

The Implementation of Campus Contact Tracing to Track COVID-19 Cases

08/24/2020

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Key Points

- **Contact tracing is a helpful tool to mitigate the spread of COVID-19 on college campuses**
- **Contact tracing has worked in previous epidemics such as the SARS, smallpox, and Ebola epidemics**
- **Contact tracing can be done manually or digitally through various platforms**

As colleges plan to reopen in fall 2020 using either in-person or hybrid models of learning, parents and students are concerned about the ability to contain the spread of COVID-19 amid a student body that will likely be highly interactive, even with physical distancing protocols in place.

The goal of contact tracing is to minimize the spread of COVID-19 by identifying potentially infected cases and preventing secondary transmission to close contacts¹. Mathematical models of the pandemic show that successful contact tracing combined with increased testing to effectively quarantine positive cases of COVID-19 may be able to completely end the epidemic². Only about half of the infected cases show immediate symptoms, meaning that the remaining half are asymptomatic and will unknowingly contribute to the spread of the virus². Even if someone is asymptomatic, contact tracing data will be able to track other possibly infected cases and authorities can proactively test for potential cases of COVID-19 on campus^{1,2}.

In previous years, contact tracing has been used to track and mitigate the spread of smallpox, HIV, certain STD's, Ebola, and the SARS epidemic³. In a closer look at the elimination of smallpox, a computer simulation study showed that through contact tracing and isolation mechanisms, smallpox cases were able to be eradicated in half a year⁴. Using this model, scientists believe that contact tracing, "...decisively contributed to eradicating smallpox in many countries"⁵ and can do the same for COVID-19^{3,4}.

Contact tracing can be done in two ways: digitally or manually. Current manual methods recommended by the CDC involve asking infected individuals who they have been in contact with and testing them⁶. The drawback to this method is that asymptomatic individuals may not know who they possibly infected. An alternative method is a digital app currently being developed by Apple and Google that can identify both symptomatic and asymptomatic cases using Bluetooth to track proximity to infected individuals². Implementing either method of contact tracing will be helpful to mitigate the spread of COVID-19 at Marquette and on other college campuses.

Figure 1: Manual contact tracing method that tests and quarantines possibly infected individuals after interviewing patients with COVID-19.

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

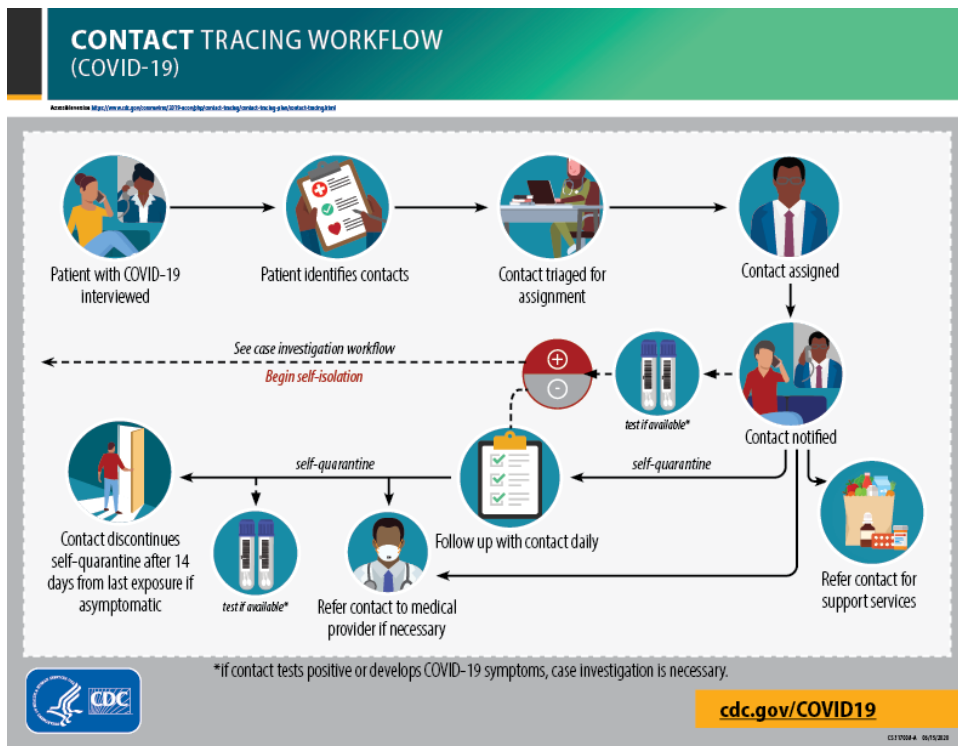
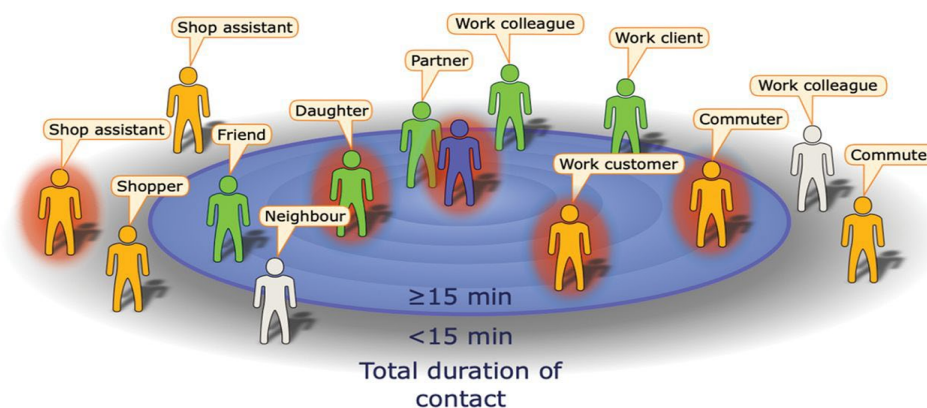


Figure 2: A model of how digital contact tracing tracks and sorts interactions by time of contact (over or under 15 minutes) and contact distance. The circles represent duration of contact with the individuals in the smaller circles being exposed for the longest time and the individuals in the larger and farther circles exposed for a shorter time or a period of less than 15 minutes. The green individuals are the identifiable individuals meaning that infected people can remember and identify that the green figures might have been exposed. The orange individuals are unidentifiable individuals meaning that the infected cases might not remember that they were in contact with that person. The gray individuals are people who were not exposed for a long time but may be infected due to the frequency of the contact rather than the duration. Infected individuals are shown with a red halo. This data would be used to track the unidentifiable individuals to test and quarantine them and stop the spread of COVID-19.

Graphic: <https://jech.bmj.com/content/early/2020/06/16/jech-2020-21405>



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