

Contact tracing: public health management of persons, including healthcare workers, having had contact with COVID-19 cases in the European Union – second update

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Background

This document outlines the key steps of contact tracing, including contact identification, listing and follow-up, in the context of the COVID-19 response.

Contact management is based on the latest available evidence, as outlined below.

- Current estimates suggest a median incubation period from five to six days, with a range from 1 to 14 days. A recent modelling study confirmed that it remains prudent to consider an incubation period of up to 14 days [1,2].
- A case may already be infectious up to 48 hours before the onset of symptoms. A recent study reported that 12.6% of case reports indicated pre-symptomatic transmission [3]. In addition, the proportion of pre-symptomatic transmission has been inferred through modelling and was estimated to be – in the presence of control measures – at around 48% and 62% in Singapore and China (Tianjin data), respectively [4]. Other studies have shown no significant difference in viral load in asymptomatic and symptomatic patients, indicating the potential of virus transmission from asymptomatic patients [5-7].
- Transmission is believed to be mainly via respiratory droplets and direct contact with infected people, and indirect contact with surfaces or objects in the immediate environment [8]. Recent experimental studies carried out under highly controlled conditions have demonstrated the survival of SARS-CoV-2 on different surfaces as well as in aerosol. Different levels of environmental contamination have been described in rooms of COVID-19 patients [9-11].
- Up to 10% of reported cases in China [12] and up to 9% of cases in Italy were among healthcare workers [13]. It is likely that nosocomial outbreaks play an important role in amplifying local outbreaks, and they disproportionately affect elderly and vulnerable populations.

Scope of this document

This document aims to help EU/EEA public health authorities in the tracing and management of persons, including healthcare workers, who had contact with COVID-19 cases. It should be implemented in combination with non-pharmaceutical measures as appropriate [14].

Purpose of contact tracing

The purpose of identifying and managing the contacts of probable or confirmed COVID-19 cases is to rapidly identify secondary cases that may arise after transmission from the primary known cases in order to intervene and interrupt further onward transmission. This is achieved through:

- the prompt identification of contacts of a probable or confirmed case of COVID-19;
- providing contacts with information on self-quarantine, proper hand hygiene and respiratory etiquette measures, and advice around what to do if they develop symptoms;
- timely laboratory testing for all those with symptoms.

Contact tracing is an essential measure to fight the ongoing epidemic of COVID-19, in conjunction with active case finding and testing, and in synergy with other measures such as physical distancing. Each country will need to adapt their response to the local epidemiological situation and according to available resources. The rigorous application of contact tracing measures during the period when only sporadic cases are being observed can reduce further transmission and have a major impact on the spread of the outbreak. However, if resources allow, it should also be considered for application in geographical locations of more widespread transmission. Even if not all contacts of each case are identified and traced, contact tracing can still contribute to reducing transmission in combination with other measures such as physical distancing [15-17].

Emerging evidence from the response in China and Singapore has indicated that efficient contact tracing helped reduce the time from symptom onset to isolation, and may have substantially reduced the likelihood of ongoing transmission [18,19]. Contact tracing and quarantine have also been used during periods of widespread transmission in Wuhan and South Korea, together with a range of other measures [12,20]. Contact tracing also contributes to better understanding of the epidemiology of COVID-19.

Countries in the EU/EEA that still have a **limited number of cases** should focus their public health efforts on identifying cases and tracing their contacts.

In countries with **widespread transmission** in some regions but limited transmission in others, contact tracing plays a key role in containing the outbreak in these lesser affected areas and within closed settings (e.g. prisons, nursing homes). Contact tracing should still be considered in areas of more widespread transmission, wherever possible, and in conjunction with physical distancing measures. If resources are limited, high-risk exposure contacts of each case (close contacts) and contacts who are healthcare workers or work with vulnerable populations should be traced first, followed by as many low-risk exposure contacts as possible [21]. In areas with widespread virus circulation, contact tracing should include at least cases appearing in specific settings such as long-term care facilities, prisons, refugee camps, etc., to reduce transmission and mitigate the impact on vulnerable populations. Furthermore, contact tracing should be performed if the case is a HCW, and it should focus on hospital or general practice contacts, to rapidly identify potentially vulnerable exposed individuals. However, even if not implemented for all cases when widespread transmission is observed, contact tracing has to be implemented extensively as soon as community transmission decreases.

For countries that have had enforced strict **physical distancing** measures for a period of time in order to attempt to interrupt the chain of transmission of the virus, case finding measures, including contact tracing, are a priority once the **physical distancing measures are lifted**, in order to reduce the risk of further escalation. During lockdown periods, countries should aim to review existing public health systems to determine the optimal implementation and timing of reinforced contact tracing measures.

ECDC has published a technical report on the resources required for contact tracing, quarantine and monitoring activities [21]. At the end of this document some resource-saving measures are outlined.

Definition of the term 'contact person'

A contact of a COVID-19 case is any person who has had contact with a COVID-19 case (Table 1) within a timeframe ranging from 48 hours before the onset of symptoms of the case to 14 days after the onset of symptoms.

If the case had no symptoms, a contact person is defined as someone who has had contact with the case within a timeframe ranging from 48 hours before the sample which led to confirmation was taken, to 14 days after the sample was taken.

The associated risk of infection depends on the level of exposure, which will, in turn, determine the type of management and monitoring (Table 1) [22].

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.

Key steps after a case is identified

Contact identification and listing

Immediately after a confirmed or probable case has been identified, the next steps regarding contact tracing for the public health authorities include:

- Interviewing the case to collect information on clinical history and possible contacts that occurred from 48 hours before symptom onset until the case was isolated. This should be undertaken through a phone call where possible. Cases may be hospitalised and possibly be in a poor condition; in such instances, hospital staff or the treating physician may be able to assist in collecting information either directly from the case or close family members.
- Tracing the contacts and classifying them into high-risk exposure ('close contact') or low-risk exposure, as described in Table 1 above. Information should also be collected on whether the contact belongs to one of the risk groups for severe COVID-19, or works with vulnerable populations (e.g. providing care to the elderly or to immunocompromised people).
- Arranging for testing of symptomatic contacts for SARS-CoV-2 (see [ECDC webpage on laboratory support for COVID-19](#) and [WHO recommendations for testing strategy](#)).
- Tracing, and communicating with, the identified contacts and providing information about suitable infection control measures, symptom monitoring and other precautionary measures such as the need for quarantine.

Contact follow-up

Depending on the exposure risk level, individuals and public health authorities should consider several actions (Table 2).

High-risk exposure contacts should be actively monitored by public health authorities, whereas low-risk exposure contacts could self-monitor for symptoms while observing physical distancing measures and avoiding travel. Quarantine should be considered for high-risk exposure contacts [14]. If symptoms of illness occur, contacts should immediately self-isolate and seek medical advice, preferably by phone first, always following recommendations of the national/local authorities.

Table 2. Key actions for management of contacts

Actions	High-risk exposure (close contact)	Low-risk exposure
Individual	For a period of 14 days after the last exposure to a COVID-19 case, high-risk contacts should be advised to: <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. 	For a period of 14 days after the last exposure, low-risk contacts should be advised to: <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	For a period of 14 days after the last exposure to a COVID-19 case: <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. 	For a period of 14 days after the last low-risk exposure to a COVID-19 case: <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. 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).

* 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].

Resource considerations

Contact tracing can be resource intensive. Each country will need to adapt their contact tracing intensity to the local epidemiological situation and according to available resources. These resources may be strengthened by recruiting non-medical staff, including volunteers, if sufficient data protection safeguards, training, and supervision can be provided. Other available resources, such as recruiting call centres set up for other purposes, can also be considered. Measures that may help save resources include switching to self-monitoring for close contacts instead of daily calls, or introducing an app or other online tool to assist with monitoring [27,28]. To enable scaling up contact tracing, contacts could also be contacted and informed through text messages instead of phone calls [28]. WHO has developed the [Go.Data tool](#) which enables more efficient and effective contact tracing; the tool makes it possible to quickly follow up contacts, visualise chains of transmission, and share data.

If resources become too limited to test symptomatic contacts, all symptomatic contacts should be advised to self-isolate and should be managed as a case [26].

Using contact tracing data to inform response

Data on contact tracing investigations should be collated and analysed at the local and/or national level in order to learn from investigations and inform the response. Examples include gaining an understanding of transmission and attack rates, identifying and documenting settings where transmission takes place, and understanding the effectiveness of different mitigation measures such as physical distancing.

An algorithm for the management of contacts of probable or confirmed COVID-19 cases can be found in the Annex.

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Annex

Algorithm for the management of contacts of probable or confirmed COVID-19 cases

