Guidelines for the Implementation and Use of Digital Tools to Augment Traditional Contact Tracing

COVID-19 Contact Tracing for Health Departments

Version 1

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Introduction

This document describes two broad categories of digital contact tracing tools, how and where they can improve timeliness and efficiency in the contact tracing process, and defines their minimum and preferred features. This document is based on research and ongoing discussions with contact tracing and informatics experts across local, state, territorial, tribal, and federal government agencies; national public health associations; academic consortia; and nongovernmental organizations.

This document builds on previous guidance; it is a living body of knowledge and will be revised frequently in response to new information and the evolving needs of state, local, tribal, and territorial health departments.

Use of trade names and commercial sources is for identification only and does not imply endorsement by the U.S. Department of Health and Human Services or the Centers for Disease Control and Prevention.

cdc.gov/coronavirus

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Tools Overview

Case Management Tools

Tools that make the traditional contact tracing process faster and more efficient

- These tools can streamline the electronic capture and management of data on patients and contacts by enabling automation of contact notification and follow-up, and by allowing patients and contacts to electronically self-report (e.g. demographic and clinical data, contacts, services needed).
- Workflows may integrate with surveillance systems or other workforce management tools (e.g., virtual call centers, test scheduling, support services).

Proximity and Exposure Notification Tools

Tools that may help identify more contacts and notify them of exposure faster than traditional contact tracing alone

- Voluntary, opt-in tools using Bluetooth or GPS technologies (most commonly via smartphone apps) can be used to estimate the proximity and duration of an individual's exposure to patient(s) diagnosed with COVID-19.
- More data (from pilots and limited implementations) are needed to quantify the public health value of these tools.

Technology can support case investigation and contact tracing but cannot take the place of a trained public health workforce for interviewing, counseling, and providing support for those impacted by COVID-19.

Important Features

Tables 1 and 2 define minimum and preferred features for case management tools and for proximity and exposure notification tools, organized by contact tracing task and crosscutting theme, respectively. A minimum feature is defined as one that all health departments should invest in. A preferred feature is defined as an enhancement that makes the contact tracing process timelier and/or more efficient. When only one category is listed, this indicates that additional functionality may not be needed.

Table 1. Minimum and preferred features of digital contact tracing tools, by contact tracing task

	For health departments[1] that choose to use only **case management tools** for contact tracing, the tools should:	For health departments that choose to supplement contact tracing with the use of voluntary, opt-in **proximity or exposure notification tools**, the tools should:[2]
	Patient Identification	
Minimum	• Enable manual import of existing case investigation / patient data from health department and/or laboratory information systems	• Enable patients diagnosed with COVID-19 to electronically self-report confirmed test results, data facilitating connection with services needed to support 14-day self-quarantine period (e.g., safe housing, food, medicine), and best means of communication • Enable health departments or laboratories to authenticate self-reported test results as a precondition for automated contact notification
Preferred	• Enable real-time automated synchronization of case investigation / patient data from health department and/or laboratory information systems • Provide electronic reporting feature for patients with positive lab results to self-identify, report test results, relevant demographic and clinical data (e.g., date of symptom onset), data facilitating connection with services needed to support 14-day self-quarantine period (e.g., safe housing, food, medicine), and best means of communication • Enable health departments or laboratories to authenticate self-reported test results	• Enable automatic integration of minimum data above from consenting patient with validated test result into the health department's surveillance system or case management tool
	Contact Elicitation / Identification	
Minimum	• Enable health department to perform manual data entry of contacts of patients reported during phone calls with patients	• Enable health department to define different exposure risk levels used to identify contacts based on how close and how long their exposure was (e.g., within 6 feet of patient for 15 minutes or more)
Preferred	• Provide electronic means for patients to securely self-report contacts and their best means of communication	• Enable automatic modification of exposure risk level based on self-reported protective behaviors (e.g., mask use), events (e.g., recovery from illness, vaccination) or mass gathering detected by multiple exposure alerts received in quick succession

Table 1 (continued). Minimum and preferred features of digital contact tracing tools, by contact tracing task

	For health departments that choose to use only **case management tools** for contact tracing, the tools should:	For health departments that choose to supplement contact tracing with the use of voluntary, opt-in **proximity or exposure notification tools**, the tools should:
	Contact Notification	
Minimum	• Allow customizable manual, anonymous, and automated notifications[3] to elicited contacts in the following order of priority: recorded voice message, email, and text message • Enable messaging to be tailored to the likelihood of exposure, include links to health information resources and services to support 14-day self-quarantine period, and provide next steps (e.g., testing, self-quarantine) • Enable logging date and time of notification to be used in measurements of time between patient identification and contact notification	• Enable anonymous[4] automated notification to contacts who opt-in to being notified, while also preserving anonymity of patient • Enable notified contacts to voluntarily report relevant demographic data, data facilitating connection with supportive services, and best means of communication • Allow messaging to be tailored to the likelihood of exposure based on the risk level, include links to health information resources and services to support 14-day self-quarantine period, and provide next steps (e.g., testing, self-quarantine)
Preferred	• Integrate with telephone services to allow health department to call contacts using elicited information and log timestamp of call to be used in measurements of time between patient identification and contact notification	• Fully automate enrollment of contacts into follow-up and monitoring module of health department information system/case management tool (upon contact consent), instruct contact on follow-up and monitoring process, and direct them to health department's electronic platform for self-reporting
	Patient / Contact Follow up and Monitoring	
Minimum	• Enable health department to perform manual data entry of daily symptom and temperature data reported during phone calls with patients and contacts, as well as data facilitating connection of patients and contacts with supportive services (including instructions for medical assistance) • Enable seamless restart of workflow upon confirmation of case status among any contact	• Enable automated dispatch of reminders to elicited contacts for 14 days and provides link to platform to electronically self-report symptoms, temperature, and other information facilitating the connection with supportive services (if not supported by the health department's case management tool)
Preferred	• Enable automated dispatch of reminders to elicited contacts for 14 days and provides link to platform to electronically self-report symptoms, temperature, and other information facilitating the connection with supportive services • Enable automated analytics of patient and contact check-in logs and notifies health department personnel of patients and contacts who have missed daily check-ins • Enable automatic prioritization and classification of self-reported symptom and temperature data, immediate contact notification to suggest testing, and immediate health department notification to provide support to the contact	• Enable automatic prioritization and classification of self-reported symptom and temperature data, immediate contact notification to suggest testing, and immediate health department notification to provide support to the contact (if not supported by the health department's case management tool) • Be able to receive authentication of patient convalescence from health department to clear case status

Table 2. Minimum and preferred features of digital contact tracing tools, by crosscutting theme

	For health departments that choose to use only **case management tools** for contact tracing, the tools should:	For health departments that choose to supplement contact tracing with the use of voluntary, opt-in **proximity or exposure notification tools,** the tools should:
	Personal Privacy and Data Security	
Minimum	• Require consent of both patient and contact before collection and use of personally identifying information (PII) • Transparently inform patients and contacts of which data is collected, how it is used, and how long it will be retained • Authorize data access on a need-to-know basis for health department personnel • Use secure means of data transfer for any information that is shared between information systems within and between jurisdictions • Encrypt patient and contact data in transit and at rest <u>Additionally, tools providing patients and/or contacts an electronic option for voluntarily self-reporting test results, symptoms, temperature, and other sensitive health data should:</u> • Implement measures to prevent introduction of false data • Enable patients and contacts to opt-out of daily check-ins	• Require user consent before their data is shared with health department and contact notifications are initiated • Require that sharing location data, proximity data, or sensitive health data with a health department is not necessary for the user to benefit from the tool's exposure notification features • Allow user to revoke consent and delete the application from their device at any time • Require that data is encrypted and only stored locally on user's device prior to voluntary sharing with health department • Require that any willingly shared user data stored on a central server is encrypted in transit and at rest, and only accessible by authorized health department personnel • Undergo independent security and privacy assessment that addresses issues of trustworthiness, security, and privacy, and publicly provide results • Include safeguards to prevent introduction of false data • Use programmatic means of secure data transfer for any information that is shared between tool and health department information systems
Preferred	• Use programmatic means of secure data transfer[5] for any information that is shared between information systems within and between jurisdictions <u>Additionally, tools providing patients and/or contacts an electronic option for voluntarily self-reporting test results, symptoms, temperature, and other sensitive health data should:</u> • Automatically unsubscribe consenting patients and contacts from daily symptom and temperature monitoring after 14 days	
	Localization	
Minimum	• Provide self-reporting features in patient's and contact's language of choice and use plain language terms that can be easily understood	• Provide user interfaces and all content therein in user's language of choice and use plain language terms that can be easily understood
Preferred	• Provide voice messages, emails, text messages, and user interfaces shared with patient and contact in patient's and contact's language of choice and use plain language terms that can be easily understood	

	For health departments that choose to use only **case management tools** for contact tracing, the tools should:	For health departments that choose to supplement contact tracing with the use of voluntary, opt-in **proximity or exposure notification tools,** the tools should:
	Workflow Management and Reporting	
Minimum	• Use a structured, electronic means of assigning, tracking, and closing out patient and contact follow-up and monitoring activities that can integrate into reporting workflows	• Enable tagging of contacts by source (i.e., identified by patient or identified by proximity or exposure notification tool)
Preferred	• Possess configurable, robust reporting and analytics functionality (e.g., dashboards containing various configurable visual widgets)	
	User Experience	
Minimum	• Be easy to learn for both contact tracing workforce and IT system administrators • Be easily used within web browser on mobile and desktop environments	• Be easy to learn for both contact tracing workforce and general public
Preferred	• Support offline data entry and caching across platforms • Support efficient response to cross-jurisdiction case and contact investigation by being interoperable with tools used by health departments in neighboring states	• Be open source and interoperable with tools used by health departments in neighboring states
	Development, Operations, and Maintenance	
Minimum	• Be easily scalable to accommodate increases in cases and contacts • Use open architectures and open standards • Be developed and supported by vendors that can provide initial setup and comprehensive, rapid technical support and tool customization	• Provide cross-platform functionality (Android, and iOS, with reasonable backwards compatibility for older operating system versions) • Receive regular usability and feature updates as exposure risk levels are calibrated and use cases are refined
Preferred	• Be open source and provide cross-platform functionality (Android and iOS, with reasonable backwards compatibility for older operating system and web browser versions) • Be developed and supported by a vendor that has experience working in public health settings • Allow health department staff to perform some of their own customizations (e.g., adding new data elements, implementing data validation and business rules, developing reports)	

[1] Local, state, tribal, and territorial public health departments

[2] Health departments choosing to supplement traditional contact tracing with the use of proximity or exposure notification tools should still select case management tools that meet at least the minimum functionality for each contact tracing task. Proximity or exposure notifications do not need to meet the minimum or preferred functionality of the case management tools.

[3] Health departments should consider prioritizing resource allocation to calling contacts or conducting in-person interviews as necessary; when personnel capacity is limited, the case management tool should employ automated messaging that incorporates rapport-building human elements (e.g., delivered in audio or video by trusted local or national health figure)

[4] For tools using geolocation-based proximity tracing, we recommend participatory sharing methods that require health departments to validate case status and protect the privacy of patients, contacts, and local businesses. For Bluetooth-enabled exposure notification tools, we recommend decentralized, bidirectionally anonymous methods. For an example of a protocol that employs this method, see the PACT protocol.

[5] E.g., RESTful API transferring data over HTTPS or SSH