

Contact tracing in the context of COVID-19. Interim guidance

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BACKGROUND

Coronavirus disease 2019 (COVID-19) is caused by the SARS-CoV-2 virus, and spreads from person-to-person through droplet and contact transmission. To control the spread of COVID-19, interventions need to break the chains of human-to-human transmission, ensuring that the number of new cases generated by each confirmed case is maintained below 1 (effective reproduction number <1). As part of a comprehensive strategy, case identification, isolation, testing and care, and contact tracing and quarantine, are critical activities to reduce transmission and control the epidemic⁽¹⁾.

Contact tracing is the process of identifying, assessing, and managing people who have been exposed to a disease to prevent onward transmission. When systematically applied, contact tracing will break the chains of transmission of an infectious disease and is thus an essential public health tool for controlling infectious disease outbreaks. Contact tracing for COVID-19 requires identifying persons who may have been exposed to COVID-19 and following them up daily for 14 days from the last point of exposure.

This document provides guidance on how to establish contact tracing capacity for the control of COVID-19. It builds upon WHO considerations in the investigation of cases and clusters of COVID-19⁽²⁾.

Critical elements of the implementation of contact tracing are community engagement and public support; careful planning and consideration of local contexts, communities, and cultures; a workforce of trained contact tracers and supervisors; logistics support to contact tracing teams; and a system to collate, compile, and analyse data in real-time.

For contact tracing to be effective, countries must have adequate capacity to test suspect cases in a timely manner. Where this is not possible, testing⁽³⁾ and contact tracing strategies may instead focus on specific high-risk settings with vulnerable individuals, such as hospitals, care homes, or other closed settings (e.g. dormitories).

Because individuals may transmit COVID-19 while pre-symptomatic or asymptomatic, this guidance also emphasizes the importance of quarantining contacts to further reduce the potential for secondary transmission⁽⁴⁾.

ENGAGING COMMUNITIES

Contact tracing begins with engaging communities about the disease, how to protect individuals and their communities, and how to suppress transmission. Contact tracing requires individuals to agree to daily monitoring, to be willing to report signs or symptoms of COVID-19 promptly, and to be prepared to go into quarantine for at least 14 days or into isolation if they become symptomatic.

Engagement with communities and their leaders should help identify potential challenges for contact tracing including language and literacy, access to food and medical care for other illnesses, education, information, as well as stigma and marginalization. Special consideration should be given to planning contact tracing for at-risk and vulnerable groups, including, but not limited to, minority groups, homeless persons, migrant workers, refugees, and others.

Communication about contact tracing should emphasize solidarity, reciprocity, and the common good. By participating in contact tracing, communities will contribute to controlling local spread of COVID-19, vulnerable people will be protected, and more restrictive measures, such as general stay-at-home orders, might be avoided or minimized. All communities are likely to express concerns about privacy and confidentiality of their personal health information. Public health agencies implementing contact tracing for COVID-19 should be prepared to communicate how information will be used, stored, and accessed, and how individuals will be protected from harmful disclosure or identification.

It is critical that contact tracing and associated steps, such as quarantine of contacts and isolation of cases, not be used punitively or associated with security measures, immigration issues, or other concerns outside the realm of public

health. Contact tracing activities should be available to all communities. As such, WHO recommends voluntary participation by cases and their contacts.

EPIDEMIOLOGICAL SCENARIOS

Contact tracing preparedness, readiness and action will depend on the four main transmission scenarios:

1. **no cases:** a well-trained contact tracing workforce should be identified, trained and on standby ready to respond to first cases;
2. **sporadic cases or clusters: exhaustive** contact tracing is essential for rapidly suppressing transmission;
3. **clusters:** contact tracing is essential for suppressing transmission and reducing transmission within clusters;
4. **community transmission:** contact tracing may be difficult when transmission is intense but should be carried out as much as possible, focusing on household contacts, health care workers, high-risk closed settings (dormitories, institutions, long term-care homes), and vulnerable contacts, as well as maintaining strong contact tracing capacity in areas with smaller clusters of cases.

When countries have passed the peak of transmission and case numbers are decreasing, and particularly when stringent public health and social measures are being adjusted, rapid identification of cases and contact tracing are critical to maintain low levels of transmission and rapidly identify and break new transmission chains.

STEPS IN UNDERTAKING CONTACT TRACING

The definitions of suspect, probable, and confirmed COVID-19 cases have been published here: <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/technical-guidance/surveillance-and-case-definitions>. Contact tracing is essential to be conducted for all confirmed cases and may be desirable for probable cases in the absence of comprehensive testing capacity.

Defining contacts

A contact is defined as anyone with the following exposures to a COVID-19 case, from 2 days before to 14 days after the case's onset of illness:

- being within 1 metre of a COVID-19 case for >15 minutes;
- direct physical contact with a COVID-19 case;
- providing direct care for patients with COVID-19 disease without using proper personal protective equipment (PPE);
- other definitions, as indicated by local risk assessments, as outlined in Tab. 1.

If confirmed cases are asymptomatic, contacts should be managed in the same way as for a symptomatic case with an exposure period from 2 days before the case was sampled, to 14 days after.

Identifying contacts

To identify contacts, a detailed case investigation and interview with the COVID-19 patient or their caregiver are needed and can be found here: <https://www.who.int/who-documents-detail/considerations-in-the-investigation-of-cases-and-clusters-of-covid-19>.

Tab. 1 provides examples of ways contact tracing teams can identify contacts in various settings. Public health officials will need to identify contacts depending on the local context and culturally appropriate measures.

Informing contacts

The contact tracing team should develop a list of persons who had been in contact with the COVID-19 patient. Each contact should first be contacted by phone or in person to determine whether they meet the contact definition and thus require monitoring. Each individual confirmed as a contact should be provided with information on:

- The **process and rationale** for contact tracing, and information on quarantine.
- Where they will be quarantined and how they will be cared for. See further guidance on quarantine: [https://www.who.int/publications-detail/considerations-for-quarantine-of-individuals-in-the-context-of-containment-for-coronavirus-disease-\(covid-19\)](https://www.who.int/publications-detail/considerations-for-quarantine-of-individuals-in-the-context-of-containment-for-coronavirus-disease-(covid-19)).
- What **symptoms to look out for** during the monitoring period. These include any symptoms, especially fever (measured or feeling feverish or having chills) or at least one of the following: sore throat, cough, runny nose or nasal congestion, shortness of breath or difficulty breathing, muscle pain, loss of smell or taste, or diarrhoea.
- **What to do if they become unwell**, including 1) whom to inform, 2) how to self-isolate and what precautions to take (respiratory and hand hygiene) and 3) what referral mechanisms are in place for testing and treatment.
- **Data protection**, including how their personal information will be used, processed and stored.
- **Any other specific query** or concern raised by the contact.

Information should ideally be provided over the phone or in person, although alternative approaches such as text messages and emails could be considered when direct contact cannot be made.

Managing and monitoring contacts daily

Quarantine

Quarantine of persons is the restriction of activities of or the separation of persons who are not ill but who may have been exposed to an infectious agent or disease, with the objective of monitoring their symptoms and ensuring the early de-

Setting	Specific contact by setting	Ways to identify contacts
Known/identifiable contacts		
Household and community/social contacts	<ul style="list-style-type: none"> • Face-to-face contact with a case within 1 metre and for >15 minutes. • Direct physical contact with a COVID-19 patient. • Providing direct care for a COVID-19 patient in the home without proper PPE. • Anyone living in the household. 	<ul style="list-style-type: none"> • Direct interview with the COVID-19 patient and/or their caregiver(s). This could be done in person or by telephone.
Closed settings, such as long-term living facilities, and other high-risk congregational/closed settings (prisons, shelters, hostels)	<ul style="list-style-type: none"> • Face-to-face contact with a case within 1 metre and for >15 minutes. • Direct physical contact with a COVID-19 patient. • Providing direct care for a COVID-19 patient in the home without proper PPE. • Sharing a room, meal, or other space with a confirmed patient. • If contact events are difficult to assess, a wider definition may be used to ensure that all residents, especially high-risk residents, and staff are being monitored and screened. 	<ul style="list-style-type: none"> • Direct interview with the COVID-19 patient and/or their caregiver. • List of residents, visitors, and all staff members working during the relevant timeframe. • Interview with coordinator or manager of facility.
Known context, but contacts unknown		
Healthcare settings	<ul style="list-style-type: none"> • Health care workers: any staff in direct contact with a COVID-19 patient, where strict adherence to PPE has failed. • Contacts exposed during hospitalization: any patient hospitalized in the same room or sharing the same bathroom as a COVID-19 patient, visitors to the patient, or other patient in the same room; other situations as dictated by risk assessment. • Contacts exposed during outpatient visits: anyone in the waiting room or equivalent closed environment at the same time as a COVID-19 should be listed as a contact. • Anyone within 1 metre of the COVID-19 patient in any part of the hospital for >15 minutes. 	<ul style="list-style-type: none"> • Identify all staff who have been in direct contact with the COVID-19 patient or who may have been within 1 metre of the COVID-19 patient without PPE for >15 minutes without direct contact (e.g. chaplain). • Review the list of patients hospitalized in the same room or room sharing same bathroom. • List of visitors who visited the patient or another patient in the same room during the relevant timeframe. • Undertake a local risk assessment to determine whether any additional exposures may be relevant, such as in common dining facilities.
Public or shared transport	<ul style="list-style-type: none"> • Anyone within 1 metre of the COVID-19 patient for >15 minutes. • Direct physical contact with a COVID-19 patient. • Anyone sitting within two rows of a COVID-19 patient for >15 minutes and any staff (e.g. train or airline crew) in direct contact with the case. 	<ul style="list-style-type: none"> • Contact identification is generally possible only where there is allocated seating. • Airlines/transport authorities should be contacted to obtain details of passengers and flight manifests. • For public or shared transport where passenger lists or allocated seating is not available, a media release may be required to request passengers to self-identify. Media release may specify the date, time, pick-up location and arrival/destination, and stops along the way, requesting people self-identify as a potential contact.
Other well-defined settings and gatherings (places of worship, workplaces, schools, private social events)	<ul style="list-style-type: none"> • Anyone within 1 metre of the COVID-19 patient for >15 minutes. • Direct physical contact with a COVID-19 patient. • When events are difficult to assess, the local risk assessment may consider anyone staying in the same close and confined environment as a COVID-19 patient as a contact. 	<ul style="list-style-type: none"> • Undertake a local risk assessment and collaborate with organizers/leadership to notify potential contacts either actively or passively (for example, through “warn and inform” messages to an audience of potential attendees). • Communication with focal points, such as faith leaders, about potential transmission events to raise awareness (“warn and inform”). • For private social events, work from guest registration and booking lists. • When necessary, consider media release specifying the event day and time, with request for people to self-identify as a potential contact.

Tab. 1. Examples of identifying contacts in different settings

tection of cases. Quarantine is different from isolation, which is the separation of ill or infected persons from others to prevent the spread of infection or contamination. Detailed considerations for quarantine can be found here: [https://www.who.int/publications-detail/considerations-for-quarantine-of-individuals-in-the-context-of-containment-for-coronavirus-disease-\(covid-19\)](https://www.who.int/publications-detail/considerations-for-quarantine-of-individuals-in-the-context-of-containment-for-coronavirus-disease-(covid-19)).

Daily monitoring

Daily monitoring refers to the regular communication between the contact tracing team and the contacts they have been assigned to monitor for any sign of illness. The options for daily monitoring include:

Direct monitoring by the contact tracing team, monitoring potential signs and symptoms by phone or visiting them in person.

Contact tracers should implement standard precautions and physical distancing.

Self-reporting, whereby contacts self-monitor and report any signs and symptoms to the contact tracing team. Self-re-

porting should be conducted daily, even if no signs or symptoms are present (so-called zero reporting).

Contact tracers collect information on signs and symptoms from each contact on a **contact tracing form on a daily basis**. **Electronic data capture tools** should be used wherever possible (see section on Information technology). Tab. 2 outlines the minimum information that should be captured on the contact tracing form.

If **contacts cannot be reached**, the contact tracing team should ask relatives and friends or explore other means to find them. If contacts relocate to known locations in the same catchment area, the contact tracing team should visit them. If contacts move to another catchment area, the contact tracing team responsible for that catchment areas should be informed and follow up.

If **a contact develops symptoms**, the individual should self-isolate, and follow the established referral pathway for testing and treatment in their area.

Type of information	Minimum data required
Contact identification (entered once)	<ul style="list-style-type: none"> • Contact (unique) ID. • Linked source Case ID or Event ID. • Full name. • Address (and geolocation, where possible). • Phone number and/or other contact details. • Alternative contact details (important in settings with variable telecommunications reception).
Demographic information (entered once)	<ul style="list-style-type: none"> • Date of birth (or age, when not known). • Sex. • Occupation (to identify health care workers, transport workers, other at-risk occupations). • Relationship with the source case. • Language (in settings with diverse populations).
Type of contact (entered once)	<ul style="list-style-type: none"> • Type of contact (household, workplace, community, health facility, other). • Date of last contact with the COVID-19 patient. • Exposure frequency and duration (this may be used to classify contacts into high and low exposure in case resources are too limited to allow for tracing of all contacts). • Factors influencing contact vulnerability.
Daily follow-up of signs and symptoms (daily entry fields)	<ul style="list-style-type: none"> • Fever (perceived or measured, and reported or observed). • Other signs and symptoms: sore throat, cough, runny nose or nasal congestion, shortness of breath or difficulty breathing, muscle pain, loss of smell or taste, or diarrhoea.
Absence or loss to follow-up	<ul style="list-style-type: none"> • Reasons for non-reporting of daily signs and symptoms (contacts are unavailable, relocated, lost to follow-up). • New address (if known).
Actions taken if symptomatic (entered once)	<ul style="list-style-type: none"> • Date of symptom onset. • Referral criteria (based on clinical severity and presence of vulnerability factors). • Contact's location (self-isolation at home, other self-isolation facility, hospital). • Whether a sample has been taken, date of collection.

36 Tab. 2. Key information on the contact tracing form

The monitoring phase ends 14 days after the contact last came into contact with the COVID-19 patient, or if the contact develops COVID-19.

In the event that contacts are in close proximity to each other, such as being in the same household, and one of them becomes a COVID-19 case, the follow-up period is reset to 14 days after the last exposure to the new case.

Special population groups

Healthcare workers

For potentially exposed health care workers caring for a COVID-19 cases, a detailed exposure risk assessment (https://apps.who.int/iris/bitstream/handle/10665/331496/WHO-2019-nCov-HCW_risk_assessment-2020.2-eng.pdf) should be undertaken to assess the type of exposure and PPE use at the time of exposure.

- Any exposed staff member not wearing appropriate PPE at the time of exposure (as per contact definition) should stop working, undergo quarantine, and self-monitor for 14 days following last exposure.
- Staff who were exposed to a COVID-19 patient but are assessed as having worn appropriate PPE at the time of exposure may continue to work.
- Staff should report on a daily basis to a COVID-19 focal point in their workplace for any illness.
- Health care personnel exposed to a COVID-19 case outside of the health care setting will follow the same rules and monitoring principles as community contacts.

Other groups

- Contact tracing may be further adapted for jurisdictions with limited human resources and technological capacity, including very low-income settings or humanitarian contexts: this may entail focusing only on high-risk contacts and on areas not experiencing community-wide transmission. Additional guidance on public health and social measures for COVID-19 preparedness and response in low capacity and humanitarian settings, including contact tracing is available here: <https://interagency-standingcommittee.org/system/files/2020-05/IASC%20Interim%20Guidance%20on%20Public%20Health%20and%20Social%20Measures%20for%20COVID-19%20Preparedness%20and%20Response%20Operations%20in%20Low%20Capacity%20and%20Humanitarian%20Settings.pdf>. In settings with limited resources, the provision of essential commodities for infection control among contacts, such as soap and clean water, must also be ensured.

Data processes and analysis

Data flow

The information that the contact tracing teams gather on each contact should be entered into a **database**, including the link to the source case and information on the monitoring status.

The database should be updated with the daily monitoring details collected by contact tracers, or with self-reports sent directly by contacts. Descriptive analyses as well as relevant **performance indicators** should be compiled regularly and communicated to contact tracers and their supervisors.

If a contact becomes a case, the change in status should be linked, through a common identifier, to a case database (i.e. a line list). The systematic use of common identifiers linking contact tracing, case line lists, and individual laboratory results is essential. The Global Outbreak Alert and Response Network (GOARN) has developed *Go.Data*, a software application specifically designed to manage case-contact relationships and the follow-up of contacts. Information on *Go.Data* can be found here: <https://www.who.int/godata/about>, and training material here: <https://openwho.org/courses/godata-en>.

Analysis

Key monitoring indicators

Key performance indicators should be compiled daily and communicated to contact tracers and contact tracing teams. Examples are provided in Tab. 3; additional indicators may be required depending on the characteristics of contact tracing.

WORKFORCE FOR CONTACT TRACING

Estimating **workforce requirements** for contact tracing depends on several factors, including the estimated number of contacts to be traced, the physical and technological logistics of reaching affected communities and contacts, cultural context, socio-political context, security concerns, and contact tracing modalities such as self-report versus in-person daily visits. Public health authorities should review their local requirements and plan for an adequately sized workforce of contact tracers.

WHO has developed a workforce planning tools (<https://www.who.int/emergencies/diseases/novel-coronavirus-2019/technical-guidance/covid-19-critical-items>) to help Member States plan their workforce needs. It is important to recruit and prepare a sufficiently large contact tracing workforce early on when no or low transmission is occurring.

Profile of contact tracers

Ideally, contact tracers are recruited from their own community and have an appropriate level of literacy, strong communication skills, local language proficiency, and an understanding of context and culture. They should be recruited from their own communities same communities, they should be familiar with and trained on the basics of COVID-19 transmission, prevention

Indicator	Definition	Use
Proportion of contacts seen	# contacts seen / # contacts to follow (stratified by geographic region, type of contact, contact tracer)	<ul style="list-style-type: none"> • Monitor coverage. • Identify areas with low coverage. • Identify poor contact tracing performance.
Proportion of contacts lost to follow-up (arbitrarily defined as not seen for >2 days)	# contacts not seen for >2 consecutive days / 1 # contacts to follow (stratified by geographic region, type of contact)	<ul style="list-style-type: none"> • Identify areas with persistently low coverage and higher risk of spread. • Identify individual contacts to be located (where resources allow).
Proportion of contacts who become suspect cases	# new suspect cases / # contacts to follow	<ul style="list-style-type: none"> • Monitor contact tracing quality (having no suspect cases among contacts may suggest that the monitoring is not rigorous enough).
Proportion of contacts who become confirmed cases	# new confirmed cases / # of contacts to follow	<ul style="list-style-type: none"> • Track outbreak dynamics.
Proportion of new cases who are known contacts	# newly confirmed cases among contacts / # newly confirmed cases	<ul style="list-style-type: none"> • Track the quality and completeness of contact identification.
Time from symptom onset to case confirmation	# hours/days between symptom onset in contact and case isolation/confirmation	<ul style="list-style-type: none"> • Track the performance of contact tracing to rapidly identify cases.

Tab. 3. Daily monitoring indicators

and control measures, how to monitor signs and symptoms, as well as the ethics of public health surveillance and quarantine.

Contact tracers workforce can be drawn from many settings, including local government, civil society, and non-governmental organizations, university students, community volunteers, etc. **Medical personnel should not be assigned to perform contact tracing unless circumstances require.** Supervisors should be assigned to all contact tracing teams to allow for technical and logistics support, problem solving, and quality monitoring.

All contact tracers need to maintain a safe distance (>1 m) when interacting with contacts or suspect COVID-19 patients, and conduct interviews preferably in well-ventilated areas or outside, as recommended elsewhere (https://apps.who.int/iris/bitstream/handle/10665/331695/WHO-2019-nCov-IPC_PPE_use-2020.3-eng.pdf).

Several relevant trainings (<https://openwho.org/courses/introduction-to-ncov>) have been developed by WHO and may be adapted to suit local needs.

Equipment and logistics

Contact tracing teams may require administrative, material, and other logistics support, such as means of official identification, transport, electronic or paper materials to record information, mobile telephone, and telephone credit.

Contact tracers should also be supplied with appropriate masks, hand sanitizer, and gloves.

INFORMATION TECHNOLOGY

Types of tools

Electronic tools and information technology are not essential for contact tracing but can make it more efficient and facilitate implementation on a large scale. The *Go.Data* software application, for example, has been designed to support contact tracing and surveillance in outbreaks.

Other tools exist for self-reporting of symptoms by contacts, as well as proximity applications that track people's movements to indicate potential exposures to and from other persons. WHO is conducting a more comprehensive review of information technology tools for contact tracing that will be published shortly.

Data protection

The ethics of public health information, data protection, and data privacy must be considered at all levels of contact tracing activities, in all training activities for contact tracing, and when implementing contact tracing tools. In particular:

- Safeguards must be in place to guarantee privacy and data protection in accordance with the legal frameworks of the countries where systems are implemented.

- Everyone involved in contact tracing must adhere to the ethical principles of handling personal information, to ensure responsible data management and respect for privacy throughout the process.
- How data will be handled, stored, and used needs to be communicated to those concerned in a clear and transparent manner. This is important for buy-in and engagement as well as to avoid misperceptions that could jeopardize the effectiveness of a contact tracing programme.
- Digital tools used for contact tracing should be assessed before use to ensure safeguarding data protection according to national regulations.

GUIDANCE DEVELOPMENT METHODS

A draft of this interim guidance was developed by an internal steering group of WHO staff and circulated for feedback to external partners. The external group was composed of experts with experience in the field of infectious diseases, surveillance, and outbreak detection and response.

WHO continues to monitor the situation closely for any changes that may affect this interim guidance. Should any factors change, WHO will issue a further update. Otherwise, this interim guidance document will expire 2 years after the date of publication

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