Novel Coronavirus Disease (COVID-19)

CONTACT TRACING GUIDELINES
Disclosure

► Information in this presentation has been created with guidance and adaptation from the following documents as well as other referenced sources:

► WHO Go Training Module 4.2: Contact Tracing & Case Finding
► WHO & CDC Emergency Guideline: Implementation and management of contact tracing for Ebola virus disease
► WHO: The First Few X cases and contacts (FFX) investigation protocol for coronavirus disease 2019 (COVID-19)
Objectives

► Describe general considerations for contact tracing
► Outline the planning and preparation necessary for contact tracing
► Describe implementation of contact tracing
► Explain contact tracing management techniques
► Provide resources for contact tracing in multiple settings and phases of outbreak
Purpose for Contact Tracing & Monitoring

**Definition:** Process of identifying, assessing, and managing people who have been exposed to a disease to prevent onward transmission

**Goals:**
- Detecting cases early
- Improve early isolation of contacts
- Reducing community and healthcare-associated spread

Source: WHO: GO Training – Case finding and contact tracing – Module 4.2
COVID-19: Principles of Controlling the Outbreak

Control of Transmission
- Case detection
- Case investigation
- Contact tracing (14 days)
- Interruption of community and health care spread

Social Distancing
- Stay-at-home orders
- Teleworking
- Closure of non-essential services
- PPE recommendations

Case Management
- Within Households
  - Self-isolation and self-monitoring
- In Healthcare Settings
  - Patient isolation
  - PPE for patients and healthcare workers
  - IPC and safety
Sample Incident Management Framework
Infrastructure Considerations

**Resources**
- Phones and call center
- Training
- Case and contact questionnaires
- Translation services
- Database
- Data collection instruments
- Transportation
- PPE for field epidemiologists and CHW
- Testing capabilities and kits

**Personnel**
- National team
  - Ministry of Health/Department of Health
- Local team
  - Epidemiologists
  - Surveillance officers
- Training team
- Health care workers
- Driver
- Laboratory team
Sample equipment list for Contact Tracing Team

<table>
<thead>
<tr>
<th>Contact Tracing Team</th>
<th>Load Epidemiologist</th>
<th>Supervisor</th>
<th>Investigation Team</th>
<th>Contact Follow-up Team</th>
<th>Data Manager</th>
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<tbody>
<tr>
<td><strong>Personal Protective Equipment</strong></td>
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<td>Disposable gloves</td>
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<td>Gowns</td>
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<td>Face shield (or goggles)</td>
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<td>Face mask N95/FFP2</td>
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<td>Surgical mask for the case</td>
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<td>Biohazard plastic bags</td>
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<td><strong>Information Technology</strong></td>
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<td>Electronic data collection tools</td>
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<td><strong>Field Equipment</strong></td>
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<td>Thermometers¹</td>
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<td>Office supplies²</td>
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<td>Weather appropriate gear³</td>
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<td>Hand sanitizer or bleach</td>
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<td>Appropriate forms</td>
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<td>Transportation</td>
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</tbody>
</table>

Additional Resources: WHO COVID-19 Essential Supplies Forecasting Tool (ESFT)

Source: WHO & CDC: Implementation and management of contact tracing for Ebola virus disease
Key Components of COVID-19 Outbreak Surveillance

1. Reporting and capturing cases
2. Case investigation
3. Contact tracing
4. Contact monitoring for 14 days
1. Reporting and Capturing Cases

- Information from healthcare professionals and laboratories routed to surveillance team via...
  - Established alert system
  - Electronic laboratory reporting (ELR)
  - Hotlines
  - Laboratories
  - Deaths
  - Self-reporting
- Cases and information will be reported to the epidemiology team to assign epidemiologists or trained surveillance officers to conduct case investigations
- A line list will be maintained to track cases and create daily reports
## Developing a Line List for Cases

<table>
<thead>
<tr>
<th>Case ID</th>
<th>Last Name</th>
<th>First Name</th>
<th>DOB</th>
<th>Onset Date</th>
<th>Sex</th>
<th>Age</th>
<th>Exposure Risks/Epi Links</th>
<th>Location</th>
<th>Number of Contacts</th>
<th>Lead Epi</th>
<th>Date of Specimen Collection</th>
<th>Lab Used</th>
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</tbody>
</table>

**Line List Descriptions:**

- **Case ID:** Unique identifier assigned to each case for the current investigation
- **Last Name:** Surname
- **First Name:** Given name
- **DOB:** Date of birth
- **Onset Date:** Date of symptom onset, mm/dd/yyyy
- **Sex:** Male, Female, or Unknown
- **Age:** Age in years
- **Exposure Risks/Epi Links:** Known exposures, contacts with suspected, probable, or confirmed cases, or locations visited with known connections to cases
- **Location:** Hospital, City, County
- **Number of Contacts:** Number of people case identified that they had contact with 48 hours prior to symptom onset or while symptomatic
- **Lead Epi:** Lead epidemiologist for the identified case
- **Date Specimen Collection:** Date that COVID-19 specimen was collected for testing, mm/dd/yyyy
- **Lab Used:** Laboratory conducting testing for suspected or confirmed case

*Source: Adapted from CDC’s line list template*
Additional Line List Considerations

- Maintaining additional line lists to include:
  - Case counts
  - Deaths
  - Hospitalizations
  - Outbreak or exposure locations (i.e. nursing homes, work places, etc.)
  - Recovered cases
Resources for Creating Line Lists

- Intrahealth International
  - Open source resources for data tracking, contact tracing (current partnership with WHO)
    - COVID-19 Surveillance Digital Data Package
    - dhis2 COVID-19 Package Overview Video
  - ELR Reporting from laboratories to public health departments into established databases
    - About ELR
- WHO
  - Go.Data
- Excel or manual creation of a line lists of cases
  - CDC: Steps for creating a line list
  - CDC: Line list template
  - Canada: National Collaborating Centre for Infectious Diseases line list excel format tool
- Epilinfo
  - Open source, app and web based, form designer
    - Line list introduction
2. Case Investigation

- Interview potential case to determine if they meet the definition for suspected, probable, or confirmed case and obtain epidemiological info
  - Collect
    - Personal information & demographics
    - Location
    - Testing status
    - Exposure risks or epidemiological links to other cases
    - List of contacts
- Make recommendations based on current guidance
  - Isolation (at-home or healthcare setting) or aid with access to medical care
  - Facilitate specimen collection & laboratory testing, if appropriate
Examples of Contact Tracing

Community Contact Tracing

Health Care Contact Tracing

Source: WHO: Considerations in the investigation of cases and clusters of COVID-19.
WHO Case Definitions

**Suspected Case**
- A patient with severe acute respiratory infection (fever, cough, and requiring admission to hospital) **AND** with no other etiology to explain clinical presentation **AND** a history of travel or residence in a country/area reporting local or community transmission during the 14 days prior to symptom onset
- OR
- A patient with acute respiratory illness **AND** at least one of the following during the 14 days prior to symptom onset:
  - Contact with a confirmed or probable case of COVID-19 infection
  - Worked in or attended a health-care facility where patients with confirmed or probable COVID-19 were being treated

**Probable Case**
- A suspected case for whom testing for COVID-19 is inconclusive or who testing positive using a pan-coronavirus assay, and without laboratory evidence of other respiratory pathogens

**Confirmed Case**
- A person with laboratory confirmation of COVID-19 infection, irrespective of clinical signs and symptoms
- Further classification of confirmed case:
  - Primary case (index case): an individual who tests positive for COVID-19 and has the earliest onset date in a particular setting (i.e., household, school, hospital). Cases with onset dates less than 24 hours from the onset date of the primary case are considered to be “co-primary cases”
  - Secondary case: a contact who becomes a case with positive test results 24 hours or more after the latest positive test date of the primary and/or co-primary case; or with onset of symptoms 24 hours or more after the latest onset date of the primary and/or co-primary case
  - Imported case: a case with a history of travel from an affected area in the 14 days before disease onset
WHO Recommendations for Cases

- WHO recommends all probable and laboratory-confirmed cases of COVID-19 be isolated and cared for in a health care facility.

If not possible or prioritization is necessary,

- Prioritize health care facilities for:
  - Patients with severe and critical illness
  - Patient with mild disease and risk for poor outcome (age > 60 years, underlying medical conditions)

- Non-traditional facilities (re-purposed hotels, gyms, stadiums, etc.)
  - Patients with mild illness +/- minimal risk factors

- Home isolation
  - Asymptomatic patients
  - Patients with mild disease and no risk factors

Additional Resources:

- WHO: Considerations for quarantine of individuals in the context of containment for coronavirus disease (COVID-19)

- Home care for patients with COVID-19 presenting with mild symptoms and management of their contacts
Defining a Contact

All social, familial/household, work, health care, and any other contacts who have had contact with a probable or confirmed case

<table>
<thead>
<tr>
<th>Close contact (High-risk)</th>
<th>Casual contact (Low-risk)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Household contacts</td>
<td>• Health care workers who have taken appropriate PPE precautions</td>
</tr>
<tr>
<td>• Individual with &gt;15 minutes face-to-face contact within &lt;2 metres distance</td>
<td>• Individuals sharing a close space &lt;2 hours, but not within 2 metres of one another</td>
</tr>
<tr>
<td>• Health care workers exposed to case without use of appropriate PPE</td>
<td>• Passengers on an aircraft beyond two seats in any direction</td>
</tr>
<tr>
<td>• In the same room in health care with aerosolized procedure undertaken</td>
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<tr>
<td>• Passengers on an aircraft within 2 seats in any direction and crew members serving section of aircraft</td>
<td></td>
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<tr>
<td>• Individuals sharing a close space with case &gt;2 hours, but not within 2 metres of one another</td>
<td></td>
</tr>
<tr>
<td>• Direct contact with body fluids or lab specimens of case</td>
<td></td>
</tr>
</tbody>
</table>
Creating Contact Lists

**For symptomatic cases:** Identify contacts from 2 days before symptom onset and up to 14 days after their symptom onset.

**For asymptomatic cases:** Identify contacts from 2 days before through 14 days after the sample was taken that led to confirmation of positive COVID-19 infection.

Contact Interview:

Determine symptom onset and infectious period for case. Stress importance of identifying all contacts 2 days before and 14 days after symptom onset.

Collect information on all of patient’s contacts including:
- Name (nicknames)
- Address/telephone number
- Other locating information
- Location of contact with individual (household, workplace, church, etc)
- Date of first and last exposure

Conclusion:

- Answer patient’s questions
- Provide patient with resources for any required follow-up
- Review and reinforce quarantine plan
- Leave name and telephone number
- Thank patient for their cooperation

CDC Train: [Interviewing Techniques](#)

CDC: [Contact Tracing: Self-Study](#)
3. Contact Identification

- Informing identified contacts of their potential exposure
  - Determine nature of contact with case to categorize risk category
  - Verify last date of exposure to case
  - Determine if contact is symptomatic. If so, facilitate testing if appropriate

**Close Contact (High-Risk)**
- Active monitoring for 14 days
- Recommend self-isolation for 14 days from last date of exposure to case

**Casual Contact (Low-Risk)**
- Self-monitoring for 14 days
- Recommend avoiding social gatherings and social contacts

Additional Resources: WHO Laboratory testing strategy recommendations for COVID-19
# Example of Case Contact List

<table>
<thead>
<tr>
<th>Index Case ID:</th>
<th>Index Case Name:</th>
<th>Investigating Epidemiologist:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Index Case Symptom Onset Date:</td>
<td></td>
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</tr>
</tbody>
</table>

Today's Date: 

<table>
<thead>
<tr>
<th>TO BE COMPLETED BY INVESTIGATING EPIDEMIOLOGIST</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Last Name</th>
<th>First Name</th>
<th>DOB</th>
<th>Phone #</th>
<th>First date of exposure</th>
<th>Last date of exposure</th>
<th>Relationship to case</th>
<th>Contact tracing staff assigned</th>
<th>Date contacted by contact tracing staff</th>
<th>Phone follow-up or text-based follow-up</th>
<th>Experienced symptoms?</th>
<th>Description of interaction with case</th>
<th>Categorization of interaction, Close or casual?</th>
<th>Other comments</th>
</tr>
</thead>
</table>


4. Contact Monitoring (14 days)

- Monitoring of symptoms is intended for early detection of new cases (active case finding & self-reporting)
- More sustained efforts required at the community level
  - Districts to gather data on the overall progress (daily, weekly)
  - Supervisors to oversee day-to-day monitoring
  - Communities/contact monitoring personnel are often on their own
### Example Contact Follow-up Form

**Daily Contact Follow-Up Form**

**Contact Information**
- **Name**
- **Gender**
- **Age**
- **Date of Last Contact**
- **Address**
- **Tel No.**

**Instructions:** For each day, evaluate the contact for the symptoms below and write "yes" if the contact has the symptom and "no" if the contact does not have the symptom. If a contact has any of the symptoms, immediately call the Supervisor at: 

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<th>Date</th>
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<td>Date</td>
<td>Fever</td>
<td>Malaise</td>
<td>Muscle pain</td>
<td>Headache</td>
<td>Weakness/Fatigue</td>
<td>Sore throat</td>
<td>Vomiting</td>
<td>Diarrhea</td>
<td>Rash</td>
<td>Haemorrhage</td>
<td>Hiccups</td>
<td>Comments</td>
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</tbody>
</table>

**Source:** WHO & CDC: Implementation and management of contact tracing for Ebola virus disease
Apps and Tools for Monitoring Contacts

How to Participate?

To participate in this effort and to help stop COVID-19 in New York City,

1. Text COVID to 647-22.
2. You will receive daily texts to check on your symptoms.

What is TraceTogether?
A community-driven contact tracing app to help stop the spread of COVID-19

Text-Based Systems

Trace Together

COVID SafePaths

Safe Paths
Defining High Resource vs. Low Resource Settings

► Definition **High Resource Settings**: Robust public health + workforce, strong supply chain for PPE, reliable transportation for physical contact tracing, use of cellular/internet/app-based tools feasible, robust laboratory network and access to diagnostic testing, call center and testing site infrastructure.

► Definition **Low Resource Settings**: Limited access to PPE, limited transportation for physical tracing, limited access to cellular/internet/app-based tracing tools, limited laboratory infrastructure/access to diagnostic testing, may be remote/rural area, region may be unstable.
# Pandemic Phase Descriptions

## Table 3: WHO Pandemic Phase Descriptions and Main Actions by Phase

<table>
<thead>
<tr>
<th>Phase</th>
<th>Estimated Probability of Pandemic</th>
<th>Description</th>
<th>Main Actions in Affected Countries</th>
<th>Main Actions in Not-Yet-Affected Countries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase 1</td>
<td>Uncertain</td>
<td>No animal influenza virus circulating among animals has been reported to cause infection in humans.</td>
<td>Producing, implementing, exercising, and harmonizing national pandemic influenza preparedness and response plans with national emergency preparedness and response plans.</td>
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<tr>
<td>Phase 2</td>
<td>Uncertain</td>
<td>An animal influenza virus circulating in domesticated or wild animals is known to have caused infection in humans and is therefore considered a specific potential pandemic threat.</td>
<td>Producing, implementing, exercising, and harmonizing national pandemic influenza preparedness and response plans with national emergency preparedness and response plans.</td>
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<tr>
<td>Phase 3</td>
<td>Uncertain</td>
<td>An animal or human-animal influenza reassortant virus has caused sporadic cases or small clusters of disease in people, but has not resulted in human-to-human transmission sufficient to sustain community-level outbreaks.</td>
<td>Producing, implementing, exercising, and harmonizing national pandemic influenza preparedness and response plans with national emergency preparedness and response plans.</td>
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<tr>
<td>Phase 4</td>
<td>Medium to high</td>
<td>Human-to-human transmission of an animal or human-animal influenza reassortant virus able to sustain community-level outbreaks has been verified.</td>
<td>Producing, implementing, exercising, and harmonizing national pandemic influenza preparedness and response plans with national emergency preparedness and response plans.</td>
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<tr>
<td>Phase 5</td>
<td>High to certain</td>
<td>The same identified virus has caused sustained community-level outbreaks in at least two countries in one WHO region.</td>
<td>Producing, implementing, exercising, and harmonizing national pandemic influenza preparedness and response plans with national emergency preparedness and response plans.</td>
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<tr>
<td>Phase 6</td>
<td>Pandemic in progress</td>
<td>In addition to the criteria defined in Phase 5, the same virus has caused sustained community-level outbreaks in at least one other country in another WHO region.</td>
<td>Producing, implementing, exercising, and harmonizing national pandemic influenza preparedness and response plans with national emergency preparedness and response plans.</td>
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</tr>
<tr>
<td>Post-Peak Period</td>
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<td>Levels of pandemic influenza in most countries with adequate surveillance have dropped below peak levels.</td>
<td>Evaluating response; recovery; preparation for possible second wave.</td>
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<tr>
<td>Possible New Wave</td>
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<td>Level of pandemic influenza activity in most countries with adequate surveillance is rising again.</td>
<td>Evaluating response; revision of plans; recovery.</td>
<td></td>
</tr>
<tr>
<td>Post-Pandemic Period</td>
<td></td>
<td>Levels of influenza have returned to the levels seen for seasonal influenza in most countries with adequate surveillance.</td>
<td>Evaluating response; revisions of plans; recovery.</td>
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</tbody>
</table>
## High Resource Settings

<table>
<thead>
<tr>
<th>Code</th>
<th>Phase</th>
<th>Description</th>
<th>Resources Needed</th>
</tr>
</thead>
</table>
| O1-WHO* | Phases 2/3 | WHO guidance for collecting/analyzing data and specimens from COVID first few cases and their contacts | - personnel  
- lab, call center, testing infrastructure  
- PPE, lab, diagnostic materials  
- cellular, internet technology  
- couriers, drivers, transportation  
- software, database platforms |
| O2-HPSC | Phases 3-6 | Ireland Gov health surveillance website: COVID specific contact tracing guidance documents  
App: HSE COVID-19 | - personnel (1500 per center, at least 8 centres nationwide)  
- lab, call center, testing infrastructure  
- PPE, lab, diagnostic materials  
- cellular, internet technology  
- couriers, drivers, transportation  
- software, database platforms |
| O3-ECDC | Phases 2/3 | Resource estimation for contact tracing, quarantine, monitoring activities of COVID-19 cases in EU/EEA | - personnel (10+3 per symptomatic case)  
- lab, call center, testing infrastructure  
- PPE, lab, diagnostic materials  
- cellular, internet technology  
- couriers, drivers, transportation  
- software, database platforms |
| R1.2-AUS | Phases 4-6 | Queensland AUS Gov (Hospital & Health Service) HHS region by cases to date  
Flights with confirmed cases requiring contact tracing  
Information for the public | - personnel  
- lab, call center, testing infrastructure  
- PPE, lab, diagnostic materials  
- cellular, internet technology  
- couriers, drivers, transportation  
- software, database platforms |
<table>
<thead>
<tr>
<th>Code</th>
<th>Phase</th>
<th>Description</th>
<th>Resources Needed</th>
</tr>
</thead>
</table>
| R2-NZ  | Phases 3-6 | Phone calls to suspected contacts, airline updates | - personnel  
- call center infrastructure  
- internet access (computer)/connection |
| R3.1-CA* | Phases 3-6 | CA TB contact investigation protocol for provincial, national, international investigations | - personnel  
- lab, call center, testing infrastructure  
- PPE, lab, diagnostic materials  
- cellular, internet technology  
- couriers, drivers, transportation  
- software, database platforms |
| R3.2-CA* | Phases 3-6 | Internet based contact tracing for STIs, utilizing social networking sites and personal email | - personnel  
- internet platform  
- internet access (computer)/connection  
- social media, email etc. |
| R4.1-IRE* | Phases 3-6 | Ireland TB contact tracing protocol on p. 94 | - personnel  
- lab, call center, testing infrastructure  
- PPE, lab, diagnostic materials  
- cellular, internet technology  
- couriers, drivers, transportation  
- software, database platforms |
| R4.2-IRE | Phases 4-6 | Containment, delay, mitigation definitions  
- Based on WHO and ECDC strategy  
- Formed NPHET (Ntnl PH Emergency Team) | *not really a tracing tool |
| R4.3-IRE* | Phases 3-6 | HCW contact tracing and management guidelines (COVID-specific)  
- guidelines for HCW returning to Ireland from abroad  
- active f/u for close contacts of + HCW etc. | - robust occupational health system/dept/workforce  
- personnel  
- lab, call center, testing infrastructure  
- PPE, lab, diagnostic materials  
- cellular, internet technology  
- couriers, drivers, transportation  
- software, database platforms |
| T1-IATA | Phase 5/6 | Form for contact tracing cases from international flights | - personnel  
- postal service  
- cellular/internet technology |
<table>
<thead>
<tr>
<th>Code</th>
<th>Phase</th>
<th>Description</th>
<th>Resources Needed</th>
</tr>
</thead>
<tbody>
<tr>
<td>T1-SHIPS*</td>
<td>Phase 5/6</td>
<td>WHO management of PH events on board ship, p. 16 for event detection</td>
<td>- coordination with port authority&lt;br&gt;- personnel&lt;br&gt;- lab, call center, testing infrastructure&lt;br&gt;- PPE, lab, diagnostic materials&lt;br&gt;- cellular, internet technology&lt;br&gt;- couriers, drivers, transportation</td>
</tr>
<tr>
<td>A6-EPIC</td>
<td>Phases 3-6</td>
<td>Contact tracing software tool on R</td>
<td>- R software&lt;br&gt;- database development/management capabilities&lt;br&gt;- statisticians&lt;br&gt;- computer</td>
</tr>
<tr>
<td>A10-PEPP</td>
<td>Phases 3-6</td>
<td>Mobile-based proximity tracing technology from Switzerland - Country-level participation (specifically in Europe)</td>
<td>- mobile devices&lt;br&gt;- developed national technology systems/coordination</td>
</tr>
<tr>
<td>A11-SAFE</td>
<td>Phases 3-6</td>
<td>Mobile app for PH officials and general public to privately collect location data over time&lt;br&gt; - reviews: unclear how to use/purpose</td>
<td>- GPS, bluetooth technology&lt;br&gt;- only available for iphone/ipad</td>
</tr>
<tr>
<td>A13-NEXT</td>
<td>Phases 3-6</td>
<td>App in development - individuals register confirmed + cases in online platform, using cell location and proximity data can warn other registered individuals if they were possibly exposed to seek testing, collect pt hx and contacts</td>
<td>- GPS, bluetooth technology&lt;br&gt;- smartphones&lt;br&gt;- reliable cell signal / internet&lt;br&gt;- assumed resources: - all resources associated with + tests (lab, diagnostics etc.)</td>
</tr>
<tr>
<td>A14-SCAN</td>
<td>Phases 3-6</td>
<td>At home nasal swabs via mailed test kit, returned to central location and tested, results can be viewed on secure web portal&lt;br&gt;*may be pending CDC approval</td>
<td>- personnel&lt;br&gt;- robust postal system&lt;br&gt;- lab, call center, testing infrastructure&lt;br&gt;- PPE, lab, diagnostic materials&lt;br&gt;- couriers, drivers, transportation&lt;br&gt;- software, database platforms</td>
</tr>
<tr>
<td>H1-CON</td>
<td>Phase 1/2**</td>
<td>Electronic hand hygiene monitoring system (installed on sinks/sanitizer dispensers) - data collection to track and reduce HAI rates</td>
<td>- clean-hands technology&lt;br&gt;- larger hospital systems&lt;br&gt;<em>advanced technology&lt;br&gt;</em> for purchase</td>
</tr>
</tbody>
</table>
## Resources for Various Phases of Outbreak – Low Resource Settings

*Tools indicated for use in low resource settings could also be used in high resource settings*

<table>
<thead>
<tr>
<th>Resource</th>
<th>Stage of Outbreak</th>
<th>Description</th>
<th>Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>O1-WHO*</td>
<td>Phases 2/3</td>
<td>WHO guidelines for first few cases possibly modifiable for low-resource settings (general guidance applies)</td>
<td>- personnel&lt;br&gt;- lab, call center, testing infrastructure&lt;br&gt;- PPE, lab, diagnostic materials&lt;br&gt;- cellular, internet technology&lt;br&gt;- couriers, drivers, transportation&lt;br&gt;- software, database platforms</td>
</tr>
<tr>
<td>O4-CDC*</td>
<td>Phase 3-6</td>
<td>Ebola contact tracing guidelines for less-affected countries</td>
<td>** revise may be high resource&lt;br&gt;- personnel&lt;br&gt;- robust postal system&lt;br&gt;- lab, call center, testing infrastructure&lt;br&gt;- PPE, lab, diagnostic materials&lt;br&gt;- couriers, drivers, transportation&lt;br&gt;- software, database platforms</td>
</tr>
<tr>
<td>R1.1-AUS</td>
<td>Phases 3-6</td>
<td>Various approaches including: phone, letter, in person/home visit, referral to another agency</td>
<td></td>
</tr>
<tr>
<td>R1.3-AUS</td>
<td>Phases 3-6</td>
<td>Various approaches + contact tracing via social media</td>
<td></td>
</tr>
<tr>
<td>Resource</td>
<td>Stage of Outbreak</td>
<td>Description</td>
<td>Resources</td>
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<tr>
<td>M1-UNC</td>
<td>Phases 1/2**</td>
<td>Free PH prep, epidemiology, risk assessment etc. via CDC TRAIN platform Workplace/institution association, and free account necessary to access modules</td>
<td>- internet connection - computer/tablet/phone</td>
</tr>
<tr>
<td>M2-WHO</td>
<td>Phases 1/2**</td>
<td>Video module on case finding and contact tracing</td>
<td>- internet connection - computer/tablet/phone</td>
</tr>
<tr>
<td>M3-STI</td>
<td>Phases 1/2**</td>
<td>Free contact tracing online module, with free account</td>
<td>- internet connection - computer/tablet/phone</td>
</tr>
<tr>
<td>A1-EBO</td>
<td></td>
<td>Uses short-distance bluetooth signals, proximity data is encrypted and stored locally</td>
<td>- phones - database</td>
</tr>
<tr>
<td>A2-TRACE</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
Challenges

► Building trust within communities
► Individuals with various religious, political, and cultural beliefs
► Adapting contact tracing to setting and phase of outbreak
► Working with limited or insufficient resources
► Ensuring completeness of data and maintaining adequate data management
► Dealing with slow reporting times or limited testing capabilities
WHO Resources

► World Health Organization: The First Few X (FFX) Cases and contact investigation protocol for COVID-19 infection
► World Health Organization: Considerations for quarantine of individuals in the context of containment for coronavirus disease (COVID-19)
► World Health Organization: Home care for patients with suspected novel coronavirus (nCoV) infection presenting with mild symptoms and management of contact
► World Health Organization: Operational considerations for case management of COVID-19 in health facility and community
► World Health Organization: WHO COVID-19 Essential Supplies Forecasting Tool (ESFT)
► World Health Organization: Critical preparedness, readiness and response actions for COVID-19
► World Health Organization: Responding to community spread of COVID-19
► World Health Organization: Considerations in the investigation of cases and clusters of COVID-19
► World Health Organization: Operational considerations for case management of COVID-19 in health facility and community
► World Health Organization: Global Surveillance for human infection with coronavirus disease (COVID-19)
► World Health Organization: Case-based reporting form
► World Health Organization: Considerations for quarantine of individuals in the context of containment for coronavirus disease (COVID-19)
► World Health Organization: Operational considerations for COVID-19 surveillance using GISRS
Additional Resources (1)

**Guidance By Organization**

- The First Few X (FFX) Cases and contact investigation protocol for 2019-novel coronavirus (2019-nCoV) infection (O1-WHO*)
- Health Protection Surveillance Centre – National Interim Guidelines for Public Health management of contacts of cases of COVID-19 (O2-HPSC)
- European Centre for Disease Prevention and Control - Resource estimation for contact tracing, quarantine and monitoring activities for COVID-19 cases in the EU/EEA (O3-ECDC)
- CDC Methods For Implementing & Managing Contact Tracing for Ebola Virus Disease in Less-Affected Countries (Dec. 2014) (O4-CDC*)

**Guidance By Region**

- Australia
  - Contact tracing (R1.1-AUS)
  - Current status and contact tracing alerts — coronavirus (COVID-19) (R1.2-AUS)
  - Australiasian contact tracing guidelines (R1.3-AUS)
Additional Resources (2)

• New Zealand
  • Contact tracing for COVID-19 (R2-NZ)

• Canada
  • Communicable Disease Control Manual: Chapter 4: Tuberculosis Contact Investigation (R3.1-CA*)
  • Case and Contact Management for STIs - Internet-Based Contact Tracing (R3.2-CA*)

• Ireland
  • Ireland - Guidelines on the Prevention and Control of TB in Ireland 2010 (R4.1-IRE*)
  • Containment, Delay, and Mitigation Strategy (R4.2-IRE)
  • High Consequence Infectious Diseases Planning and Coordination Group: Health Protection Surveillance Centre (R.4.3-IRE*)

For Airlines and Transportation:

• International Air Transport Association (IATA) and Passenger Location Forms (PLF) (T1-IATA*)
• Handbook for management of public health events on board ships (T2-SHIPS*)