

# COVID-19 and Contact Tracing

This report provides information about contact tracing, a public health tool used to help slow and prevent the continued spread of an infectious disease. At its most basic, contact tracing is an effort to stop the transmission of infectious disease by keeping sick people away from healthy people and by keeping potentially sick people in quarantine until it is clear that they are not sick. In the context of COVID-19, state and local governments will use contact tracing to help stem the spread of coronavirus, and in turn, allow states to begin to relax social distancing orders.

**NOTE: COVID-19 INFORMATION IS CHANGING ON A DAILY BASIS. TO THE BEST OF OUR KNOWLEDGE, THE INFORMATION IN THIS REPORT IS ACCURATE AT THE TIME OF PUBLISHING.**

## BACKGROUND<sup>1</sup>

The United States currently is addressing a pandemic of a disease caused by a novel coronavirus called “severe acute respiratory syndrome coronavirus 2” or SARS-CoV-2. This virus causes the disease “Coronavirus Disease 2019” or COVID-19.

SARS-CoV-2 is easily spread from person-to-person through respiratory droplets when people cough or sneeze and can also spread to people who touch an infected surface or object. Spread of SARS-CoV-2 is more likely when people are in close contact and an infected patient can spread the virus to others before the patient shows symptoms of COVID-19. Currently, public health officials do not know if a person becomes immune to COVID-19 if they have recovered from it.

To slow the spread of COVID-19, beginning in March 2019 individual U.S. states began cancelling school for extended periods, ordering the closure of non-essential businesses, prohibiting gatherings of more than 10 people at a time, and recommending or ordering residents to stay at home if possible. Public health officials and government leaders are working to develop plans for how to resume normal activity. **Overwhelmingly, these plans involve a greatly expanded public health infrastructure, including the extensive use of contact tracing to track and try to prevent further spread of COVID-19.**



## CONTACT TRACING<sup>2</sup>

Contact tracing is a tool to stop the transmission of infectious disease by keeping sick people away from healthy people and by keeping potentially sick people in quarantine until it is clear that they are not sick.

Contact tracing involves identifying a person with an infectious disease (the patient) and then identifying people who had contact with the patient while the patient was contagious (the contacts). Public health officials then reach out to the contacts (1) to warn them of potential exposure and (2) to give them information on what they should do to stop chains of transmission.

Diseases where the public health community typically use contact tracing include tuberculosis, measles, and now, COVID-19. Contact tracers typically work at the state and local government levels in health departments.

## What is a COVID-19 Contact?

*“Based on our current knowledge, a **close contact** is someone who was within 6 feet of an infected person for at least 15 minutes starting from 48 hours before illness onset until the time the patient is isolated.”*

U.S. Centers for Disease Control and Prevention (CDC) (emphasis added).

<https://www.cdc.gov/coronavirus/2019-ncov/php/principles-contact-tracing.html>



# EXPANDING PUBLIC HEALTH INFRASTRUCTURE<sup>3</sup>

There is not yet an effective vaccine or treatment for COVID-19 and it has led to at least 1.4 million diagnosed infections and more than 80,000 deaths in the United States since March 2020. Due to the lack of treatment options, public health experts agree that tracking and trying to interrupt the spread of COVID-19 is currently the best way to contain it. However, this will require time and greatly expanding existing state and local public health infrastructures. Contact tracing is one piece of this infrastructure. At this point, federal, state, and local plans being developed for how to reopen the country and allow business and social life to begin to resume safely, while also containing the spread of the virus, involve contact tracing.

## Needed Infrastructure

### Diagnostic Testing

- Testing people with symptoms
- Testing people with a reasonable suspicion of COVID-19 exposure

### Serologic Testing

- Testing people for antibodies to the virus
- Measure community exposure and potential immunity

### Contact Tracing

- Public health workforce to identify, track down, and notify all people who patients encountered when infectious and record data for public health surveillance

### Surveillance

- Testing representative and at-risk populations to identify asymptomatic or mildly symptomatic spread of the virus – prelude to and indicator of larger outbreaks

### Quarantine Resources

- Resources so that all patients and contacts can self-isolate for up to two weeks
- E.g., safe housing, income supports, food, medical services, childcare, transportation



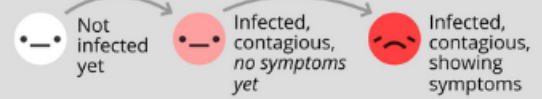
## STEPS IN CONTACT TRACING<sup>4</sup>

- Identify infected persons (patients)
- Talk to patient – identify all people in close contact when patient may have been infectious (contacts)
- Talk to all contacts – warn of exposure and provide follow-up information and resources
- Help contacts arranged to be tested
- Ask contacts to quarantine for 14 days following last exposure
- Offer quarantine support services, if needed

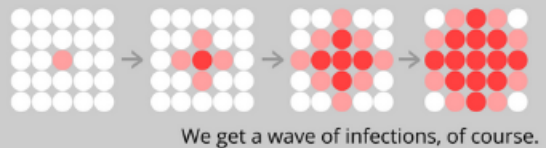
## WHAT IS CONTACT TRACING?

An alternative to prevent long term lockdowns or overwhelmed health systems

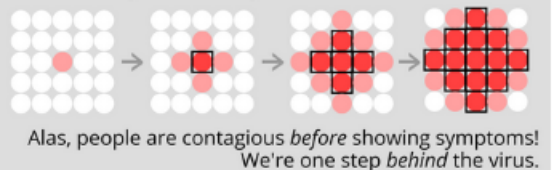
As far as COVID-19 cares, there are 3 kinds of people:



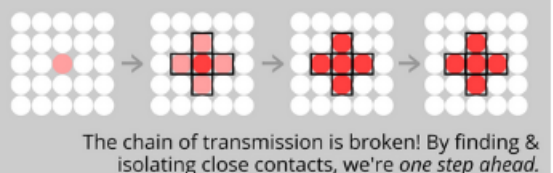
If we do nothing, here's what happens to a neighborhood with one Patient Zero:



Here's what happens if, when someone finds out they're infected, they immediately self-isolate:



But here's what happens if, when someone finds out they're infected, they *and their close contacts* self-isolate:



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remix & reuse freely!

by Marcel Salathé (epidemiologist)  
& Nicky Case (visualizer)

Source: <https://blog.ncase.me/onestepahead/>



## A CONTACT TRACING WORKFORCE<sup>5</sup>

Various sources estimate that the United States will need between 100,000 and 300,000 people to adequately conduct contact tracing related to COVID-19 in the United States. These sources include: Johns Hopkins University Bloomberg School of Health’s Center for Health Security, the Association of State and Territorial Health Officials (ASTHO), and the National Association of County & City Health Officials (NACCHO).

The CDC indicates that the number of staff needed will depend on (1) the number of daily cases, (2) the number of contacts identifies, and (3) how quickly patients are isolated and contacts notified. Public health experts have estimated a minimum need of 15 to 30 contact tracers per 100,000 population. Described more below, the Milken School of Public Health at George Washington University has developed a tool that state and local health departments can use to determine how many contact tracers they will need.

Across the U.S., state and local health departments and organizations working with them are hiring staff to expand contact tracing workforces. Workers are not limited to “contact tracers,” but also include supervisors, case investigators, care resource coordinators, and epidemiologists. California reports that it will hire 10,000 people. Texas, which has 1,150 contact tracers, intends to hire an additional 2,850. Massachusetts is in the process of hiring 1,200 workers. And Maryland has contracted with National Opinion Research Center (NORC) at the University of Chicago to hire 1,000 people to conduct contact tracing.

Public health officials report that people from many types of backgrounds can be well-suited to do contact tracing, including teachers, librarians, other technical professionals, healthcare professionals, and medical or other students. Many local health departments are also seeking volunteers for this work.

Several courses are available to train people to conduct COVID-19 contact tracing, including ones by the U.S. CDC and the Association of State and Territorial Health Officials (ASTHO), and Johns Hopkins University:

- <https://www.cdc.gov/coronavirus/2019-ncov/php/contact-tracing/index.html>
- [https://learn.astho.org/products/making-contact-a-training-for-covid-19-contact-tracers#tab-product\\_tab\\_overview](https://learn.astho.org/products/making-contact-a-training-for-covid-19-contact-tracers#tab-product_tab_overview)
- <https://www.coursera.org/learn/covid-19-contact-tracing?edocomorp=covid-19-contact-tracing>

Cost estimates for a COVID-19 contact tracing workforce in the U.S. start at approximately \$3 billion.

### Skills Needed

- Empathy and ability to build trust with people quickly
- Accurate information gathering and recording
- Ability to maintain confidential information
- Knowledge of local cultural sensitivities, languages

### Knowledge Bases

- Understanding of COVID-19 disease transmission
- Principles behind case isolation and quarantine
- Ethics of public health data collection
- Local data collection processes



## CONTACT TRACING IN MARYLAND AND MOCO<sup>6</sup>

The State has contracted with NORC at the University of Chicago to quickly expand the State’s contact tracing workforce by 1,000 workers and expects to start training workers in late May. NORC is a research institution based in Illinois with an office in Bethesda. Maryland will track data with a new contact-tracing platform called COVID Link, using medical data from the Chesapeake Regional Information System for our Patients (CRISP). Currently, local health departments are performing contact tracing for COVID-19 cases.

As of early May, Montgomery County has had a contact tracing team at work. For COVID-19 contact tracing, the County has added approximately 50 school health nurses to the team. The County is also receiving contact tracing support from the George Washington University School of Public Health and has discussed partnerships with Westat, Partners in Health – Harvard, and Montgomery College.

People can apply for contact tracing jobs with NORC here: <https://careers.norc.org/en-us/job/495630/contact-tracer-maryland-future-opportunities>



## TECHNOLOGY AND CONTACT TRACING<sup>7</sup>

Public health experts stress that new technologies can help contact tracers track patients and contacts, provide case management, and monitor isolation and quarantine. Currently, there is no federal coordination to develop systems for use by contact tracers across the country. Many states are in the process of developing their own systems for contact tracing.

In collaboration with Association of State and Territorial Health Officials and the NACCHO, the Milken School of Public Health at George Washington University has developed an online tool to help state and local health officials estimate the number of contact tracers they will need to limit future spread of the virus based on the number of cases in an area and other data. The tool is available here: <http://www.gwhwi.org/estimator-613404.html>

### Contact Tracing Apps<sup>8</sup>

Much attention in the press has focused on how the public health community can augment traditional contact tracing by use of smartphone apps. Apple and Google currently are partnering to develop technology for use in contact tracing apps.

Contact tracing smartphone apps work by recording when an app user is in close proximity to another user of the same app. These data are not shared with app users unless and until a user becomes ill. If the status of an app user is changed to indicate that they have been infected, the app can subsequently notify other app users who were in close proximity to the patient. Development of apps is currently ongoing in the United States and across the globe. A study from Oxford University estimate that almost 60% of a population in a given area would have to use an app for it to be effective to stem the continued spread of COVID-19.

One primary concern across the literature discussing app development is user privacy. Polls show differences in the willingness of people in the United States to use a smartphone app for COVID-19 contact tracing – based on age, political affiliation, and who manages the data (government health department vs. private industry). Additionally, one in six people in the U.S. doesn't have access to a smartphone. Public health experts stress that contact tracing apps cannot replace human contact tracing.



Source: <https://www.bbc.com/news/technology-52366129>

## CHALLENGES<sup>9</sup>

The public health system's knowledge about and understanding of SARS-CoV-2 and COVID-19 is changing on a daily basis. Until an effective vaccine is developed and widely available for COVID-19, public health officials will need to use older methods to try to stem the spread of the disease. Contact tracing is one available useful tool. Contact tracing, however, is only one piece in the public health infrastructure puzzle. Other pieces of the puzzle – such as adequate testing and resources for effective quarantine – are needed to have the greatest chance of success in stemming the spread of COVID-19.

Some challenges to containing the continued spread of COVID-19 include:

### Timing and Transmission of Virus

- People can transmit the virus before they have symptoms
- People may be most contagious before and immediately after symptom onset. Finding and isolating symptomatic patients may not be enough to disrupt spread of the disease

### Testing Resources

- States need to still do not have access to adequate resources to test all potential patients and contacts
- Reliability of testing – false positives and negatives
- FDA process for approval has allowed ineffective tests on the market

### Contact Tracing

- Transmission before onset of symptoms – increases speed with which contact tracers need to identify and talk to contacts (hours, not days)
- Cost to hire contract tracing workforce
- Cost and availability of resources for contact quarantine – housing, food, childcare, medical care, etc.
- Will enough users use a smartphone tracing app for it to work?

### Lifting Social Isolation Restrictions

- No confirmation that prior infection with the virus confers immunity on the infected person

#### QUESTIONS? COMMENTS?

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[www.montgomerycountymd.gov/olo](http://www.montgomerycountymd.gov/olo)

## ENDNOTES

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