

COVID-19: recommendations for contacts

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Background

- **Cases might transmit virus 2 days before symptoms** occur. Various percentages of cases were estimated to originate from pre-symptomatic contacts, ranging from 6,4% (1) to 12.6 (2) and up to 48%-62% in a modelling study (3).
- **Transmission via asymptomatic people seems possible.** In Italy no differences in viral load were found between symptomatic and asymptomatic patients (4). However, it is unclear whether the detection of virus in asymptomatic persons is related to infectivity. In Italy, a limited number of asymptomatic cases were identified through contact tracing, suggesting a minor role for asymptomatic individuals in overall spread of infection (4).
- Based on the current literature, it are mainly symptomatic individuals who contribute to the spread and the **contribution of asymptomatic individuals and presymptomatic transmission to the spread seems limited** (4-6).
- **It is not very clear when the infectious period ends.** Viral load persists up to **eight days** after the onset of symptoms in mild cases and **peaks in day 11 in more severe cases** (7,8). However, more research is needed on the level and duration of viral shedding in the various patient groups and in the context of asymptomatic and pre-symptomatic infections. There is no evidence on the duration of viral shedding after resolution of fever. There are likely prolonged periods of viral RNA shedding and a shift between oral shedding towards fecal shedding, but focus is advised to be on droplet transmission. Presence of viral RNA does NOT equal infectiousness. It has been reported that despite high viral loads, no infectious virus (viral culture) could be isolated after day 8 from symptom onset (3, 9,10).
- The **mean incubation period** is **about 4-6 days** with about 95% of individuals developing symptoms within 14 days from infection (11-13).
- **Transmission is mainly via respiratory droplets and direct contact with infected people, and indirect contact with surfaces or objects in the immediate environment** (14). Recent studies question a potential for airborne transmission. There are some indications that smaller SARS-CoV-2 virus aerosols can travel >1.5m (15). In one recent experiment, SARS-CoV-2 was aerosolized and kept in a closed container in optimal circumstances (16). After 3h, viable virus could still be detected. The amount of infective virus was however halved each 1,1h and the findings need to be interpreted with caution, as these experimental circumstances are not representative of real-life circumstances.
- Longer duration of contact is assumed to increase the risk of transmission. ECDC uses a **15 minute limit**, which is arbitrarily selected for practical purposes (17).
- The risk of spreading covid-19 through hospitals, nursing homes or other care institutions is not negligible. These institutions contain elderly and/or vulnerable persons. This has to be weighed against **the importance of continuity of care** and therefore the presence of sufficient care staff in these institutions.
- **Serology testing:** The median seroconversion time for Ab, IgM and IgG was day-11, day-12 and day-14 after symptom onset in a study by Zhao et al (18). In Guo et al's study, the median duration to IgM and IgA antibody detection were 5 days (IQR 3-6) and 14 days for IgG (IQR 10-18) (19). Both studies described higher sensitivities of the serological assays over a repeated RT-PCR after the first week of symptom onset. On the basis of current knowledge, serology can only tell if a

person triggered an immune response to the virus, but not whether a person is infected with CoV-2-SARS within the first week of symptom onset; has developed an asymptomatic/paucisymptomatic infection; is protected against reinfection and if so, for how long; and is no longer contagious. The use of serology in contact tracing is therefore limited.

Recommendations for contacts made by the ECDC can be found in Annex 1 (17). Much of the classification of contacts and measures, as well as the definition of contact in this document comes from the ECDC.

Classification of contacts and measures

A contact of a COVID-19 case is any person who has had contact with a COVID-19 case (=possible or confirmed) within a timeframe ranging from 2 days before onset of symptoms of the case.

A contact can be classified differently (high risk or low risk), depending on the exposure (see table).

For an asymptomatic person with a positive PCR test, a contact person is defined as someone who has had contact with this person within a timeframe ranging from 48 hours before the sample which led to confirmation was taken, to 14 days after the sample was taken.

High risk contact	Low risk contact
<ul style="list-style-type: none"> - Person with cumulative contact of at least 15 minutes within a distance of <1.5m, for example in a conversation. - Person who was in the same room/closed environment with a COVID-19 case for more than 15 minutes. This includes, household contacts, a section of a nursery, all the classroom for children < 6 years (kindergarten), classroom neighbors ≥6 years, office neighbors. - Person having had physical contact with a COVID-19 case. - Person in direct contact with secretions or body fluids, including respiratory secretions of a COVID-19 case, such as kissing, contact with vomit, mouth-to-mouth, coughing, sneezing, etc.. - Healthcare worker in contact with a COVID-19 case during care, or medical examination (≤ 1.5m), without recommended PPE (according to protocol/activity). - Person travelling together with a COVID-19 case in any mode of transport, sitting within two seats (in any direction) of the COVID-19 case. In an aircraft also crew members serving in the section of the aircraft where the index case was seated (if severity of symptoms or movement of the case indicate more extensive exposure, passengers 	<ul style="list-style-type: none"> - Person having had contact with a COVID-19 case within 1.5 m for less than 15 minutes. - Person who was in the same room/closed environment with a COVID-19 case, but no cumulative contact of at least 15 minutes within a distance of <1.5m with the COVID-19 case. This includes all the classroom of children ≥6 years*, people in the same office*, hospital waiting room, ... - Healthcare worker who has been in the same room of a COVID-19 case without the use of adequate protective clothing, but never within a distance of 1.5 meter.

<p>seated in the entire section or all passengers on the aircraft may be considered close contacts).</p>	
<p>Measures:</p> <ul style="list-style-type: none"> - Isolation at home for 14 days, with an authorized exit for small essential purchases (food, pharmacy,...), with cloth mask and strict respect of hygiene measures, while avoiding direct contact with other people. If not possible (for essential profession, particularly to ensure continuity of health care), respect physical distancing measures and avoid travel. - Sampling to exclude infection is only necessary for some persons (see below). - During the 14-day isolation period, people must monitor their health (self-monitoring) by taking their temperature twice a day. Active monitoring (daily reporting of health status) is recommended (if logistically possible) for high risk contacts, who are themselves in contact with people belonging to a risk group for developing severe disease. - In case of fever or other symptoms (see case definition), the person should contact his/her doctor by phone (and follow procedure GP). 	<p>Measures:</p> <ul style="list-style-type: none"> - Keep social contacts to a minimum. - Strict respect of social distancing for 14 days from the last contact with the case. - Strict respect of hygiene measures. - Cloth masks for all exits (school, work,...). - In case of development of fever or other symptoms (see case definition), the person should contact his doctor by phone (and follow procedure GP).

*Except neighbor, see high risk contact

Additional comments:

- The two categories “High risk contact” and “Low risk contact” can be further separated in 2, based on the profession/activity of the contact: “high” or “low risk of contact with persons at risk of developing severe disease”. This will be taken into consideration for the monitoring and testing strategy.
- Testing of asymptomatic contacts will depend on the testing capacity. In a first phase, only high risk contacts with high risk of contact with risk groups will be tested by PCR, at the end of the isolation period. If testing capacity will be sufficient, other contacts of the high risk group can be tested at the end of the isolation period. Low risk contacts do not have to be tested.
- Serology tests are not recommended for testing of contacts.
- Active reporting of the health status on a daily base should only be considered for the high risk contacts with high risk of contact with risk groups, if this is logistically possible. For all other contacts, monitoring is passive (self-monitoring), with contact of the GP if symptoms develop.
- HCW providing care (on a continuous base) to a COVID-19 case, or laboratory workers handling specimens from a COVID-19 case, **wearing the recommended PPE** are not considered as low risk contacts. They will be considered separately in the guideline published, with recommendation to apply strict of hygiene measures and recommendation to wear a cloth mask for all exits.
- For low risk contacts, based on an individual risk assessment, public health authorities/the treating physician may consider excluding low-risk exposure contacts from work if they work with vulnerable populations (e.g. immunosuppressed people).

- For high risk contacts, work is possible in exceptional cases, especially if working in critical infrastructures in case of staff shortages (hospitals, nursing homes, home care nurses, ...) if the following measures are followed:
 - use of adequate protective measures;
 - temperature measurement and monitoring for symptoms compatible with COVID-19 (up to 14 days after exposure);
 - strict hygiene (including frequent hand washing);
 - as far as possible, keep a distance of at least 1.5 m from other people (also during breaks, etc.).
- For household contacts, if a new case appears during the isolation period, the period of 14 days starts again for non-symptomatic persons who were exposed to the new case.

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Annexe 1: ECDC recommendations for contacts (Table 1 and 2)

Table 1. Classification of contact based on level of exposure

High-risk exposure (close contact)	Low-risk exposure
<p>A person:</p> <ul style="list-style-type: none"> • having had face-to-face contact with a COVID-19 case within two metres for more than 15 minutes; • having had physical contact with a COVID-19 case; • having unprotected direct contact with infectious secretions of a COVID-19 case (e.g. being coughed on); • who was in a closed environment (e.g. household, classroom, meeting room, hospital waiting room, etc.) with a COVID-19 case for more than 15 minutes; • in an aircraft, sitting within two seats (in any direction) of the COVID-19 case, travel companions or persons providing care, and crew members serving in the section of the aircraft where the index case was seated [23] (if severity of symptoms or movement of the case indicate more extensive exposure, passengers seated in the entire section or all passengers on the aircraft may be considered close contacts); • A healthcare worker or other person providing care to a COVID-19 case, or laboratory workers handling specimens from a COVID-19 case, without recommended PPE or with a possible breach of PPE [24]. 	<p>A person:</p> <ul style="list-style-type: none"> • having had face-to-face contact with a COVID-19 case within two metres for less than 15 minutes; • who was in a closed environment with a COVID-19 case for less than 15 minutes; • travelling together with a COVID-19 case in any mode of transport*; • A healthcare worker or other person providing care to a COVID-19 case, or laboratory workers handling specimens from a COVID-19 case, wearing the recommended PPE [24].

* Except if sitting in an aircraft as specified in the relevant point in the left column.

Longer duration of contact is assumed to increase the risk of transmission; the 15-minute limit is arbitrarily selected for practical purposes. Public health authorities may consider some persons who had a shorter duration of contact with the case as having had high-risk exposure, based on individual risk assessments.

Using only part of the recommended set of PPE increases the exposure of healthcare workers thus increasing the risk.

Table 2. Key actions for management of contacts

Actions	High-risk exposure (close contact)	Low-risk exposure
Individual	<p>For a period of 14 days after the last exposure to a COVID-19 case, high-risk contacts should be advised to:</p> <ul style="list-style-type: none"> • quarantine at home if possible*. If not possible, respect physical distancing measures and avoid travel; • daily self-monitoring for COVID-19-compatible symptoms, including fever of any grade, cough, fatigue or difficulty breathing; • take and record temperature daily (contacts should avoid the use of fever-reducing medication a few hours before they take their temperature); • remain contactable by public health authorities; • implement rigorous hand hygiene and respiratory etiquette; • self-isolate immediately should symptoms develop and seek medical advice, preferably by phone first, following recommendations of the national/local authorities. 	<p>For a period of 14 days after the last exposure, low-risk contacts should be advised to:</p> <ul style="list-style-type: none"> • daily self-monitoring for COVID-19-compatible symptoms, including fever of any grade, cough, fatigue or difficulty breathing; • respect physical distancing measures and avoid travel; • implement rigorous hand hygiene and respiratory etiquette measures; • self-isolate immediately should symptoms develop and seek medical advice, preferably by phone first, following recommendations of the national/local authorities.
Public health authorities	<p>For a period of 14 days after the last exposure to a COVID-19 case:</p> <ul style="list-style-type: none"> • Active follow-up of the contacts (e.g. daily phone calls, e-mails, text messages). Contacts can be encouraged to also proactively contact public health authorities as soon as they develop any compatible symptoms, outside of the scheduled follow-up; • testing of contacts that develop COVID-19-compatible symptoms if possible** <ul style="list-style-type: none"> • if test is negative, continue individual actions for a period of 14 days after the last exposure; • if the test is positive, notify the case and initiate contact tracing. 	<p>For a period of 14 days after the last low-risk exposure to a COVID-19 case:</p> <ul style="list-style-type: none"> • Encourage low-risk contacts to proactively contact public health authorities if they develop any compatible symptoms; • If the contact develops COVID-19-compatible symptoms, follow steps as for high-risk contacts. <p>Based on individual risk assessments, public health authorities may consider excluding low-risk exposure contacts from work if they work with vulnerable populations (e.g. those who provide care to elderly).</p>

* See ECDC technical report on 'Infection prevention and control in the household management of people with suspected or confirmed coronavirus disease (COVID-19)' [25].

**See ECDC 'Guidance for discharge and ending isolation in the context of widespread community transmission of COVID-19 - first update' [26].