



COVID-19 disease

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Key facts

To better understand public health terms included in this Disease Tool (e.g. What is a case definition? or What is an infectious agent?), consult our page on Key concepts on epidemiology.

Importance

COVID-19 disease was detected for the first time in December 2019 in Wuhan, China and classified as a pandemic by WHO on 11 March 2020. By the end of 2021, the cumulative numbers of confirmed cases and deaths had surpassed 200 million and 4 million respectively (last update from 21 September 2021). The economic, political and social impacts quickly became extreme on a regional and global scale. Throughout the pandemic, those facing the greatest vulnerabilities have been the people and groups most neglected by society, including women, children, migrants and refugees. COVID-19 has amplified inequalities, destabilized communities and reversed development gains made in the past decades. An unprecedented level of global coordination and collaboration in health management was and is still needed to tackle the pandemic.

Case definition

A **case definition** is a set of uniform criteria used to define a disease for public health surveillance. It enables public health officials to classify and count cases consistently.

*The following are standard case definitions to allow national health authorities to interpret data in an international context. However, during an outbreak case definitions may be adapted to the local context and the Red Cross Red Crescent should use those agreed/established by national health authorities. NB: Consider that during community-based surveillance, **volunteers** should use broad (simplified) case definitions (referred to as community case definitions) to recognize most or all possible cases, provide relevant risk communication and appropriate actions and encourage them to seek care. Other actors such as **healthcare workers or investigators** studying the cause of a disease, on the other hand, can use more specific case definitions that may require laboratory confirmation.*

Since the beginning of the pandemic, case definitions for COVID-19 have been revised based on updated evidence of the most common and predictive symptoms, clinical signs and transmission dynamics. The case definition below was last updated by WHO in December 2020. Red Cross Red Crescent teams should verify the latest case definition at the time of a particular response intervention.

COVID-19 is an infectious disease caused by the SARS-CoV-2 virus.

Suspected case of SARS-CoV-2 infection:

- A person who meets the clinical AND epidemiological criteria. The clinical criterion is an acute onset of ANY THREE OR MORE of the following signs or symptoms: fever, cough, tiredness, headache, feeling unwell, sore throat, runny nose, difficulty breathing, diarrhoea, loss of smell, loss of taste.
- The epidemiological criteria are residing or working in an area with high risk of transmission of virus; or residing or travelling to an area with community transmission any time within the 14 days prior to symptom onset; or working in any healthcare setting.
- A patient with severe acute respiratory illness.
- Asymptomatic person not meeting epidemiologic criteria with a positive SARS-CoV-2 Antigen-Rapid Diagnostic test.

Probable case of SARS-CoV-2-infection:

- A patient who meets clinical criteria AND is a contact of a probable or confirmed case.
- A person with recent onset of loss of smell or loss of taste in the absence of any other identified cause.

Confirmed case of SARS-CoV-2 infection:

- A person with a positive PCR test.
- A person with a positive SARS-CoV-2 Antigen-RDT AND meeting probable case definition.
- An asymptomatic person with a positive SARS-CoV-2 Antigen-RDT who is a contact of a probable confirmed case.

WHO case definition source of information here:

https://www.who.int/publications/i/item/WHO-2019-nCoV-Surveillance_Case_Definition-2020.2

Alert / epidemic threshold

An **alert threshold** is the pre-defined number of alerts that suggest the beginning of a possible disease outbreak and therefore warrant immediate notification.

Epidemic thresholds are the minimum number of cases indicating the beginning of a particular disease's outbreak.

An increase in the number of cases of COVID-19 disease above what is normally expected in a population. The specific threshold must be developed based on local epidemiology and immunization programme objectives. The outbreak threshold may, and should, change as the incidence of COVID-19 disease changes.

In countries with no recent COVID-19 cases reported, a single case should trigger a detailed case investigation.

Risk factors

- Prolonged unprotected contact with a COVID-19 positive person. This person does not necessarily need to have symptoms.
- Close contact with a distance less than one metre to a COVID-19 positive person.
- Any non-immune person (who has not been vaccinated or previously infected or was vaccinated but did not develop immunity) can become infected.
- Overcrowded areas where physical distancing, proper ventilation and/or wearing a mask is not possible facilitates person-to-person spread.

Attack rate (AR)

The **attack rate** is the risk of getting a disease during a specific time period (such as during an outbreak).

Attack rates will vary from one outbreak to another. In case of an outbreak, consult the latest information provided by health authorities.

Due to the ongoing COVID-19 pandemic, the estimated attack rate may change over time, and will vary location by location depending on natural and vaccine-derived immunity and potential new variants of SARS-CoV-2. Current estimates place the overall attack rate around 45 per cent.

Groups at increased risk of severe illness (most vulnerable)

- People aged 60 years and over.
- People with underlying medical conditions such as high blood pressure, cardiovascular disease, diabetes, chronic respiratory disease, chronic kidney disease, chronic infectious diseases, cancer and obesity.
- People who are immunosuppressed.
- People who smoke.

Infectious agent

Infectious agents are bacteria, viruses, fungi, prions and parasites. A disease caused by an infectious agent or its toxic products is defined as an infectious disease.

SARS-CoV-2 virus and variants.

Reservoir / host

A **reservoir of infection** is a living organism or material in or on which an infectious agent lives and/or usually multiplies. Reservoirs include humans, animals and the environment.

A **susceptible host** is a person at risk of being infected. The level of susceptibility depends on age, sex, ethnicity and genetic factors, specific immunity also depends on other factors that affect an individual's ability to resist infection or to limit its ability to cause infection.

A **zoonotic disease** or **zoonosis** is an infectious disease that has jumped from a non-human animal to humans.

While not confirmed, the most likely reservoir hosts for SARS-CoV-2 are fruit bats (common hosts for many other coronaviruses). SARS-CoV-2, the agent which causes COVID-19 in humans, is a betacoronavirus – a genus that includes several coronaviruses isolated from humans, bats, camels, civets, and other animals. Coronavirus infections are common in both animals and humans, and some strains of coronaviruses are zoonotic, meaning they can be transmitted between animals and humans. While current evidence suggests that SAR-COV-2 emerged from an animal, till date, there is not enough scientific evidence to identify the source or explain the original transmission route to humans, which may have involved an intermediate host.

Other animals known to be susceptible to infection include SARS-CoV-2 ferrets, cats, dogs, voles, hamsters, and white tailed deer. To date COVID-19 outbreaks have been reported among at least 17 species worldwide.

How disease is spread (modes of transmission)

Categorisation of **modes of transmission** varies from one agency to another. In addition, some infectious agents can be transmitted by more than one mode. A list of modes of transmission can be found in the key concepts to serve as guidance to better understand the diseases included in this website.

Droplet spread: The virus is spread through droplet infection by coughing, speaking or sneezing.

Airborne transmission: An aerogenic transmission can also take place through dust and droplet nuclei (droplets $\leq 5 \mu\text{m}$) which are able to travel longer distances and stay in the air for a longer period.

Contact transmission: In rare cases, the virus can be transmitted through fomites on surfaces touched prior by infected people or by close skin-to-skin contact with infected people. The virus can then spread when touching the nose, mouth or eyes after touching the contaminated surface.

Incubation period

This time from when infection occurs to the onset of symptoms is called the **incubation period**. It is a range of days and it can be different for each disease.

On average five days, however there is evidence of as little as three days to up to 14 days.

Period of infectiousness

Period of infectiousness is the time interval during which an infected person can transmit the infection to other susceptible persons.

2.5 days before symptom onset until 9 days after symptom onset; highest infectivity takes place just before and around symptom onset.

Clinical signs and symptoms

Most common symptoms: fever, cough, tiredness, loss of taste and smell.

Less common symptoms: sore throat, headache, aches and pains, diarrhoea, a rash.

Serious symptoms: difficulty breathing or shortness of breath, loss of speech or mobility, chest pain.

Other diseases with similar clinical signs and symptoms

Influenza, pertussis, other acute respiratory infections (e.g. pneumonia), exacerbated chronic respiratory diseases, allergies.

Diagnosis

Authorized assays for viral testing include those that detect SARS-CoV-2 nucleic acid or antigen with sample material from the respiratory system such as nasal or oral swabs. Some tests are point-of-care tests, meaning results may be available at the testing site in less than an hour. Other tests must be sent to a laboratory to analyse, taking several hours or days (depending on the capacity of the laboratory).

Vaccine or treatment

Please refer to the appropriate local or international guidelines for clinical management. All clinical management including the administration of any treatment or vaccine should be conducted by health professionals.

- Different vaccines exist since December 2020 around the world to prevent COVID-19 disease. The number of vaccines and the timespan in between doses is updated by WHO and the national ministries of health as new studies are published revealing new information about this recent disease. New variants might emerge in the future.
- In case of serious symptoms: hospitalization is required. Oxygen support up to advanced respiratory support such as ventilation might be necessary. This is usually associated with the administration of medication.
- Several antiviral pills have also become available for emergency use in some countries. When identified and prescribed early (within the first few days of infection), these can reduce severe disease in at-risk individuals with known COVID-19 infection.
- In case of mild symptoms: initially no requirement for hospitalization and only symptomatic therapy in isolation. This means staying home, limiting contact with others through physical distancing, wearing facemasks when around others, using separate bedroom and bathroom if possible. Signs and symptoms may worsen, which is why a regular update of the patient's clinical presentation is needed.

Immunity

There are two types of immunity:

- **Active immunity** results when exposure to an agent triggers the immune system to produce antibodies to that disease.
- **Passive immunity** is provided when a person is given antibodies to a disease rather than producing them through his or her own immune system.

- Immunity after infection has passed is estimated to last around six months.
- Population immunity varies by disease and happens as a result of vaccination or through immunity developed through previous infection. Information is still emerging on how many people need to be vaccinated against COVID-19 before the population can be considered protected and on the number of booster vaccinations necessary.

Which interventions are most effective for prevention and control?

The following is a list of activities considered for Red Cross Red Crescent volunteers to take part in. It is not an exhaustive list of all prevention and control activities for the specific disease.

- Communicate risks about the disease or epidemic, not only to share information on prevention and mitigation measures, but also to encourage informed decision-making, positive behaviour change and maintenance of trust in the Red Cross Red Crescent response. This includes the identification of rumours and misinformation around disease—frequent during health emergencies—to manage them appropriately. Volunteers should use the most context-appropriate communication techniques (ranging from social media to face-to-face interactions).
- Community education and engagement activities to encourage the adoption of protective behaviours:
 - Regular handwashing with soap.
 - Personal protection/barriers (e.g. wearing masks or cloth that covers mouth and nose).
 - Coughing etiquette (using a bent elbow or tissue to cover mouth when coughing or sneezing; tissues should be disposed of immediately).
 - Monitoring one's health daily to stay alert for symptoms.
 - If developing symptoms or testing positive for COVID-19, self-isolation until recovery.
 - Physical distancing (staying at least one metre apart from others).
 - Avoiding crowds and spaces that are poorly ventilated.
 - COVID-19 testing (either through self-tests or in testing facilities).
 - "High touch" surfaces should be cleaned regularly; these include doorknobs, light switches, phones, faucets, handles, etc.
 - Getting vaccinated as soon as it is one's turn.
- Rapid detection and early referral of cases (active surveillance).
- Social mobilization activities for COVID-19 vaccination.
- Contact tracing to identify people who have been in contact with those who are infected, or "backwards contact tracing" used to find a source of infection (this in turn allows for targeted public health measures).
- If context-relevant, the community health workforce can contribute to the response by making referrals from homes to hospitals (following established local protocols), providing support for home care, or staffing community-based isolation centres.

Which interventions have NO evidence and therefore are NOT recommended?

- Safe and dignified burials using full personal protective equipment (PPE) and other infection control prevention methods (e.g. as for Ebola interventions) are not necessary. Evidence points at a low likelihood of transmission when handling human remains. Furthermore, the use of full PPE for this purpose may accentuate fear and stigma in communities. Burials for people who have died from COVID-19 should follow family preferences or local standards.
- Environmental spraying with chlorine of people or public places is not supported by evidence, and in fact can lead to skin rashes and loss in healthy biodiversity in the environment where sprayed.
- There are several misconceptions about the COVID-19 vaccine that continue to emerge, and this has led communities to avoid getting the vaccine. Some of these misconceptions and myths have been debunked by the World Health Organization and can be consulted at <http://www.emro.who.int/health-topics/corona-virus/covid-19-vaccine-myth-busters.html>. Misconceptions will likely continue to emerge and therefore Red Cross Red Crescent managers are encouraged to regularly consult the World Health Organization's COVID-19 vaccination advice for the public at: <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/covid-19-vaccines/advice>, and to support volunteers to help communities in spotting the difference between myths and facts.

Epidemic characteristics and RCRC indicators and targets

The first table below includes data that should be gathered from health authorities and relevant non-governmental actors to understand the progress and characteristics of the epidemic in the specific country and area of intervention. The second table includes a list of suggested indicators that can be used for monitoring and evaluating Red Cross Red Crescent activities; wording of indicators may be adapted to specific contexts. Target values for a specific indicator can vary widely from one context to another and therefore managers should define them based on the specific population, area of intervention and programmatic capacity. Exceptionally, some indicators in this website may include target values when these are globally agreed as a standard; e.g. 80 per cent of individuals who slept under an insecticide-treated net (ITN) the previous night—the normative World Health Organization benchmark for universal coverage with ITNs.

Epidemic characteristics and progression
COVID-19 cases in total country population per week
Deaths from COVID-19 in total population per week
Vaccination coverage
Indicators for Red Cross Red Crescent activities
Number of volunteers trained on a specific topic (e.g. Epidemic Control for Volunteers (ECV); Community-based surveillance (CBS); WASH training; CBHFA training, etc.) <i>Numerator:</i> Number of volunteers trained Source of information: Training attendance sheets
Number of people tested by National Society to diagnose COVID-19 (NB. Only for those National Societies with the capacity and mandate to do testing) <i>Numerator:</i> Number of people tested Source of information: Testing records
Number of contacts identified and/or followed up <i>Numerator:</i> Number of contacts identified and/or followed up Source of information: Contact tracing records

Indicators for Red Cross Red Crescent activities
<p>Number of COVID-19 cases (confirmed or suspected) who received ambulance transport (NB. Only for those National Societies providing ambulance support) <i>Numerator:</i> Number of COVID-19 cases who received ambulance transport Source of information: Ambulance transport records</p>
<p>Number of people supported through community WASH activities that reduce the risk of COVID-19 transmission <i>Numerator:</i> Number of people supported Source of information: WASH activities' reports</p>
<p>Number of active CBS volunteers actively engaged on COVID-19-related health risks (NB. Only for National Societies conducting CBS programming) <i>Numerator:</i> Number of active CBS volunteers actively engaged Source of information: CBS volunteer lists and diseases prioritised</p>
<p>Number of people reached by the National Society to address vaccine hesitancy <i>Numerator:</i> Number of people reached Source of information: Community activities' records</p>

See also:

- For technical guidance and resources on COVID-19, FAQs and webinars: IFRC (2022), *Health Help Desk FAQs*. Available at: <https://preparecenter.org/toolkit/healthhelpdesk/health-help-desk-faqs/>
- For Community Engagement and Accountability (CEA) indicators for activities accompanying ECV actions, please refer to: IFRC *CEA toolkit (Tool 7.1: Template CEA logframe, activities and indicators)*. Available at: <https://www.ifrc.org/document/cea-toolkit>
- For guidance documents, key actions and key messages to conduct Risk Communication and Community Engagement Activities for COVID-19 response and prevention, access the COVID-19 resources on the online Community Engagement Hub: IFRC, BritishRedCross (2022) *COVID-19 Resources*. Available at: <https://communityengagementhub.org/what-we-do/novel-coronavirus/>
- For a global library of COVID-19 IEC materials including infographics, posters, videos and other key IEC materials in different languages: *Global Repository of COVID-19 IEC Materials*. Available at: <https://communityengagementhub.org/covid-19-resources-list/>

Mental Health and Psychosocial Support (MHPSS):

- For indicators see the Monitoring and Evaluation for MHPSS in COVID-19 guidance: IFRC Psychosocial Centre (2020) *Monitoring and Evaluation for MHPSS in COVID-19*. Available at: <https://pscentre.org/wp-content/uploads/2020/05/me.pdf>
- Guidance on caring for volunteers in COVID-19 to enhance their safety and psychosocial well-being: IFRC (2020) *IFRC brief guidance note on caring for volunteers in COVID-19*. Available at: <https://pscentre.org/?resource=ifrc-brief-guidance-note-on-caring-for-volunteers-in-covid-19>

Sexual and Gender Based Violence (SGBV):

- For prevention of and response to SGBV in the context of COVID-19, see the IFRC technical guidance: IFRC *Prevention and response to Sexual and Gender-Based Violence in COVID-19*. Available at: <https://oldmedia.ifrc.org/ifrc/document/prevention-response-sexual-gender-based-violence-covid-19/>

Socioeconomic consequences:

- IFRC (2021) *Drowning just below the surface: The socioeconomic consequences of the COVID-19 pandemic*. Available at: <https://www.ifrc.org/document/drowning-just-below-surface-socioeconomic-consequences-covid-19-pandemic>

Contact tracing

- Guidance on contact tracing for COVID-19 to assist National Societies in deciding if and how they may wish to assist their government's strategy for contact tracing as part of their response plan for COVID-19: IFRC PrepareCenter (2020) *Guidance: Contact Tracing for COVID-19*. Available at: <https://preparecenter.org/resource/guidance-contact-tracing-for-covid-19/>
- Operational Guidance for community engagement in contact tracing can be found here: WHO (2021) *Operational guide for engaging communities in contact tracing*. Available at: https://www.who.int/publications/i/item/WHO-2019-nCoV-Contact_tracing-Community_engagement-2021.1-eng

Community-based surveillance for COVID-19

- Guidance on **CBS for COVID-19** and to assist the National Society in determining if COVID-19 should be added to CBS systems can be found here: <https://preparecenter.org/resource/community-based-surveillance-guide-covid-19/>
- Guidance for **community-based health care**, including outreach and campaigns in the context of the COVID-19 pandemic to keep people safe, maintain continuity of essential services and ensure an effective response to COVID-19: IFRC, (2020) *Community-Based Surveillance Guide COVID-19*. Available at: https://apps.who.int/iris/bitstream/handle/10665/331975/WHO-2019-nCoV-Comm_health_care-2020.1-eng.pdf
- Guidance from the World Health Organization on how to manage the COVID-19 '**infodemic**' is available at: WHO (2020) *Managing the COVID-19 infodemic*. Available at: <https://apps.who.int/iris/rest/bitstreams/1302999/retrieve>. When concerned about an emerging rumour or misconception about the disease or its prevention methods that are not covered on this website, Red Cross Red Crescent volunteers may also use the International Fact-Checking Network where fact-checkers around the world publish, share and translate facts around COVID-19 at: Poynter Institute (2022) *Fighting the Infodemic: The #CoronaVirusFacts Alliance*. Available at: <https://www.poynter.org/coronavirusfactsalliance/>

For a broader compendium of guidance resources, FAQ and webinars on COVID-19, consult the **Health Help Desk** conceived to support National Societies to work with public authorities to respond to the pandemic: IFRC PrepareCenter (2022) *COVID-19 Health Help Desk*. Available at: <https://preparecenter.org/toolkit/healthhelpdesk/>

Impact on other sectors

Sector	Link to the disease
WASH	Safe drinking water, functioning sanitation systems and hygienic conditions are essential to protecting human health during infectious disease outbreaks, including the COVID-19 pandemic. Handwashing and disinfection are effective prevention strategies as well as the safe management of water and sanitation services and observance of good hygiene practices.
Nutrition	Malnourished people are more vulnerable to infectious diseases like COVID-19.
Shelter and settlements (including household items)	The pandemic is particularly a threat to migrants, internally displaced people and refugees, as physical distancing may be particularly difficult if living in crowded shelters or shared households.
Psychosocial support	<p>The pandemic has disrupted critical mental health services while the demand for mental health support increased. COVID-19 can in fact have several negative impacts on psychological, social and emotional aspects of a person's life, apart from its physical effects only. Psychological reactions may include fear of social stigma, anxiety and worry about the outcome, social withdrawal, sleep problems, stress, depression, self-harm and suicidal behaviours, among others. These reactions are often linked to people's fear of losing their jobs or to feeling isolated, among other factors.</p> <p>Source: Prevalence of Depression, Anxiety, and Stress during COVID-19 Pandemic - PubMed (nih.gov)</p>
Gender and sex	<p>As more women work in the health sector (e.g. nurses) in client-facing roles and as home and family caregivers, they are more exposed to infection than men. Women will likely experience a significant burden given their multiple care responsibilities as school closures and confinement measures are adopted, possibly leading to reductions in working time and exit from the labour market. Shifting resources towards addressing COVID-19 outbreaks can entail disruptions to key health services for women and girls, such as reproductive and sexual health services. Pregnant women can be particularly vulnerable in this context. Further, an increase in gender-based violence due to confinement has been observed across countries. Men on the other hand, seem to be over-represented among the fatalities of COVID-19, likely in connection with higher incidences of chronic conditions and risky behaviours.</p>

Sector	Link to the disease
<p>Education</p>	<p>When schools do not have clean running water or cannot maintain social distancing and provide personal protection measures, the risk of transmission increases. Children may then be at risk of getting the disease if attending classes, or at risk of losing on education if staying at home because of quarantine or isolation. School closures during the pandemic lead to reduced access to education, an increase in child labour and child marriage, and for many children depending on school feeding programmes, this limits access to nutritious food. Furthermore, school closures cut children off from protection services, for example where there is domestic violence.</p> <p>Importantly, schools and other facilities dedicated to children and youth can offer an important space for them to engage, mobilize and raise awareness around health education issues. With support, trust and appropriate capacity-building, young people can be effective advocates of the adoption of preventive measures during an epidemic and are those best placed to mobilize their peers.</p>
<p>Livelihoods</p>	<p>The pandemic significantly impacts many types of livelihoods worldwide. It leads to job and income losses; reduced working hours; difficulty obtaining livelihood production inputs such as seeds and farming materials, due to disruptions of supply chains or price increases; food insecurity; diversion of resources to seek medical care. Jobs relying on tourism, service industries, industrial-commodity exports and informal jobs are hit particularly hard. The more vulnerable population, including women, children, migrants and refugees, unable to mitigate the socioeconomic impacts, suffer far greater socioeconomic harms from the pandemic. Many countries and regions have been set back decades in terms of development and the socioeconomic impact will last years, long after the COVID-19 disease pandemic. Vaccine inequity will exacerbate the socioeconomic impacts and hinder recovery worldwide.</p>

Resources :

- IFRC (2021) *Drowning just below the surface: The socioeconomic consequences of the COVID-19 pandemic*. Available at: <https://www.ifrc.org/sites/default/files/2021-11/IFRC-2021-SocioeconomicReport-EN.pdf>
- The World Bank (2020) *Gender and COVID-19 (Coronavirus)*. Available at: <https://www.worldbank.org/en/topic/gender/brief/gender-and-covid-19-coronavirus>
- The World Bank (2020) *Gender dimensions of the COVID-19 pandemic*. Available at: <https://documents1.worldbank.org/curated/en/618731587147227244/pdf/Gender-Dimensions-of-the-COVID-19-Pandemic.pdf>
- WHO (2021) *Q&As on COVID-19 and related health topics*. Available at: <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/question-and-answers-hub>
- IFRC Resource Compendium for COVID-19: <https://covid.ifrc.org/>