prepare, store, and transport</b></p>	<p>Ensure that adequate standard operating procedures (SOPs) are in use and that staff are trained for appropriate specimen collection, storage, packaging, and transport and according to biosafety required measures. All specimens collected for laboratory investigations should be regarded as potentially infectious.</p> <p>Ensure that health care workers who collect specimens adhere rigorously to infection prevention and control guidelines.</p> <ul style="list-style-type: none"> <li>• Specimens for virus detection should reach the laboratory as soon as possible after collection.</li> </ul>

	<ul style="list-style-type: none"> <li>• Specimens should be correctly labelled and accompanied by a diagnostic request form.</li> <li>• Correct handling of specimens during transportation is essential. Specimens that can be delivered promptly to the laboratory can be stored and shipped at 2-8°C. When there is likely to be a delay in specimens reaching the laboratory, the use of viral transport medium is strongly recommended.</li> <li>• Specimens may be frozen to - 20°C or ideally -70°C and shipped on dry ice if further delays are expected. It is important to avoid repeated freezing and thawing of specimens.</li> <li>• Transport of specimens within national borders should comply with applicable national regulations. International transport of potentially COVID-19 virus containing samples should follow the UN Model Regulations, and any other applicable regulations depending on the mode of transport being used.</li> </ul>
<b>Results</b>	<ul style="list-style-type: none"> <li>• Laboratories should follow national reporting requirements. In general, all test results, positive or negative, should be immediately reported to national authorities.</li> <li>• For laboratory-confirmed cases, 2 negative specimens at least 1 day apart indicate recovery from infection. Based on initial data, this is estimated to be 14 days after the end of illness for mild cases of infection.</li> </ul>
<b>Reference</b>	
<ul style="list-style-type: none"> <li>• COVID-19 Strategic Response Plan for the WHO African Region, Version 23 April 2020.</li> <li>• Global surveillance for COVID-19 caused by human infection with COVID-19 virus, Interim guidance, 20 March 2020. Considerations in the investigation of cases and clusters of COVID-19, Interim guidance, 13 March 2020.</li> <li>• Laboratory testing for coronavirus disease (COVID-19) in suspected human cases, Interim guidance, 19 March 2020.</li> <li>• Laboratory testing strategy recommendations for COVID-19 Interim guidance 22 March 2020.</li> </ul>	