

A Need for Contact Tracing Research

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It has now been four months since the first known case of COVID-19 was detected in the US and we have reached a tipping point. Behind us is the initial panic, depletion of resources, and surge in case numbers, ahead of us is a long road to recovery, one for which we do not have a road map. As public health experts and state officials in Delaware work through a plan for the state to safely reopen, weighing considerations of health against those of economics, it has become clear that contact tracing will play an insurmountable role in ensuring public safety and disease mitigation during the reopening phase.

Contact tracing is a process that involves identifying and seeking out individuals who may have been exposed to a disease through contact with an infected person.¹ Initially, a newly confirmed case will be contacted by a public health official, a ‘contact tracer,’ who will ask for a list of individuals with whom that person might have come into close contact during their contagious phase. Contact tracers then reach out to exposed individuals and ask them to self-quarantine and monitor their own symptoms for, in the case of COVID-19, two weeks following the date of exposure. This ensures that those exposed persons are aware of the risks their exposure presents and that they will not go on to spread the disease if they did indeed contract it from the infected individual.

Contact tracing is an essential practice when trying to flatten the curve of a disease outbreak and can help hugely in bringing down the R_0 value (the number of people to whom each infected person goes on to spread the disease).¹ It is practiced routinely when dealing with several other diseases, including sexually transmitted infections and the Ebola Virus Disease (EVD).^{2,3} While models of contact tracing vary based on the mode of transmission and the contagiousness of the disease in question, their study is useful, allowing us to construct policies and determine best practices for future disease outbreaks.

For the purposes of COVID-19, the best model we can look to is that which is used to combat EVD. The EVD contact tracing framework, developed by the World Health Organization (WHO) and implemented in West Africa at the epicenter of the outbreak, utilized health professionals who were trusted in the community to identify, trace, and isolate potential EVD contacts.² The model lays out clear criteria to classify exposure and ensures follow-up with contacts for 21 days following a potential exposure, working efficiently to halt the spread of disease. EVD, unlike COVID-19, is spread through the transfer of bodily fluids and can take several days, sometimes up to 3 weeks, for symptoms to onset. Moreover, EVD’s high morbidity and mortality rates made contact tracing imperative to curb the spread of disease.⁴

Where the contact tracing approach for the novel coronavirus must differ results from the sheer number of cases to be tracked, as well as the presentation of the disease itself. Delaware alone has seen over 10,000 confirmed cases to date, a number we know to be an underestimate due to a lack of testing available in the initial stages of the disease spread.⁵ Moreover, because of the number of people who are either asymptomatic or experience only mild symptoms, it is significantly harder to identify cases of COVID-19 than EVD.⁶ Indeed, studies conducted in Wuhan, China and on an Australian cruise ship showed the percentage of asymptomatic cases to

be 42% and 81% of all cases respectively.^{7,8} Thus, in order to effectively tackle these hurdles, we must disperse contact tracing teams throughout the state.

Contact tracing teams are made up of contact tracers, disease intervention specialists (DIS), and epidemiologists. Contact tracers may be laypeople and participate in the brunt of the contact tracing labor; that is, identifying and contacting exposed persons.¹ DIS oversee contact tracers in clustered geographic locations, and epidemiologists oversee DIS, taking a high-level view of the disease spread. In the case of COVID-19, the number of contact tracers, disease intervention specialists, and epidemiologists needed to effectively perform contact tracing across the country is unprecedented. According to a recent report from Johns Hopkins University, Wuhan, China, employed 9,000 contact tracers for a city of 11 million — that's one contact tracer for roughly every 1,222 people.⁹ Applying that same ratio to Delaware, with upwards of 973,000 residents, would mean hiring and training a team of nearly 800 contact tracers. The reality we are seeing is job postings for upwards of 200 contact tracers across the state. While this is certainly a large undertaking, it comes at a time when many Delaware residents are unemployed; ready and willing to rise to the task.

Primary purpose aside, COVID-19 contact tracing also presents Delaware with rare research opportunities. Contact tracing on this magnitude has never been attempted and as a result we are entering this process with limited knowledge on best policies and practices. Knowledge from small-scale contact tracing efforts has certainly been important as a basis for our primary response in this field, however, as time moves on, it will become imperative that we have research conducted on contact tracing in the COVID-19 pandemic itself. This will allow public health officials to make empirically sound recommendations for the distribution of funds and resources throughout the state.

This research will inevitably take many forms, and will hopefully lead to new and strengthened partnerships between research institutions and local government. Research into contact tracing will allow Delaware, and the rest of the US, to determine how to best reach potentially exposed persons, share information about the pandemic and risks incurred through exposure without inciting excess fear, and enforce self-quarantine and self-isolation to halt the spread of disease. This information will be especially necessary when looking at low-income and hard to reach populations who might not have stable phone access or permanent addresses.

In addition, the pandemic presents a unique opportunity for contact tracers and researchers to address other aspects of social determinants of health. With thousands of people's health data being tracked over time, we will have the chance to view public health trends on an unprecedented scale. While in the past it has been difficult to obtain and utilize comprehensive health data due to regulations and closed data agreements, COVID-19 contact tracing may present an opportunity for this field to open. If contact tracers were to ask a short series of questions relating to people's general health at the end of each outreach call, they would not only be able to link those callers to necessary services but, with consent, pass that data back to public health researchers. This would allow for study of the pandemic's impact on mental health, its effects on people accessing basic needs, and other social determinants of health research. It would be remiss to not examine the positive impacts that comprehensive public health data sets gathered through contact tracing efforts could have on our communities.

The future effects of the COVID-19 pandemic on the Delaware community tie closely with our ability to mobilize a large-scale contact tracing effort across the state. It is up to us, public health

professionals, to make the most of this opportunity and learn more about the populations we serve. We have the chance to not only halt the spread of disease, but to better understand where public health practices are falling short. It is time for us to open the world of data and loosen regulations, so that we can fully utilize the wealth of information gained from the pandemic to help improve the health and happiness of all Delaware communities.

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