



# COVID-19 transmission questions

We know that COVID-19 is spread primarily through droplet transmission; however many questions arise regarding pre- or asymptomatic transmission, the faecal/oral route and the role of children in transmission [MORE](#)



Asymptomatic  
transmission



Faecal–oral  
transmission?



Children &  
transmission



## The pandemic is accelerating exponentially

The 1st 100,000 cases took 67 days,  
the 2nd 100,000 cases took 11 days,  
the 3rd 100,000 4 days  
**and the 4th 100,00 just 2 days**

For the latest data, please access:

- ➔ [WHO situation dashboard](#)
- ➔ [WHO situation reports](#)
- ➔ [UNWFP world travel restrictions](#)

## Current global situation

- Close to **1 million** COVID-19 cases globally
- More than **40 000** deaths
- USA has the highest number of cases globally

### Top ten countries with the highest number of new cases

COUNTRY	NEW REPORTED CASES IN LAST 24HRS
United States of America	22 559
Spain	9 222
France	7 500
Germany	5 453
Italy	4 053
United Kingdom	3 009
Iran	2 987
Turkey	2 704
Canada	1 378
Portugal	1 035



## Number of new cases of COVID-19 per day, by WHO Region



\* There is no data from 22 March due to a change in the WHO situation reporting period



# Epidemiological insights

- At diagnosis: approximately **80% of cases are mild/moderate**; 15% severe; 5% critical
- Disease progression: approximately 10-15% of mild/moderate cases become severe, and approximately 15-20% of severe cases become critical
- Average times:
  - from exposure to symptom onset is 5-6 days after infection
  - from symptoms to recovery for mild cases is 2 weeks
  - from symptoms to recovery for severe cases is 3-6 weeks
  - from symptoms onset to death is from 1 week (critical) to 2-8 weeks
- COVID-19 much less frequent in children than adults; and children tend to have milder disease





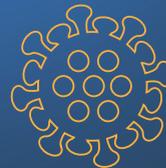
# What is COVID-19 and how does it spread?

**Coronavirus disease (COVID-19) is an infectious disease** caused by a new virus (SARS-CoV-2).

The disease causes respiratory illness with signs and symptoms such as a cough, fever, fatigue, and in more severe cases, difficulty breathing. New symptoms recently identified in some patients include loss of taste and/or smell and red eyes.

You can protect yourself by washing your hands frequently, avoiding touching your face, and avoiding close contact with other people. Keep a safe distance from others of at least 1 meter or 3 feet.

**The spread of COVID-19 from person to person is being driven by droplet transmission** – the virus is carried in the small droplets that emerge from the noses or mouth, when a person with COVID-19 speaks, coughs or sneezes. Infection can also happen when a person touches a surface or object that has the virus on it, then touches their eyes, nose or mouth.



## Related resources:



### VIDEO:

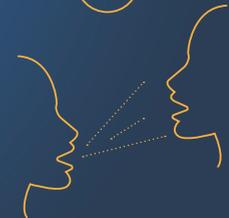
[How is COVID-19 spread and how do you protect yourself against it?](#)



# Can people who do not have symptoms spread COVID-19?

**There are reports of transmission in the presymptomatic period; which is on average 5-6 days between infection and developing actual symptoms**

- Common symptoms of COVID-19 disease are dry cough, fever and fatigue. People with mild symptoms may think they have another infection such as a common cold. Additional symptoms such as loss of smell, loss of taste and red eyes have been reported in some COVID-19 patients
- Studies show that the viral load in COVID-19 patients is highest at symptom onset, or shortly afterwards. It is possible that patients could be infectious immediately before symptom onset<sup>1,2</sup>; however the extent of transmission in the presymptomatic phase is not yet known
- COVID-19 spreads through respiratory droplets that can land on people who are less than 1 meter away. People with respiratory symptoms such as a cough, are more likely to transmit the disease than presymptomatic people



## REFERENCES

1 <https://www.medrxiv.org/content/10.1101/2020.03.05.20030502v1>

2 [https://www.thelancet.com/journals/laninf/article/PIIS1473-3099\(20\)30232-2/fulltext](https://www.thelancet.com/journals/laninf/article/PIIS1473-3099(20)30232-2/fulltext)



# How can we protect ourselves and others if we don't know who is infected?

**Practicing hand and respiratory hygiene is important at ALL times and is the best way to protect yourself and others**

- If you have been in contact with someone with COVID-19, you may be contagious; therefore self-isolate to prevent spreading COVID-19 to others
  - Even if you develop very mild symptoms you must self-isolate
  - If you did not know you had been exposed to COVID-19 but develop symptoms, then self-isolate and monitor yourself
- Transmission is more likely in the early stages of the disease (due to the high viral loads at symptom onset); therefore early self-isolation is critical
- If you have had COVID-19 and your symptoms have disappeared, then self-isolate for 14 days after symptoms have disappeared as a precautionary measure – it is not yet known how long people remain infectious after they have recovered

## Related resources:



VIDEO:

[How to wash your hands effectively](#)



VIDEO:

[How is COVID-19 spread and how do you protect yourself against it?](#)



# What is known about the transmission of COVID-19 via the faecal/oral route?

## As yet, we have no evidence of COVID-19 transmission via the faecal/oral route

- Some studies have shown contamination of toilets with viral RNA from the COVID-19 virus and viral RNA has been detected in feces; however to date, there have not been reports of faecal-oral transmission of COVID-19
- There is no evidence to date, on survival of the COVID-19 virus in water or sewage. Based on its structure, it probably does not survive long



### REFERENCES

1. <https://jamanetwork.com/journals/jama/fullarticle/2762692>
2. <https://jamanetwork.com/journals/jama/fullarticle/2762997>
3. Zhang Y, Chen C, Zhu S et al. [Isolation of 2019-nCoV from a stool specimen of a laboratory-confirmed case of the coronavirus disease 2019 (COVID-19)]. China CDC Weekly. 2020;2(8):123–4. (In Chinese)
4. <https://www.medrxiv.org/content/10.1101/2020.03.15.20036707v2>



# What is the role of children and adolescents in the transmission of COVID-19?

## Children and adolescents can be infected and spread COVID-19

- Evidence suggests that children tend to have milder disease than adults<sup>1,2</sup>
- Reports indicate that young children are as likely to be infected as adults<sup>1,2</sup>
- Children and adults should follow the same guidance on self-isolation if there is a risk they have been exposed or are showing symptoms. It is particularly important that children avoid contact with older people and others who are at risk of more severe disease.



### REFERENCES

1. <https://www.medrxiv.org/content/10.1101/2020.03.03.20028423v3>

2. <https://www.thelancet.com/action/showPdf?pii=S1473-3099%2820%2930198-5>



# Do the current case numbers underestimate the true scale of the pandemic?

## The current numbers likely underestimate the true scale for a number of reasons:

- The reported cases are those that have been tested – laboratory tests are not available in many settings and some countries do not test people who have mild symptoms
- Evidence is emerging that some people are infected but do not show symptoms and will therefore not seek medical care
- The symptoms are non-specific (not unique to COVID-19) therefore in the absence of laboratory testing there is no confirmation of COVID-19 diagnosis
- The true scale of the pandemic may not be known until serological surveys are carried out



# Two studies: Transmission of COVID-19

## STUDY NO. 1

**Air, surface, environmental and protective equipment contamination** by Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) from a symptomatic patient. Ong SWX, Tan YK, Chia PY et al. JAMA, March 4 2020. DOI:10.1001/JAMA.2020.3227

**Setting:** The individual hospital rooms of 3 symptomatic COVID-19 patients in Singapore

**Investigation:** Swabs taken from surfaces in the room (including tables, lockers, light switches, door handles, toilet and sinks, chairs and handrails) both before and after routine cleaning with a chlorine solution were tested. Air was collected for testing using special samplers.

**Findings:** There was extensive contamination of surfaces prior to cleaning but swabs were negative after cleaning. All air samples were negative.

**Conclusion:** COVID-19 is spread through droplet transmission - respiratory droplets that are relatively heavy, do not travel far and fall quickly to the ground or other surfaces. Extensive contamination of the environment can occur however, chlorine-based disinfectant is effective at cleaning surfaces. Although airborne spread seems to be unlikely in normal circumstances further evidence is needed before it is considered an insignificant route of transmission.

## STUDY NO. 2

**Aerosol and surface stability of SARS-CoV-2 [COVID-19 virus]** as compared with SARS-CoV-1. Van Doremalen N, Morris DH, Holbrook MG et al. NEJM. 17 March 2020. DOI: 10.1056/NEJMc2004973

**Setting:** Experiment in a research laboratory.

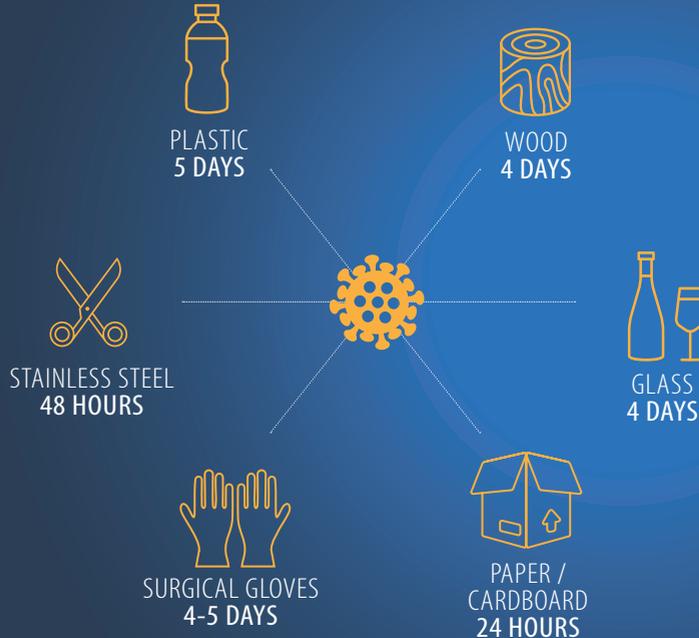
**Investigation:** Virus grown in laboratory cultures was placed on a variety of surfaces (plastic, stainless steel, copper and cardboard). Surfaces were swabbed at different time points and tested for live virus. Special laboratory equipment was used to create very fine sprays (liquid particles less than 5 microns in size) that can hang in the air.

**Findings:** Under these favorable laboratory conditions COVID-19 virus could survive for up to 72 hours on plastic and stainless steel, up to 24 hours on cardboard and up to 4 hours on copper. It could also survive for up to three hours in aerosols.

**Conclusion:** Given the right environmental conditions, COVID-19 virus can survive for long periods on certain surfaces and in fine aerosols that are sometimes produced during advanced medical procedures. Special precautions are needed for these aerosol-generating procedures.



# How long human coronaviruses stay on surfaces



- Surface disinfections with 0.1% sodium hypochlorite (diluted bleach) or 62-71% ethanol is effective within 1 minute
- COVID-19 was NOT included in this study but to date, there is no indication that SARS-CoV-2 behaves differently to other coronaviruses

Source: J.Hosp.Infect. 2020.01



# Protective measures

You can protect yourself and help prevent the spread of the virus

- **Clean hands frequently** with soap and water for 40 seconds or with alcohol-based hand rub for 20 seconds
- **Avoid touching** your eyes, nose and mouth
- **Cover your nose and mouth with a disposable tissue** or flexed elbow when you cough or sneeze. If a tissue is used, discard it immediately and wash your hands
- **Avoid close contact** with others and keep a safe distance of at least 1 meter or 3 feet
- **Stay home** and self-isolate from others in the household if you feel unwell
- **Regularly clean** and disinfect surfaces frequently touched
- **Stay up-to-date** with information from trusted sources, such as WHO and your local health authority

If you have a fever, cough and difficulty breathing, seek medical care early — but call by phone first, if possible

There are no specific vaccines or treatments for COVID-19 as yet. However, clinical trials are underway. WHO will continue to provide new information as it becomes available.

Related resources:



VIDEO:

[How to wash your hands effectively](#)



VIDEO:

[How is COVID-19 spread and how do you protect yourself against it?](#)



# Self-isolation

Self-isolation is an important measure to avoid infecting others in the community, including family members

- Self-isolation is when a person who is ill (i.e. fever or respiratory symptoms) voluntarily or based on his/her health care provider's recommendation, stays at home and does not go to work, school or public places
- If a person is in self-isolation, it is because he/she is ill but not severely ill (requiring medical attention)
- The person in self-isolation should ideally have a room at home that is separated from other family members. If not possible, spatial distance of at least 1 meter (3 feet) from other family members and the use of a medical mask is recommended for the ill person with respiratory symptoms. The person in self-isolation should have dedicated utensils, plates, cups, towels and linens
- The duration of self-isolation for a person with confirmed diagnosis of COVID-19 should be discussed with the healthcare provider and may require additional laboratory testing





# Health workers

## Recommendations for health workers with high risk for infection

- Stop all interactions with patients for 14 days since the last day of exposure to a confirmed COVID-19 patient. In your private life, protect your family and others by self-isolating
- If you have cough, fever and difficulty breathing, get tested for COVID-19 virus infection if possible. Quarantine until you have the test result, or you are feeling well

## Recommendations for health workers with low risk for COVID-19 infection

- Self-monitor temperature and respiratory symptoms daily for 14 days after the last day of exposure to a COVID-19 patient
- Reinforce contact and droplet precautions when caring for all patients with acute respiratory illness and standard precautions to take care of all patients; Reinforce airborne precautions for aerosol generating procedures on all suspect and confirmed COVID-19 patients
- Reinforce the rational, correct and consistent use of personal protective equipment when exposed to confirmed COVID-19 patients
- Apply WHO's '[My 5 Moments for Hand Hygiene](#)' before touching a patient, before any clean or aseptic procedure, after exposure to body fluid, after touching a patient and after touching a patient's surroundings
- Practice respiratory etiquette at all times

For more tailored advice and guidance for health workers, please visit:

[WHO's 'Health sector' page](#)





## New information resources



### WHO WhatsApp messaging service

Receive the latest news and information on COVID-19. To subscribe: text 'hi' to [+41 79 893 1892](tel:+41798931892)



### New EPI-WIN website

Access to timely, accurate, and easy-to-understand advice and information from trusted sources [www.who.int/epi-win](http://www.who.int/epi-win)