

Preliminary Criteria for the Evaluation of Digital Contact Tracing Tools for COVID-19

COVID-19 Contact Tracing for Health Departments

Introduction

The following preliminary¹ criteria define minimum and preferred characteristics of digital contact tracing tools to help health departments overcome one or more obstacles in the COVID-19 contact tracing workflow². They are based on preliminary research and targeted discussions with contact tracing and informatics experts across county, state, and federal government; national public health associations; academic consortia; and nongovernmental organizations.

Listed in Table 1 below are minimum and preferred criteria applied to two distinct categories of contact tracing technology: those for case management³, and those for proximity tracking⁴. Minimum and preferred criteria of the tools' technical and general attributes are described in Table 2.














= case management



= proximity tracking
























Table 1. Minimum and Preferred Capabilities of Digital Contact Tracing Tools

Contact Tracing Task	Criteria	
	Minimum	Preferred
Case Identification	<ul style="list-style-type: none"> Enables PHAs⁵ to import existing data (e.g., from PHA information systems) 	<ul style="list-style-type: none"> Can be configured for real-time synchronization of data from PHA information systems 
		<ul style="list-style-type: none"> Enables laboratory-confirmed index patients to self-report relevant demographic data and the best means of communication 
Contact Elicitation / Identification	<ul style="list-style-type: none"> Enables PHAs to manually record data on contacts of index patients 	<ul style="list-style-type: none"> Enables index patients to self-report contacts 
		<ul style="list-style-type: none"> Can seamlessly import proximity data from index patient when consent received 
Contact Notification	<ul style="list-style-type: none"> Enables manual and automated notifications⁶ to known contacts in the following order of priority: recorded voice message, email, and SMS Messaging can be tailored to the likelihood of exposure, include links to health information resources, and provide next steps (e.g., testing, self-isolation) 	<ul style="list-style-type: none"> Enables anonymous⁷ automated notification to community contacts based on history of proximity to index patient (i.e., within 6 feet for 30 minutes or more) 
Contact Follow-up	<ul style="list-style-type: none"> Enables PHA to initiate direct, manual follow-up with known contacts and collect longitudinal data Enables seamless restart of logic model / workflow upon confirmation of case status among any known contact 	<ul style="list-style-type: none"> Enables automated dispatch of reminders to known contacts and community contacts for 14 days with directions to call PHA or electronically self-report symptoms 
		<ul style="list-style-type: none"> Self-reported data are used for automated prediction of case classification and provide immediate notification to contact and PHA when infection is likely 



cdc.gov/coronavirus

Table 2. Minimum and Preferred Attributes of Digital Contact Tracing Tools

Attribute	Minimum	Preferred
Technical		
Platform Support	<ul style="list-style-type: none"> Can be easily used within web browser on mobile environment  	<ul style="list-style-type: none"> Provides cross-platform functionality (Android, and iOS, with reasonable backwards compatibility for older Android and iOS versions) 
	<ul style="list-style-type: none"> Can be easily used within web browser on desktop environment  	
	<ul style="list-style-type: none"> Supports offline data entry and caching  	<ul style="list-style-type: none"> Supports offline data entry and caching across platforms 
Data Interoperability	<ul style="list-style-type: none"> Supports manual data import from PHA information systems  Supports manual data export in common formats  	<ul style="list-style-type: none"> Supports OAuth-secured programmatic means of data transfer⁸ between information systems within and between jurisdictions 
Trustworthiness	<ul style="list-style-type: none"> Uses open architectures and open standards  	<ul style="list-style-type: none"> Is open source 
Users	<ul style="list-style-type: none"> User access for PHAs  	<ul style="list-style-type: none"> User access by index patients and their contacts 
Availability	<ul style="list-style-type: none"> Ready to use and rapidly deployable  	<ul style="list-style-type: none"> Already being used successfully by jurisdictions 
Customizability	<ul style="list-style-type: none"> Requires vendor to perform all customizations for PHAs  	<ul style="list-style-type: none"> Allows PHAs to perform some of their own customizations (e.g., adding new data elements, implementing data validation rules) 
Privacy	<ul style="list-style-type: none"> All use of personally-identifying information (PII) data is predicated on consent of index patient / contact, and all other data are anonymized before sharing  Data are encrypted in transit and at rest  	<ul style="list-style-type: none"> Provides individuals access to their own data, and ability to delete / revoke consent at any time 
	<ul style="list-style-type: none"> Authorized data access only for PHAs and must be limited to need-to-know basis  	
General		
Technical Support	<ul style="list-style-type: none"> Developer / vendor provides comprehensive technical support for PHAs  	
Vendor Experience	<ul style="list-style-type: none"> The developer / vendor has experience working in public health settings  	
Localization	<ul style="list-style-type: none"> Self-reporting features are available in index patient's and contact's language of choice  	

1. This document should be viewed as a living body of knowledge. It will be updated as more is learned.
2. This includes index case identification, contact elicitation / identification, contact notification, and follow-up.
3. Tools to streamline the electronic capture and management of data on cases and contacts; may also provide means of automating communication and follow up with contacts of an infected individual.
4. Tools that use Bluetooth or GPS technologies to estimate the proximity and duration of an individual's exposure to an infected person; used in addition to contact tracing case management tools.
5. Public health authorities, including local, state, tribal, and territorial public health departments.
6. We recommend that automated messaging incorporate rapport-building human elements (e.g., delivered in audio or video by trusted local or national health figure).
7. For tools using geolocation-based proximity tracking, we recommend [anonymous selective broadcasting methods](#). For tools with Bluetooth-enabled proximity tracking, we recommend decentralized, bidirectionally anonymous methods. For an example of a protocol that employs this method, see [the PACT protocol](#). Inclusion does not indicate endorsement.
8. E.g., RESTful API conforming to a common standard for data sharing between tools.