

COVID-19 – a global pandemic

What do we know about SARS-CoV-2 and
COVID-19?

05 June 2020



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Origin of the virus - SARS CoV-2

All available evidence suggests that the virus causing COVID-19 has a natural animal origin. It most probably has its ecological reservoir in bats.

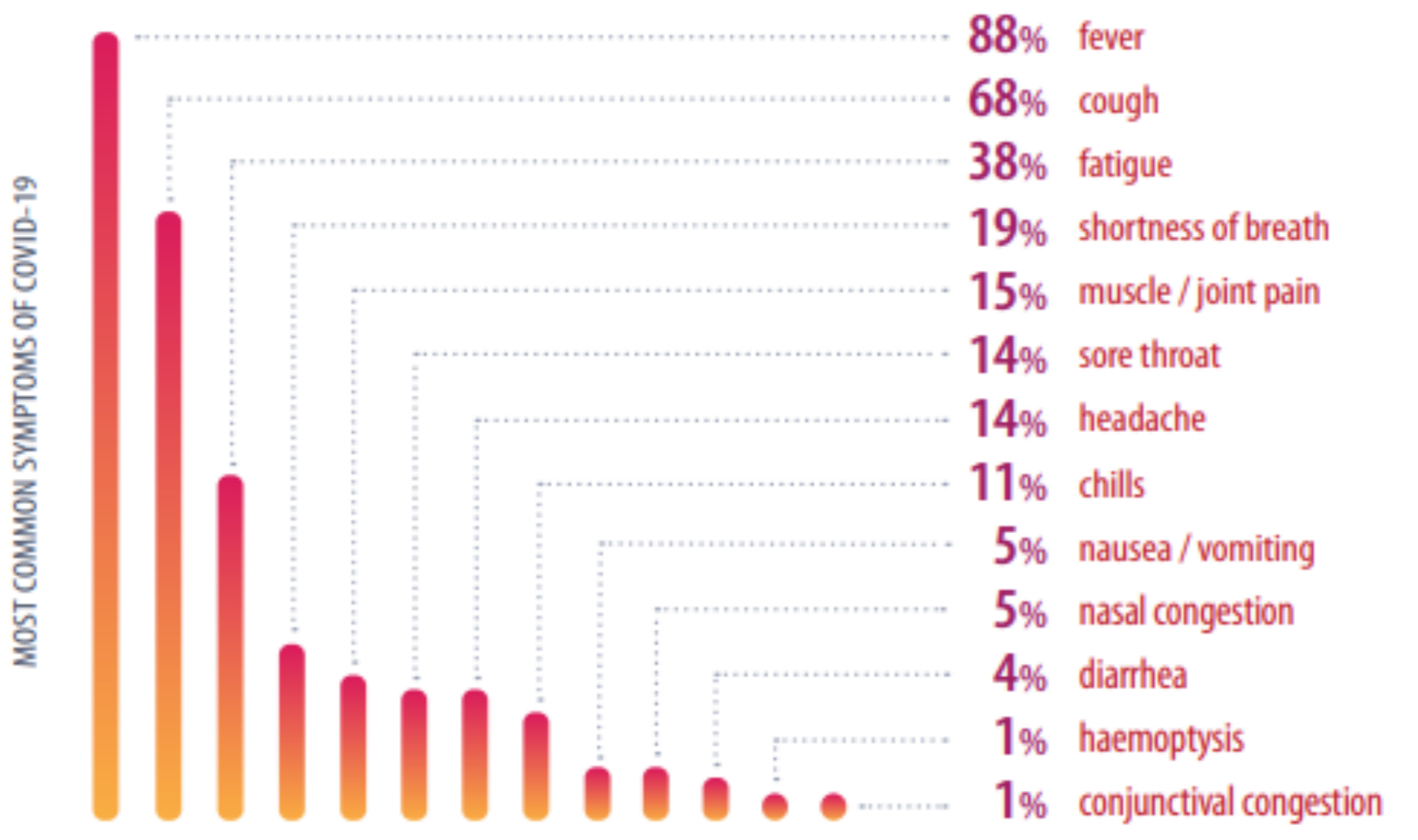
According to Lu, Zhao, Li (2020) et al [https://doi.org/10.1016/S0140-6736\(20\)30251-8](https://doi.org/10.1016/S0140-6736(20)30251-8):

- The source is most likely a virus spillover from an intermediary animal host into human populations
- The first human cases of COVID-19, the coronavirus disease caused by SARS-CoV-2, were first reported from Wuhan City, China, in December 2019.
- Environmental samples taken in a food market in Wuhan were positive for the virus, concentrated in the area where wild and farmed animal trade was present
- The market could be the origin of the virus or played a role as an amplifying setting for the initial spread



Symptoms

loss of smell loss of taste red eyes rash

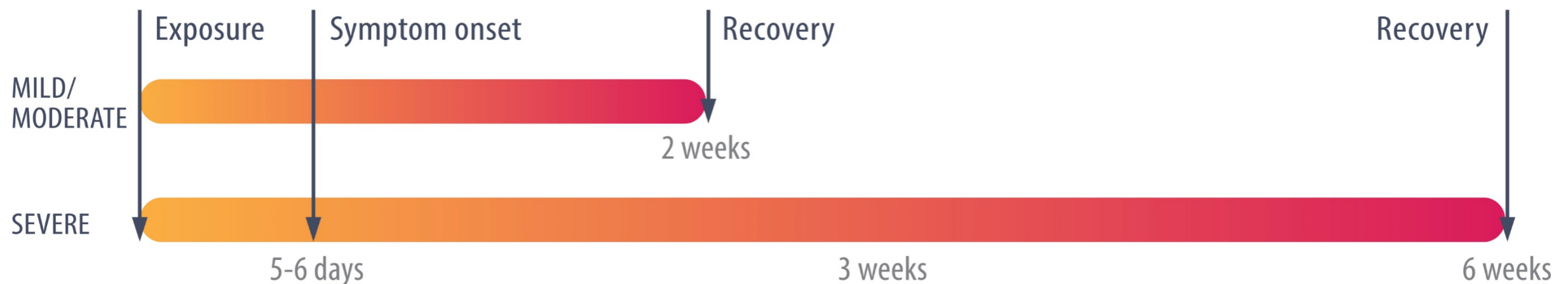


<https://www.who.int/emergencies/diseases/novel-coronavirus-2019/question-and-answers-hub/q-a-detail/q-a-coronaviruses#:~:text=symptoms>



Transmission

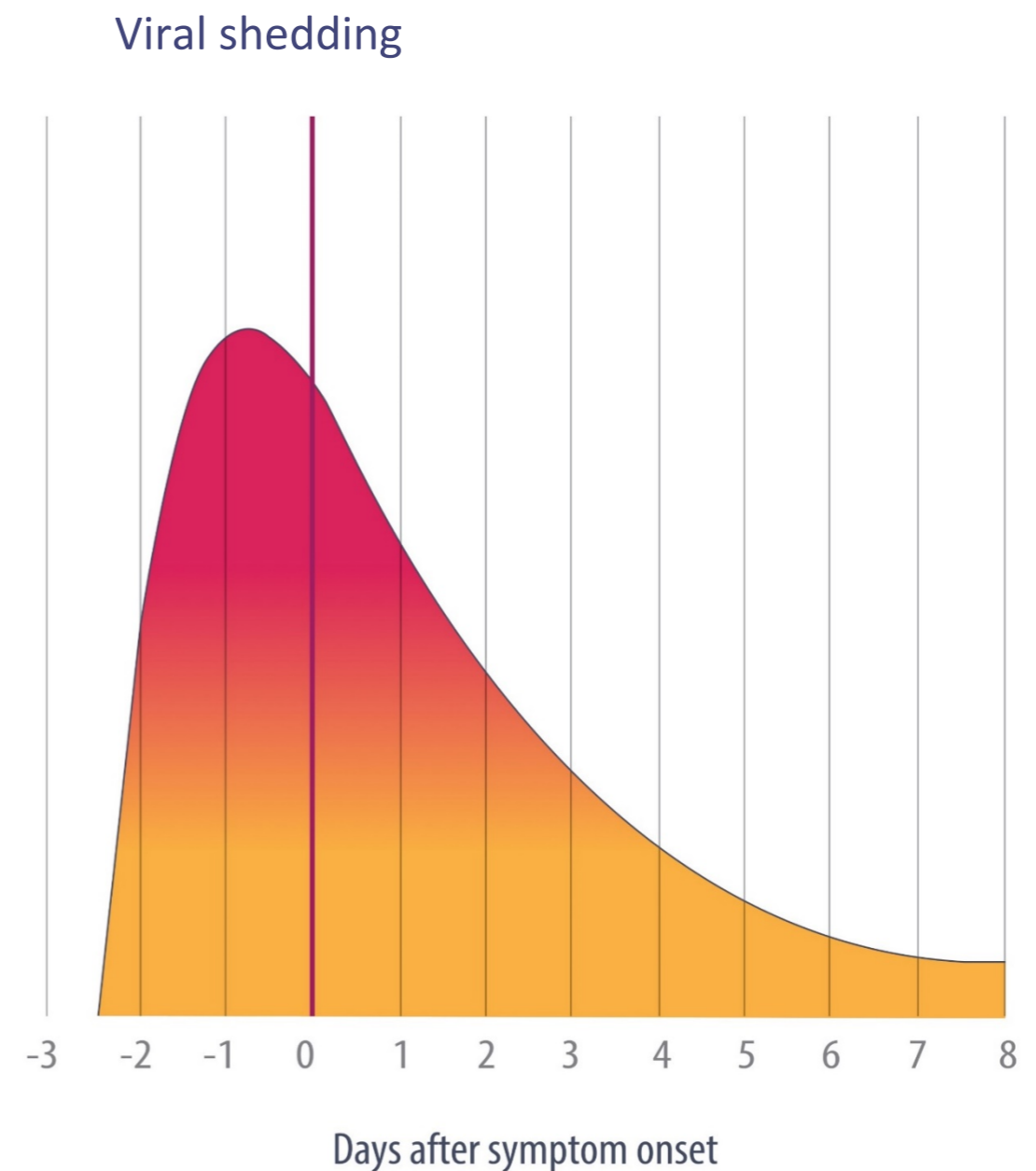
- COVID-19 is spread primarily from person to person through small droplets from the nose or mouth, expelled when a person with COVID-19 coughs or sneezes. People can catch COVID-19 if they breathe in these droplets, or by touching objects or surfaces where the droplets have landed, then their face.
- The time between infection and first symptoms (incubation period) ranges from 1 to 14 days, with an average of **5 to 6 days**. More than 97% of people experience symptoms within 14 days.





Transmission

- Active viral replication occurs in the upper respiratory tract and lungs. Early studies indicate that the virus replicates in the gastrointestinal tract but faecal-oral transmission has not been confirmed
- Peak viral shedding seems to occur at the time of symptom onset and declines thereafter
- Pre-symptomatic transmission is likely to occur. However, the absence of a cough (a key mechanism for viral expulsion) may limit transmission.



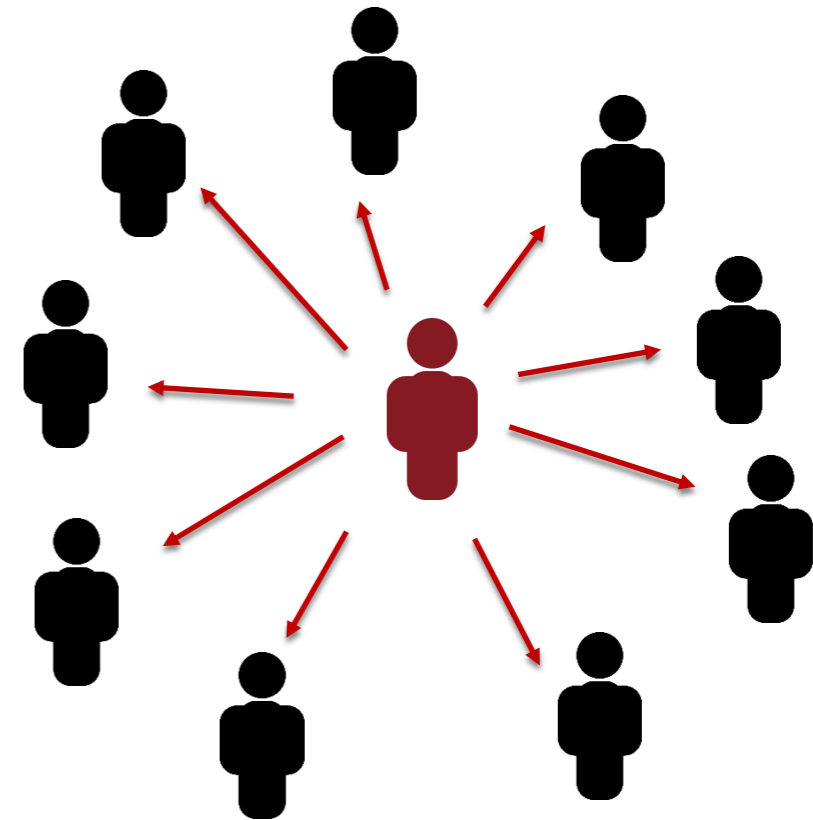
Source: <https://www.who.int/news-room/commentaries/detail/modes-of-transmission-of-virus-causing-covid-19-implications-for-ipc-precaution-recommendations>



Super-spreading events

Super-spreading events are when the transmission of the virus is suddenly amplified- that is, a single person transmits the virus to disproportionately large number of secondary contacts. Certain situations may contribute to a super-spreading event:

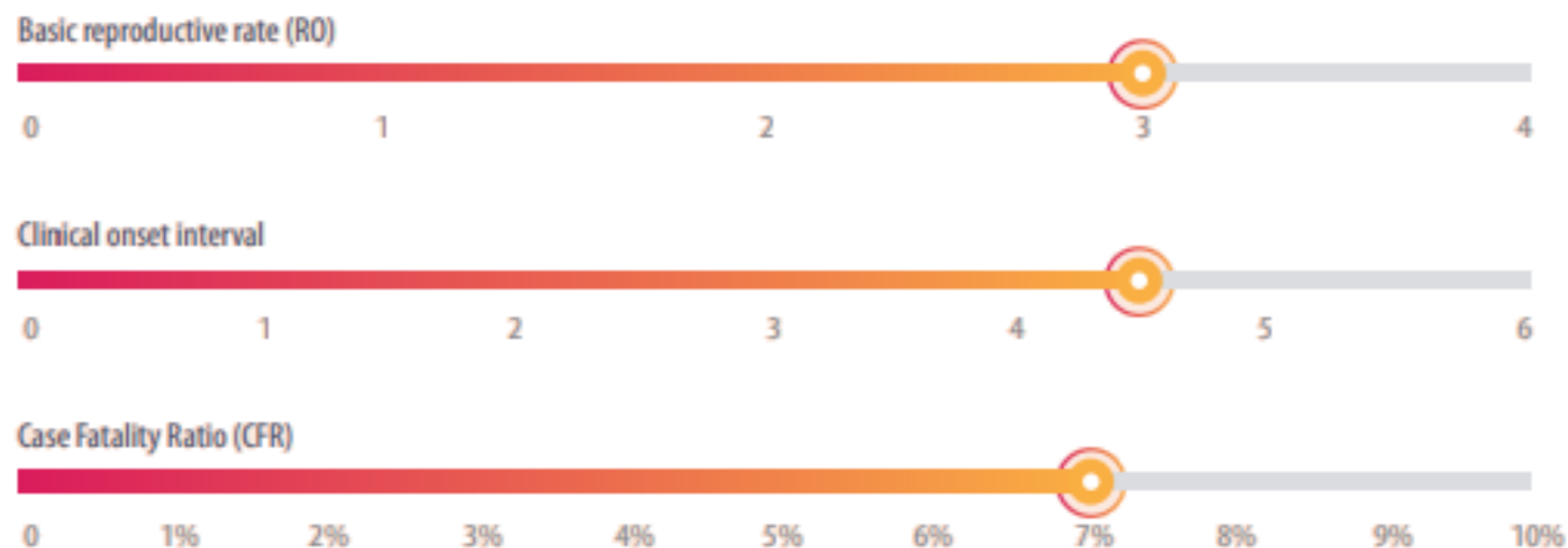
- Crowding, where physical distancing is not possible: mass-gatherings, refugee camps, densely populated urban areas
- Closed settings - long term care facilities, settings of incarceration, gyms
- Areas where there may be increased nosocomial transmission – long term care facilities, health facilities with poor IPC,





Disease specifications: reproductive rate, severity

- **Basic Reproductive Rate (R0)** is the **average number of people infected by one person** in a susceptible population. R0 for COVID-19 is estimated to be between 2 and 4
- **Clinical Onset Interval** is the **time between onset of symptoms** in successive cases in a chain of transmission. In most studies, the average time is between **4 and 5 days**
- **Case Fatality Ratio (CFR)** is the proportion of episodes of illness that are fatal. The global crude CFR is **7%** (Dec 2019-May 2020) (#cases/ #deaths)



Source https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200306-sitrep-46-covid-19.pdf?sfvrsn=96b04adf_4:



Risk groups

LOW RISK

Contact studies indicate **children and young adults** do become infected, and can transmit infection. However, children rarely progress to serious illness

HIGH RISK

Risk of severe disease **increases with age** and in those with **underlying medical conditions** such as hypertension, diabetes, cardiovascular disease, chronic respiratory disease, cancer & obesity

<https://www.who.int/news-room/commentaries/detail/multisystem-inflammatory-syndrome-in-children-and-adolescents-with-covid-19>



Immunity

Short-term:

- Antibodies to COVID-19 (both IgG and IgM) appear 6 to 12 days after symptom onset, after which there is a slow, steady decline in viral load
- Patients may still be infectious after they improve clinically. This has implications for infection, prevention and control in healthcare facilities and hospital discharges. Some patients may require further home isolation after being discharged from hospital.

Long-term:

- Currently, there is not enough evidence about the effectiveness or duration of antibody-mediated immunity to guarantee the accuracy of an “immunity passport” or “risk-free certificate.”
- There is a concern, that people may assume they are immune to a second infection and ignore public health advice, increasing the risk of continued transmission [3]

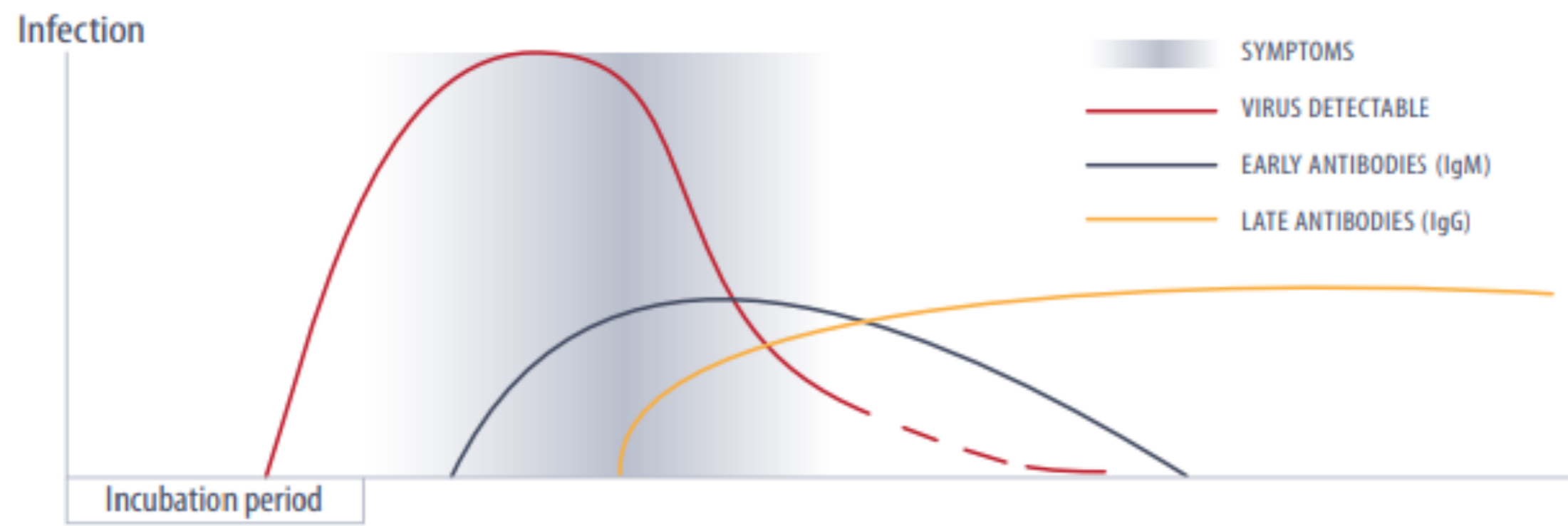
3 <https://www.who.int/news-room/commentaries/detail/immunity-passports-in-the-context-of-covid-19>



Immunity

Immune response

Antibodies to the COVID-19 virus (both IgM and IgG) start to appear **between 1 to 2 weeks after symptom onset** after which there is a slow, steady decline in viral load. Some patients may still be infectious after improving clinically & may require further isolation after hospital.

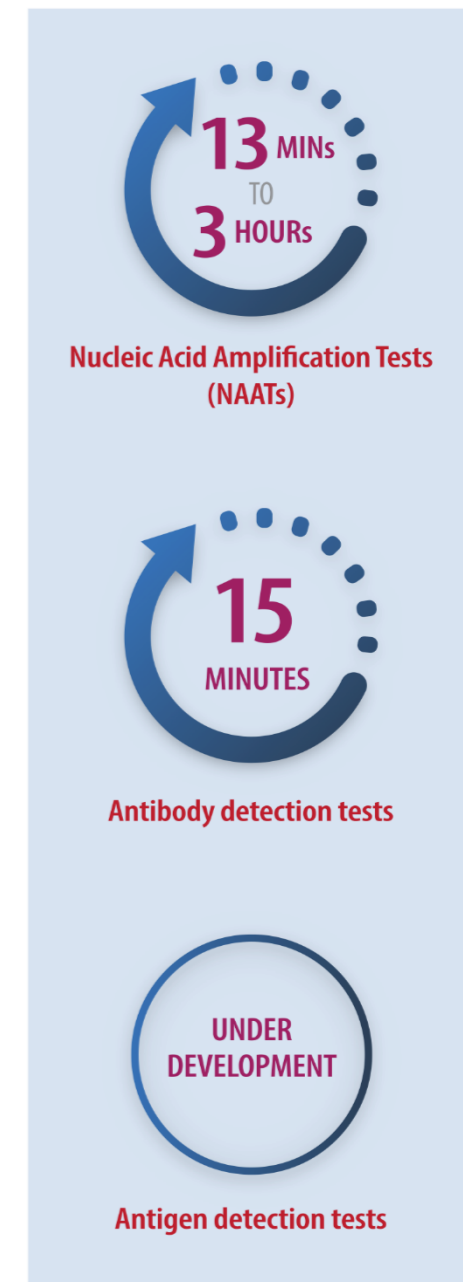




Testing

No diagnostic tests are currently licensed for COVID-19 except under emergency use regulations. All are under evaluation

- **Nucleic Acid Amplification Tests (NAATs)** are used to diagnose current infection (presence of virus) during the acute phase of disease. NAAT test time is between 13 minutes and 3 hours and require specific instrumentation.
- **Antibody detection tests** detect IgG and IgM antibodies against the virus. Not useful for diagnosis as an antibody response is not detectable in the first week of illness. Test time is approximately 15 minutes and could be used to detect those who have had prior infection. Population-based serological studies are ongoing in 6 countries.
- **Antigen detection tests** detect viral antigens and could be useful for diagnosis of acute infection. Test development is ongoing in many countries.

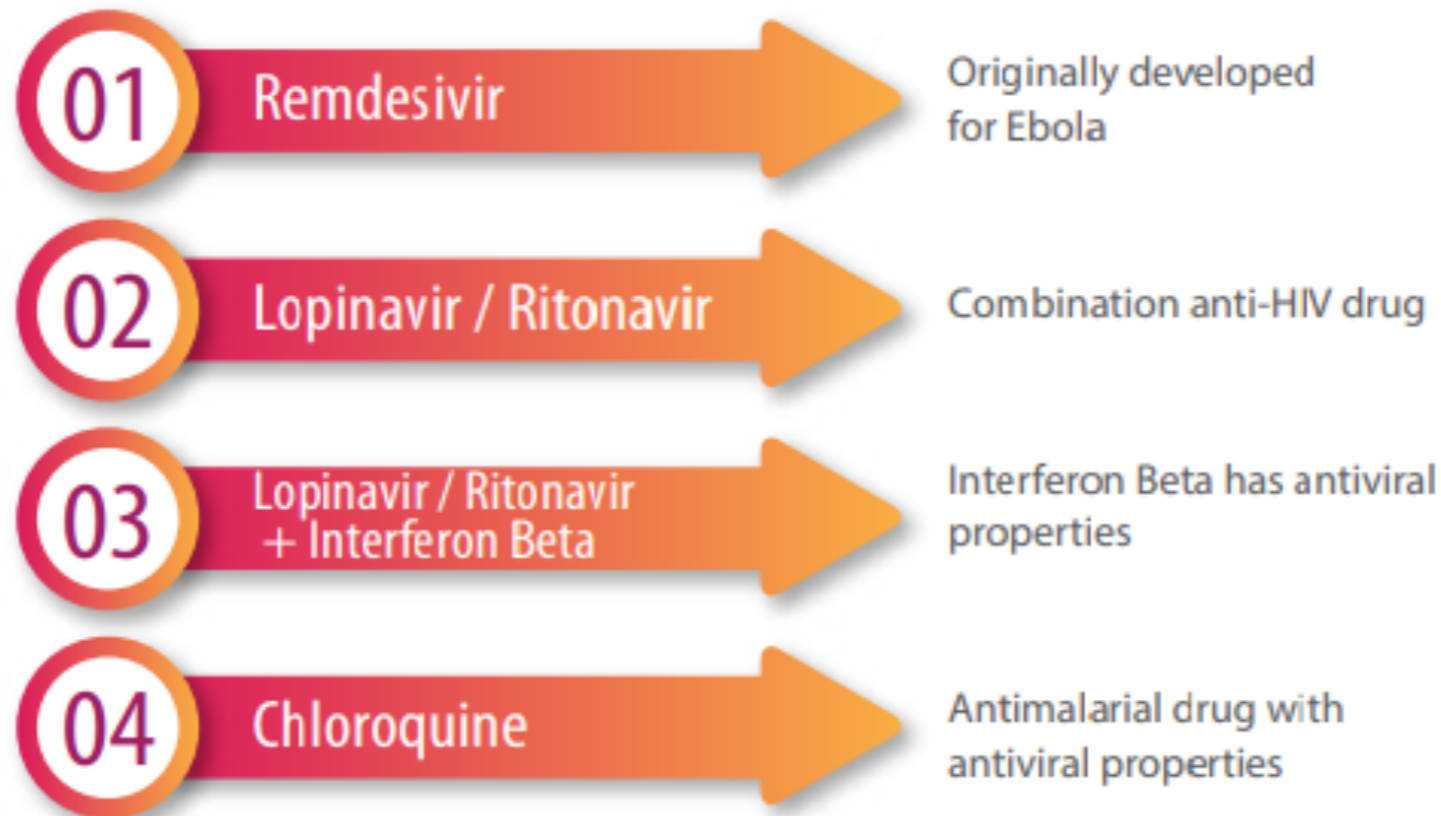


Source <https://www.who.int/publications-detail/laboratory-testing-strategy-recommendations-for-covid-19-interim-guidance>



Treatment

- Currently, there are no specific therapeutics licensed for treating COVID-19. Research is ongoing to determine if existing drugs can be re-purposed to effectively treat COVID-19
- WHO is coordinating the large multi-country **Solidarity Trial** to evaluate four promising candidate drugs/regimens:



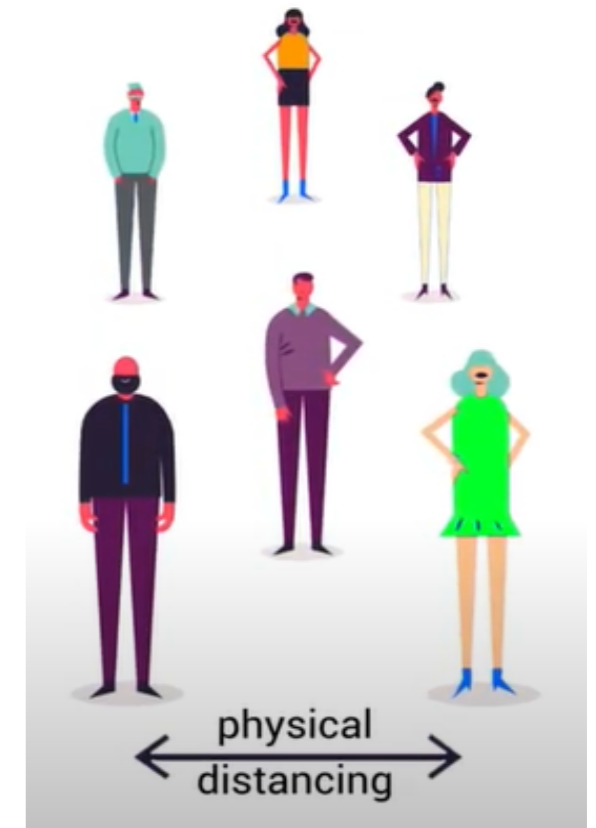
Dozens of potentially re-purposable drugs are in various trial stages.

<https://www.who.int/emergencies/diseases/novel-coronavirus-2019/global-research-on-novel-coronavirus-2019-ncov/solidarity-clinical-trial-for-covid-19-treatments>



Personal measures

- **Hand and respiratory hygiene is important at ALL times and is the best way to protect yourself and others**
- **When possible maintain at least 1 meter distance between yourself and others.** Some infected persons may not be exhibiting symptoms or their symptoms may be mild so maintaining a physical distance with everyone is important if you are in an area where COVID-19 is circulating



<https://www.who.int/emergencies/diseases/novel-coronavirus-2019/question-and-answers-hub/q-a-detail/q-a-coronaviruses>

<https://www.who.int/emergencies/diseases/novel-coronavirus-2019/advice-for-public>



Public health measures

Quarantine means restricting activities or separating people who are not ill but may have been exposed to COVID-19. The goal is to prevent the spread of disease if or when people develop symptoms

Isolation means separating people who are ill with symptoms of COVID-19 and may be infectious to prevent the spread of the disease.

Physical distancing means being physically apart. WHO recommends keeping at least 1-metre distance from others. This is a general measure that everyone should take even if they are well.

Contact tracing is the process of identifying, assessing and managing people who have been exposed to someone with COVID-19 to break chains of transmission and prevent onward transmission. Contacts are identified; quarantined for 14 days and monitored daily for onset of symptoms.

<https://www.who.int/publications-detail/considerations-in-adjusting-public-health-and-social-measures-in-the-context-of-covid-19-interim-guidance>

<https://www.who.int/publications-detail/contact-tracing-in-the-context-of-covid-19>



Social and economic impact

- The COVID-19 pandemic and the associated economic crisis poses huge global and local challenges
- The health, social and economic impact has affected all segments of the population but is particularly detrimental to social groups in vulnerable situations including; people living in poverty, older persons, persons with disabilities, and indigenous peoples.
- Epidemics and economic crises have a disproportionate impact on these vulnerable groups, which can trigger worsening inequality and poverty
- The global crisis requires coordination of stakeholders, a global solution, local implementation of effective socio-economic and public health policies and solidarity

<https://www.un.org/development/desa/dspd/2020/04/social-impact-of-covid-19/>



Information resources



WHO WhatsApp messaging service

Receive the latest news and information on COVID-19. To subscribe:
text 'hi' to +41 79 893 1892



New EPI-WIN website

Access to timely, accurate, and easy-to-understand advice and information from trusted sources

www.who.int/epi-win

Other Chat Bot Links:

[Viber](#)

[Facebook Messenger](#)



Let's all prevent the spread of **COVID-19.**

