To share or not to share – that is the question

Controversial contact tracing would be a strong tool in preventing the spread of COVID-19

By Kitty Mayo

Experts say that data sharing, particularly in the form of contact tracing, is a necessary component of safely reopening the economy and containing the COVID-19 virus. However, with many in the United States reluctant to share their personal information and health status, the campaign to digitize contact tracing is lagging.

Dr. Cathy McCarthy, associate dean for research at University of Minnesota Medical School, Duluth, says that getting accurate data in the early stages of an epidemic is of the utmost importance.

“We want our policy makers making informed decisions, and right now we have so little information. We need individuals to contribute information about their exposure to COVID-19,” she said.

As an ethicist and genetic researcher, McCarthy understands concerns about individual medical information, and how that could affect a person’s employment, insurance and even credit. “People should have privacy concerns and should be fully informed of the implications of taking a test. If they test positive, even without symptoms, they have to take 14 days off of work, and what if they don’t have sick leave? If they tested positive,” McCarthy said. “Ethically, we need to protect workers.”

Predictive modeling suggests that 50 percent adoption would not be necessary for virus containment; however, experts agree that any contact tracing aid could slow the spread and lessen impacts.

After Gov. Tim Walz ordered a survey of patients at the request of Minnesota law enforcement agencies, he faced blowback from those same agencies when extra privacy measures were put into place, including gaining patients’ consent before being traced.

“The development of predictive modeling and the release of patient data at the request of Minnesota law enforcement said the procedure was slow and inefficient. The executive order was put in place to allow first responders to take precautions at the homes of those assumed to be contagious. While the Minnesota Department of Health has kept COVID-positive identities private, going so far as to give only a patient’s county of residence, they are now sharing more information authorities. The addresses where a positive case has been identified and remains contagious is being shared with dispatchers, who pass that along to first responders. There’s another choice to staying home forever with a collapsing economy. It’s testing with highly accurate contact tracing, and isolation of just those who need to be quarantined.

Contact tracing is not a new idea. It has been used on a large scale to contain the 2014-16 ebola outbreak in West Africa and has been at the heart of effective COVID-19 containment in countries like South Korea. As a public health strategy, it is well understood as an effective tactic to track the train of transmission by tracking down all the contacts of an infected person.

The virus can be transmitted very rapidly, elevating the need to quickly identify potentially exposed individuals. Some people can be contagious several days before they have symptoms (asymptomatic), and some contagious people never have any symptoms (asymptomatic). The time between onset of symptoms from one infected person to another is relatively short at about four days, increasing the need for tracing to happen quickly to cut off new routes of transmission.

Once a positive test result is discovered, findings are sent to the Minnesota Department of Health. That’s when contact tracers place a call to the person with the positive test and begin a series of questions intended to identify other people with whom they have been in recent contact. So far, that process has been moving very slowly in Minnesota, with up to four days elapsing until MDH makes the first call, and more time elapsing before contacts are reached.

Traditional contact tracing via phone calls remains a vital part of the process. However, that process moves too slowly to be the sole tool for effective containment. The gold standard is to test all contacts from those who have tested positive.

Smartphones to the rescue

Smartphone technology is uniquely amenable to effective contact tracing. Such apps can sound ominous on the face of it, as though we would be giving up our privacy. But smartphone experts say that with adequate measures and open design, it would be minimally invasive.

Exhalation of the virus into the air is of the utmost importance. It has been used on a large scale to contain the 2014-16 ebola outbreak in West Africa and was slow and inefficient.

“The idea is to have a large number of devices spread across the population that can constantly measure if you have the virus, how long you have it and how far you’re spreading it,” Peterson said.

Transmission of COVID-19 is most likely through respiration: Each breath that an infected person exhales has a certain load of the virus. When a contact breathes in that infected air for a certain period of time, their chances of contracting the virus increase. That means the parameters are how close the two people are, and for how long – variables that smartphones measure well.

Bluetooth vs. GPS

“You don’t necessarily know who you have been close to in public spaces, but both GPS and Bluetooth technologies can keep track of that easily,” Peterson said. GPS tracking relies on correlating an individual’s location via satellite with other GPS signals. While highly reliable, it is also slightly more invasive than tracking via Bluetooth.

Bluetooth uses short range radio signals, emitting a random identifier number to other nearby Bluetooth devices. If an app user decides to engage the alert system, a search of that phone’s database identifies all the other random identifier numbers within the determined range and time to send the alert.

Apps for contact tracing work at the behest of someone who has tested positive. They push the “go” button and the app will automatically alert anyone they have been in contact with, close enough and long enough, within a set number of days. The contacts do not know who the alert is issued to – that is the alert’s strength.

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