

# Contact tracing in the context of COVID-19

Interim guidance

1 February 2021



## Key points

- Contact tracing – along with robust testing, isolation and care of cases – is a key strategy for interrupting chains of transmission of SARS-CoV-2 and reducing COVID-19-associated mortality.
- Contact tracing is used to identify and provide supported quarantine to individuals who have been in contact with people who are infected with SARS-CoV-2 and can be used to find a source of infection by identifying settings or events where infection may have occurred, allowing for targeted public health and social measures.
- In scenarios where it may not be feasible to identify, monitor and quarantine all contacts, prioritization for follow-up should be given to contacts at a higher risk of infection based on their degree of exposure; and contacts at a higher risk of developing severe COVID-19.
- Digital tools can enhance contact tracing for COVID-19, but ethical issues around accessibility, privacy, security and accountability need to be considered as they are designed and implemented.
- Ideally, contact tracers should be recruited from their own community and have an appropriate level of general literacy, strong communication skills, local language proficiency and an understanding of the local context and culture. Contact tracers should be informed on how to keep themselves safe.
- Close and consistent engagement with communities is critical for successful contact tracing.
- This guidance is relevant for all SARS-CoV-2 viruses, including the virus variants recently reported.
- WHO will update this guidance as needed.

## Introduction

Contact tracing – along with robust testing, isolation and care of cases – is a key strategy for interrupting chains of transmission of SARS-CoV-2 and reducing mortality associated with COVID-19<sup>1,2</sup>. The trigger to commence contact tracing is detection of a probable or confirmed case (Figure 1). Individuals who have been in contact with this case are identified and instructed to quarantine<sup>a</sup> to avoid further transmission of the virus<sup>3,5</sup>. Because individuals may transmit SARS-CoV-2 while pre-symptomatic or asymptomatic, quarantine should be implemented promptly after exposure to reduce potential onward transmission.

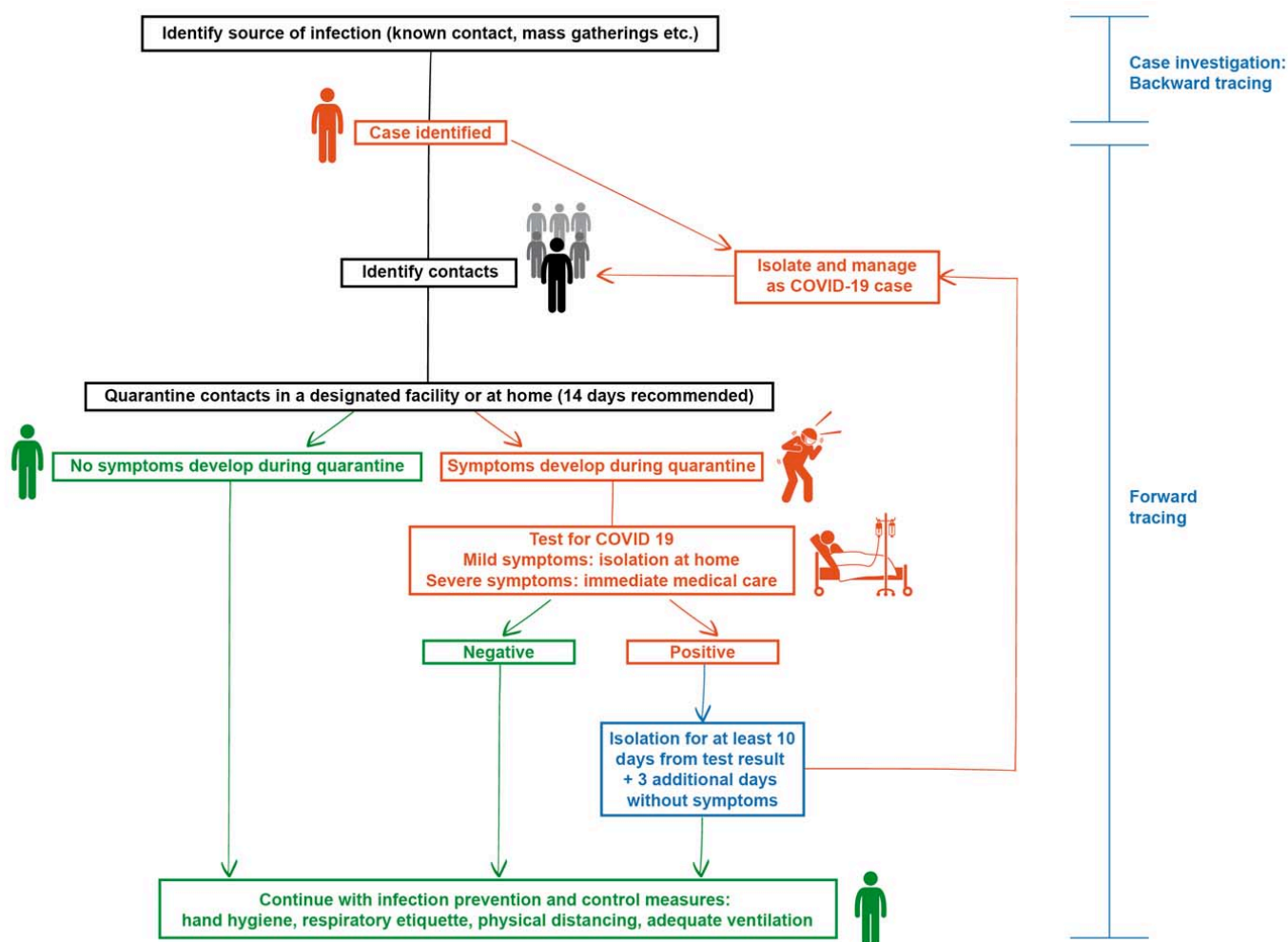
It has been estimated that most SARS-CoV-2 infections originate from relatively few individuals in high-transmission events or settings.<sup>6,7</sup> Consequently, identifying the source of infection through case investigation (also referred to as ‘backward tracing’) is key to detecting unrecognized chains of transmission and common points of exposure. Case investigations may be an efficient way to identify additional contacts at particularly high risk of becoming ill with COVID-19. At population level, source investigations help identify risk factors and allow development of targeted public health and social measures (PHSM). As COVID-19 vaccines begin to deploy in many countries, it remains important to enhance existing public health strategies like contact tracing and quarantine to stop further transmission of SARS-CoV-2.

## Changes from the prior version

This document is an update of the guidance published in May 2020. It provides public health authorities with guidance on risk-based prioritization of contact tracing activities when transmission is at high levels. Other sections of the guidance have also been updated to reflect lessons learned on contact definition, community engagement operational principles in the context of contact tracing, digital tools for contact tracing, and examples of key performance indicators (KPIs).

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<sup>a</sup> Quarantine of persons is the restriction of activities and 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 detection of cases.<sup>5</sup> Quarantine is different from isolation, which is the separation of ill or infected persons from others to prevent the spread of infection or contamination.

Figure 1. Chain of events for tracing, monitoring and caring for contacts of probable and confirmed COVID-19 cases<sup>3,4</sup>

## Building a contact tracing team

### Workforce requirements

Estimating workforce requirements for contact tracing depends on the estimated number of cases and 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-reporting versus daily visits or calls. Public health authorities should review their local requirements and plan for an adequately sized and gender balanced workforce that is maintained throughout all transmission scenarios and can surge if needed. It is important to prepare a contact tracing workforce early on when no or low transmission is occurring.

WHO has developed a [Health Workforce Estimator](#) to help Member States plan their needs in relation to the transmission scenario.

### Selection and training of contact tracers

Ideally, contact tracers should be recruited from their own community and have an appropriate level of general literacy, strong communication skills, local language proficiency and an understanding of the local context and culture. A contact tracing workforce can be drawn from many settings, including individuals connected with local government, civil society, non-governmental organizations, universities and community volunteers. Supervisors should be assigned to all contact tracing teams to allow for technical and logistics support, problem solving and quality monitoring.

Contact tracing staff and managers require relevant and continuing training. Several training materials have been developed by WHO and partners and may be adapted to local needs. Many are available through the Global Outbreak Alert and Response Network (GOARN) [knowledge platform](#), and [OpenWHO](#). Training should include the basics of virus transmission, prevention and control measures; how to monitor signs and symptoms; and standard operating procedures for contact tracing, including interview tips and ethics of public health surveillance and quarantine. It is also important to brief contact tracers on their rights, roles and responsibilities, including for occupational safety and health.

## Equipment and logistics

Contact tracing teams should be supported with administrative, material, and other logistics support (e.g. official identification, transport, means to record information, mobile telephone, telephone credit). Contact tracers should also be supplied with masks, and hand sanitizer in line with WHO recommendations for personal protective equipment (PPE)<sup>8</sup>. If digital tools are part of the contact tracing programme, contact tracers must be trained and provided with these tools.

## Engaging communities

Close and consistent engagement with communities is critical for successful contact tracing. This should include broad sensitization and community involvement in planning, selection of contact tracers, contact tracing methodologies and channels of communication. WHO recommends application of the following key principles developed in collaboration with the [Risk Communication and Community Engagement Collective Service](#).

- **Understand the community context.** Quickly identify existing information (health, social, cultural, epidemiological, geographic, linguistic, historical), and get to know the community. Seek out information around community dynamics and social and political power structures; and attitudes, perceptions and practices around contact tracing.
- **Build trust.** In crisis situations, people are more likely to make decisions based on trust and perceived credibility. Identify trusted community members as experts on their own culture, tradition and practices. Partner with them in the planning, implementation and evaluation of contact tracing programmes. Community representatives have an especially important role when vulnerable populations are concerned. They can help to ensure that the best community-based solutions are identified and leveraged.
- **Ensure and maintain community buy-in.** Contact tracing is best undertaken when the community fully understands why it is necessary and how it can be done in the least invasive and most culturally appropriate manner. The more the contact tracing process is understood and involves communities' perspectives, the more community willingness will be generated to engage with contact tracing activities.
- **Work through community-based solutions.** It is essential that local leaders, representatives and other influencers are adequately engaged as they are often accountable to their communities and knowledgeable about the best entry points for community action. Specifically consult community representatives of vulnerable populations like women, children/schools, youth, refugee and migrant populations, seniors, and people with disabilities to ensure the best community-based solutions are identified and leveraged.
- **Generate a community workforce.** Prioritize recruiting contact tracers from the community to harness their cultural, linguistic and social understanding. Provide them with adequate training to ensure efficiency, accuracy and good communication skills when implementing case and contact investigations and to integrate them with the wider response team.
- **Commit to honest and inclusive communication.** Information conveyed should include communications on privacy rights and confidentiality of collected information; available resources for contacts under quarantine; and personal, household, and community risks and benefits from participation in contact tracing procedures. Work with local networks to decide which activities, verbal and pictorial messages and local languages should be used. Ensure two-way communication channels are evaluated based on accessibility and trust, not solely usage.
- **Listen, analyse and respond to feedback.** Pay attention to fears and concerns people may have about contact tracing, and make sure these are responded to. Adapt contact tracing to meet communities' expressed needs, while maintaining reach. An effective feedback mechanism on contact tracing can prevent issues from escalating and manage expectations. Get the buy-in of programme staff and if possible, pair feedback systems with those of partners to accelerate improvements by decision makers.
- **Consider the use of contact tracing technology.** Communities will respond differently to the use of apps. Many may express concerns around geo-localization, data privacy and health information protection. These situations can increase levels of mistrust and reluctance around contact tracers. 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. Implementers should be well prepared to anticipate questions and concerns.
- **Do not criminalize actions.** 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 or other concerns outside the realm of public health. Understanding the full ramifications of punitive actions for non-compliance is imperative to ensure high levels of participation in reporting and full disclosure of activities and contacts.
- **Discourage and address stigma, discrimination and rumours.** Take special care not to bring undue stigma or attention to individuals or families affected by COVID-19.<sup>9</sup>
- **Coordinate with all response actors.** COVID-19 has an impact on many aspects of the community beyond health, including access to food, water, sanitation and hygiene, livelihood, security and education. Working in partnership with other actors supporting the community can help diminish resistance to contact tracing, make interactions with the community more effective and enable more efficient solutions.

## Adjusting contact tracing to epidemiological scenarios

WHO characterizes SARS-CoV-2 transmission into four epidemiological scenarios, one of them with four sub-categories<sup>2</sup>. Approaches to contact tracing need to be adapted to local transmission dynamics and response capacity ready to be increased for higher levels of transmission (Table 1).

Table 1. Targeted approaches to contact tracing according to SARS-CoV-2 transmission patterns.

Epidemiological scenario	
No cases	A well-trained contact tracing workforce should be identified and ready to deploy and scale up (i.e. have the required tools) to respond to first cases.
Sporadic cases	Exhaustive contact tracing and case investigation for all cases is essential for rapidly suppressing transmission.
Clusters	Contact tracing is essential to reduce transmission within clusters and to identify events that have led to high levels of virus transmission. PHSM can then be implemented to reduce the occurrence of such events.
Community transmission (including 4 sub-categories of increasing incidence)	Contact tracing remains an important activity in high incidence scenarios where capacity to trace and follow-up all contacts may be at the breaking point. Contact tracing activities should be targeted rather than abandoned. It is possible to prioritize tracing of higher risk exposure contacts based on capacity (see below).

## Steps for contact tracing

### Identifying contacts

A contact is a person who has had any one of the following exposures to a probable or confirmed case:

1. face-to-face contact with a probable or confirmed case within 1 meter and for at least 15 minutes;
2. direct physical contact with a probable or confirmed case;
3. direct care for a patient with probable or confirmed COVID-19 disease without the use of recommended PPE; or
4. other situations as indicated by local risk assessments.

Exposure must have occurred during the infectious period of the case, and defined as follows:

Exposure to a symptomatic case: 2 days before and 10 days after symptom onset of the case, plus at least 3 additional days without symptoms (including without fever and without respiratory symptoms), for a minimum of 13 days total after symptom onset.

Exposure to an asymptomatic case: 2 days before and 10 days after a positive test for SARS-CoV-2. Contacts should be managed in the same way as for a symptomatic case.

The definitions of suspect, probable, and confirmed SARS-CoV-2 infections have been published [here](#).

Investigation into the source of infection should be conducted from up to 14 days before the start of symptoms in the index case (or diagnosis of an asymptomatic case), focusing particularly on the time period of two to seven days before symptom onset. To identify contacts and potential sources of infection, a detailed case investigation and interview with the case or the individual's caregiver are needed. Where possible, it is recommended to conduct interviews virtually. For in-person interviews, contact tracers need to maintain a safe distance (>1 m) and conduct interviews in well-ventilated areas or outdoors, and wear a medical mask according to standard and transmission-based precautions (see WHO guidance on [Mask use in the context of COVID-19](#) for details on masks in different settings).

Public health officials should be sensitive to the local context and culture when identifying contacts. Communities should be educated about the need for cases to proactively notify their contacts about possible exposure to SARS-CoV-2. This is particularly important when public health capacities may be overwhelmed, which can lead to delays in notification. Additional ways to identify contacts in various settings are outlined in Table 2.

The contact tracing team should develop a list of persons who meet the definition of a contact. Ideally, all such persons should be identified, asked to quarantine and provided support during quarantine. Depending on the local context and capacity, this may be done by the contact tracing team directly, or with the case informing their own contacts.

Table 2: Identifying contacts in different settings

Setting	Ways to identify contacts
Household contacts	<ul style="list-style-type: none"> <li>• Direct* interview with the SARS-CoV-2 case or their caregiver.</li> </ul>
Contacts in closed settings (long-term living facilities, prisons, shelters, hostels, social settings, household settings other than the case's home, gyms, meeting rooms, etc.)	<ul style="list-style-type: none"> <li>• Direct* interview with the SARS-CoV-2 case or their caregiver</li> <li>• List of residents, visitors, and all staff members working during the relevant timeframe</li> <li>• Sign-in sheets</li> <li>• Membership lists of gyms or other access-restricted facilities<sup>b</sup></li> <li>• Interview with coordinator or manager of facility</li> </ul>
Healthcare settings	<ul style="list-style-type: none"> <li>• 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 &gt;15 minutes without direct contact by interviewing shift managers or reviewing rosters</li> <li>• Review the list of patients hospitalized in the same room or sharing the same bathroom</li> <li>• Review the list of visitors who visited the patient or another patient in the same room during the relevant timeframe</li> <li>• Undertake a local risk assessment to determine whether any additional exposures may be relevant, such as in common dining facilities</li> </ul>
Professional contacts, including workplaces (other than healthcare settings)	<ul style="list-style-type: none"> <li>• Direct* interview with the SARS-CoV-2 case or their caregiver(s)</li> <li>• Interview with facility managers</li> </ul>
Public or shared transport	<ul style="list-style-type: none"> <li>• Contact identification is generally possible only where there is allocated seating</li> <li>• Airlines and transport authorities should be contacted to obtain details of passengers and flight manifests. Passengers at highest risk will be those sitting within two rows of cases (in any direction), travel companions or persons providing care and crew members serving in the section of the aircraft where the case was seated. 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. The media release may specify the date, time, pick-up location and destination and stops along the way, requesting people to self-identify as a potential contact.</li> </ul>
Other well-defined settings and gatherings (places of worship, schools, private social events, restaurants and other places serving food or drinks)	<ul style="list-style-type: none"> <li>• Undertake a local risk assessment and collaborate with organizers and leadership to notify potential contacts either actively or passively (for example, through media messages to an audience of possible attendees)</li> <li>• Communication with focal points, such as faith leaders, about potential transmission events</li> <li>• For private social events, work from guest registration and booking lists</li> <li>• When necessary, consider media release specifying the event day and time, with request for people to self-identify as a potential contact</li> <li>• For commercial settings, use registries of visitors where possible and consent-granted records For schools, conduct a risk assessment in the school with support from the school authorities. List possible high-risk contacts (e.g. close friends, classmates); follow up with family of confirmed cases to identify possible exposure</li> </ul>

\*Can be virtual or in person using appropriate distancing, ventilation and PPE.

### Prioritizing contacts for follow-up

In scenarios where it may not be feasible to identify, monitor and quarantine all contacts, prioritization for follow-up should be given to: 1) contacts at a higher risk of SARS-CoV-2 infection based on their degree of exposure, with the goal of breaking chains of transmission; and 2) contacts at a higher risk of developing severe COVID-19 disease, to ensure early referral to healthcare. In general, proximity, duration and location of exposure determine the risk of transmission, although all contacts who meet the definitions above are at risk of infection.<sup>10</sup>

The following groups of contacts can be prioritized for identification, follow-up and supported quarantine:

- Household contacts;
- Contacts made in crowded or closed settings (e.g. long-term living facilities, prisons, shelters, hostels, gyms and meeting rooms), especially in settings with poor ventilation. This can include 'proximate contacts' who were further than 1m away from a case but were in the same closed space for an extended amount of time without PPE;

<sup>b</sup> In some cases it may be necessary to notify the entire membership that a SARS-CoV-2 infection has been identified and request potential contacts to self-identify to public health authorities or self-monitor for development of symptoms.



- Contacts made during an index case's period of greatest infectiousness (2 days before symptom onset and up to 7 days after);<sup>11</sup>
- Contacts made during an event or setting that has already led to other cases, identified through a case investigation.

### **Informing contacts**

Each individual verified as a contact should be provided with information in the appropriate language on the following:

- **The process and rationale for contact tracing, and information on quarantine.** The process and how to ensure proper conditions for quarantine are detailed in further guidance on [quarantine](#).
- **What symptoms to look out for during the monitoring period.** These include fever, cough, general weakness/fatigue, headache, myalgia, sore throat, loss of smell or taste, coryza, dyspnoea, anorexia/nausea/vomiting, diarrhoea and altered mental status.
- **What people should do if they become unwell.** This includes whom to inform, including their own contacts; what referral mechanisms are in place for testing and treatment; and what to expect in terms of isolation and treatment if they are diagnosed with COVID-19. Advice on isolation and home care for COVID-19 patients can be found [here](#).
- **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 where public health and social measures allow, although text messages and emails could be considered when direct contact cannot be made. In countries where contacts are notified via a mobile application, the app should provide ways to connect directly with the contact tracing team, supportive services, testing and clinical care services.

### **Managing and monitoring contacts**

#### ***Quarantine***

WHO recommends supported quarantine for a duration of 14 days from the last contact with a confirmed case to minimize risk of onward transmission<sup>5</sup>. As the evidence base grows, confidence in the duration of the incubation period has also grown. Multiple observations indicate that nearly all cases develop symptoms within 14 days of exposure, with a median incubation rate of approximately 5-6 days<sup>12</sup>. However, the day at which nearly all cases become ill varies from study to study. These differences could be due to random variation or true epidemiological differences.

WHO advises that any national adjustment in the quarantine period from 14 days balances the public health risks and benefits against its social and economic impact. Prolonged absence from social and economic activities is challenging for most people, and this is likely to affect individual adherence to quarantine recommendations. Shortening the quarantine period will result in a larger proportion of contacts becoming infectious after leaving quarantine, but conversely may lead to greater compliance and result in a reduction of transmission. Testing at the end of shortened quarantine can help improve confidence that an asymptomatic contact leaving quarantine is not infected, particularly when the quarantine period is less than 14 days; but this relies on the availability and accuracy of tests and rapid turnaround time.

#### ***Supporting individuals in quarantine***

Adherence to quarantine is improved by providing essential items, services and psychological support and minimizing associated burdens. For many individuals, particularly those in informal or hourly employment, the financial loss should be offset to the maximum extent possible; including for caregivers of quarantined children, who may be unable to work. Legislation may also need to be put in place to prevent individuals from being laid off from work or penalized for missing a court hearing, taking school exams or fulfilling other mandatory functions because of quarantine. Where possible, individuals should be provided with options to work remotely to minimize impact on their employment. It is helpful, with each monitoring visit or call, to inquire whether individuals are experiencing any barriers to maintaining quarantine so that corrective measures can be taken.

#### ***Monitoring of contacts in quarantine***

Occurrence of any signs or symptoms of COVID-19 should be closely monitored during quarantine either directly or through self-reporting to the contact tracing team. If contacts develop symptoms, they should follow the established referral pathway for testing and treatment in their area, and their contacts should be traced and asked to quarantine.

Contact tracers should ideally collect information on signs and symptoms from each contact daily. Annex 1 outlines the minimum information that should be captured. Electronic data capture tools should be used wherever possible to reduce the workload of contact tracing operators.

The monitoring phase ends once the quarantine period has been completed or if the contact develops COVID-19 symptoms and is confirmed as a positive case. In that case, isolation is recommended for at least 10 days after the positive test result, adding an additional 3 days without symptoms. If a contact becomes symptomatic and tests negative for COVID-19, the individual should still complete quarantine.

If contacts are in close proximity to each other, such as being in the same household, and one of them becomes a COVID-19 probable or confirmed case, the follow-up period of other contacts is reset to 14 days (or locally established quarantine duration) after the last exposure to the new case.

## Data processes and analysis

### Data flow

The information that the contact tracing teams gathers on each contact should be entered into a secure database and include a link to the source case and information on their current status.

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

If a contact becomes a case, the change in status should be linked, through a common identifier, to a case database (line list). The systematic use of common identifiers linking contact tracing, case line lists and individual laboratory results is essential.

Several data collection and management software tools can be used to support contact tracing. Countries should ensure the software they choose can collect minimum recommended data on cases and contacts and protects privacy.

### Analysis

Key performance indicators (KPIs) for contact tracing for COVID-19 are crucial to understanding how well a system is performing and what aspects need to be improved from a local, national and global perspective. Indicators should measure the different stages of the contact tracing pathway, as described in Figure 1. KPIs measured over time can inform policy decisions by assessing the impact of the contact tracing programme and thereby improve its quality while managing resource needs.

A minimum set of KPIs should be standardized across data management systems to facilitate comparisons. Key concepts and potential indicators are presented in Table 3. Detailed KPIs are being developed with initial benchmarks through global consultation with key partners and will be regularly updated as new evidence is compiled.

Thresholds for each indicator will depend on the local transmission scenario and the timeliness and completeness of contact tracing and quarantine. Empirical and modelling studies suggest that contact tracing can bring the reproductive number below 1 if the time between a case's symptom onset and quarantine of at least 80% of their contacts does not exceed three days.<sup>13,14</sup> However, contact tracing can still reduce tertiary transmission if delays do not exceed the incubation period of SARS-CoV-2.

Table 3. Examples of key performance indicators for COVID-19 contact tracing processes.

Key question	Rationale	Example indicators
Are procedures to organize and manage the contact tracing system available?	To ensure SOPs and guidance are in place and operationalized	Contact tracing procedures and guidelines exist
How many trained human resources are available for the programme?	To ensure the quality and efficiency of the system to identify and follow all contacts	Number of contact tracers per supervisor Number of contacts per contact tracer
How quickly are contacts being identified and provided with information on quarantine?	To ensure timely quarantine and reduce subsequent onward transmission	% of contacts provided with information on quarantine within 48 hours of interview with the index case
What proportion of all traced contacts are provided with information on quarantine; and agree to comply?	To track the coverage and compliance with tracing and quarantine	% of traced contacts that agree to quarantine
What proportion of contacts are successfully being followed according to the agreed strategy?	To track the quality of the system to follow up contacts	% of contacts with regular follow-up information according to the agreed strategy % of contacts lost to follow up

What is the coverage of digital proximity tracing tools?	To measure the uptake of digital proximity tracing tools	% of the targeted population who downloaded and actively use the application
What is the capacity of the contact tracing system to identify all potential cases?	To track the quality and completeness of the contact tracing system	% of new cases arising from known contacts

### Digital tools to support contact tracing

Large-scale community transmission exacerbates the challenges of contact tracing. Hurdles include incomplete contact identification, delays in identification and isolation of cases, notification and quarantine of contacts and complexity of data management requirements. Digital tools can help overcome some of these challenges. Such tools must be integrated into a comprehensive and adequately resourced contact tracing strategy involving the detection, testing, isolation, and care of cases as well as the tracing and quarantine of their contacts. Many digital tools, including data collection and management, proximity tracing and symptom tracking tools, have been developed to support contact tracing for SARS-CoV-2.<sup>15</sup>

Digital proximity tracing apps, which can lead to faster notification and earlier quarantine of contacts, have been widely adopted by Member States. Such apps can widen the reach of classical contact tracing processes by including contacts who may be unknown to a case. However, further research is needed to assess the effectiveness of digital proximity tracing apps. WHO and the European Center for Disease Prevention and Control are jointly developing a framework to assist Member States in conducting evaluations of their national proximity tracing apps.

WHO recommends the following considerations for the design and implementation of digital proximity tracing.

- Countries should establish regulatory oversight of all digital tools used for contact tracing. This should include regulations on the use and protection of personal data collected via these tools and criteria to decommission the tools and all associated data once the pandemic is no longer deemed a public health concern.
- Ethical issues surrounding accessibility, privacy, security, transparency and accountability should be considered throughout the design and implementation of digital tools for contact tracing. WHO has published ethical considerations to guide the use of digital proximity tracking technologies for SARS-CoV-2 contact tracing.<sup>16</sup>
- Adoption and use of these tools should be on a voluntary, opt-in basis.
- Tools should be designed based on a privacy-preserving model. Geo-location functionality is not necessary for digital proximity tracing to function and should not be included as a part of the design.
- Decisions relating to the design and implementation of these tools should involve representatives from the scientific community, public health professionals, health workers and communities.
- Public health authorities should ensure that transparent, timely and up-to-date information on these tools is provided to the public and that concerns are addressed through effective community engagement.
- Alternative approaches for contact tracing should be identified for groups with low use of smartphones, especially those that are particularly vulnerable.
- Countries should use standard performance indicators, such as those listed above, to assess the public health effectiveness of these tools.

### Resource management

Contact tracing efforts need to be balanced against other resource requirements, and the impact of contact tracing should be assessed relative to other health interventions. Planning for contact tracing includes ensuring that the costs of setting up and maintaining an effective system are secured and that the social and economic consequences of quarantine are addressed for affected individuals.

### Areas for further research

Interrupting SARS-CoV-2 transmission chains depends on the ability to intervene promptly where measures can have the most impact. Systematic analyses of data on cases and contacts are needed to characterize optimal approaches to contact tracing and quarantine and to build on evidence-based public health advice to countries.

Further analysis of incubation periods, duration of infectiousness and characterization of the risk of developing disease based on exposure is also needed. Until more is known about SARS-CoV-2 reinfection and the potential for transmission, contacts who have previously experienced a SARS-CoV-2 infection should be advised individually on the need for quarantine.



Studies are underway to assess the degree to which new variants of SARS-CoV-2 may vary in transmissibility or severity or impact the efficacy of vaccines and treatments or the accuracy of diagnostic tests. As the evidence comes in, countries should continue to prioritize case investigation, contact tracing and quarantine to limit further spread of variants of concern.

## Methods

This guidance was developed by WHO staff across major offices, who reviewed recent evidence and contact tracing experiences from Member States. It was circulated for comments to partners from the Global Outbreak Alert and Response Network who participated in a [Global consultation on contact tracing](#) in 2020. The external group was composed of experts with experience in the field of infectious diseases, surveillance, and outbreak detection and response. Comments received from partners were reviewed by WHO and contributed to the technical discussions on the recommendations.

## Declaration of Interest

This document was developed by WHO staff with no competing interests. All external partners who provided feedback, including those from GOARN partner institutions, completed a standard WHO Declaration of Interests process prior to participation in the contact tracing consultation. There were no conflicts of interest declared.

## Funder

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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

## Annex 1. Key information to be collected to identify and monitor contacts

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

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