Strategies for Contact Tracing COVID-19

ABT ASSOCIATES

The Challenge

The COVID-19 pandemic is causing global disruptions unlike anything seen in the past 100 years. Its impacts will result in a world that differs in a variety of ways compared with just a few months ago. These changes include families and communities upended by lives lost and a host of coronavirus-related health issues. Data have shown significant increases in stress, anxiety, depression, and other mental health conditions, as well as major disruptions in employment, economics, housing, food security, and the education system.

To effectively limit the spread and impact of the virus, health officials need to identify, track, and notify persons who have had contact with individuals testing positive for COVID-19.[1] Contact tracing and notification are public health interventions proven to reduce the spread of diseases such as tuberculosis and Ebola, viruses such as the Human Immunodeficiency Virus (HIV), and other sexually transmitted infections (STI).[2] Contact tracing includes identifying exposed individuals, ensuring appropriate testing, following up with exposed individuals to determine disease status, and linking those who test positive to appropriate treatment. Abt has conducted contract tracing and notification for the aforementioned diseases and more.

Given the scale of COVID-19 infections in the U.S., health departments at the city, county, and state levels require substantially increased resources to meet current needs for contact tracing. What's more, there is no clear "one size fits all" approach that lends itself to rapid and effective tracing. The most effective method of capturing data for contact tracing will likely vary from locality to locality based on respondents' access to resources such as internet connectivity, their trust and familiarity with local governing bodies and health departments, language, etc.

To meet this critical challenge, public health departments need expanded capacity in their contact tracing infrastructure, data capture tools, workforce, and coordination, as well as training and support through customized technology-based solutions. As a multi-disciplinary consulting and research firm with a 55-year record of improving the quality of people's lives worldwide, Abt is well-positioned to provide a broad range of custom, tailored data capture tools and technical assistance to public health departments wishing to expand their COVID-19 contact tracing capabilities. We are known for applying rigorous research methods to solve complex challenges. Our dedicated, client-focused team has the expertise in public health surveillance, data collection methodology, and technical assistance needed to develop and manage complex contact tracing protocols.

The Abt Approach to Contact Tracing

The essence of contact tracing is identifying and reaching out to a base of infected individuals and, via interviews with those individuals, identifying contacts they may have had. That process is then repeated with those contacts – building a larger and larger base of potentially exposed individuals. Our approach builds on contact tracing techniques that have proven effective with past outbreaks, but also allows for customization to meet the specific needs of each locality, and for additional follow-up with contacts to determine if testing was completed and to identify additional contacts upon positive test results. (See Figure 1.)

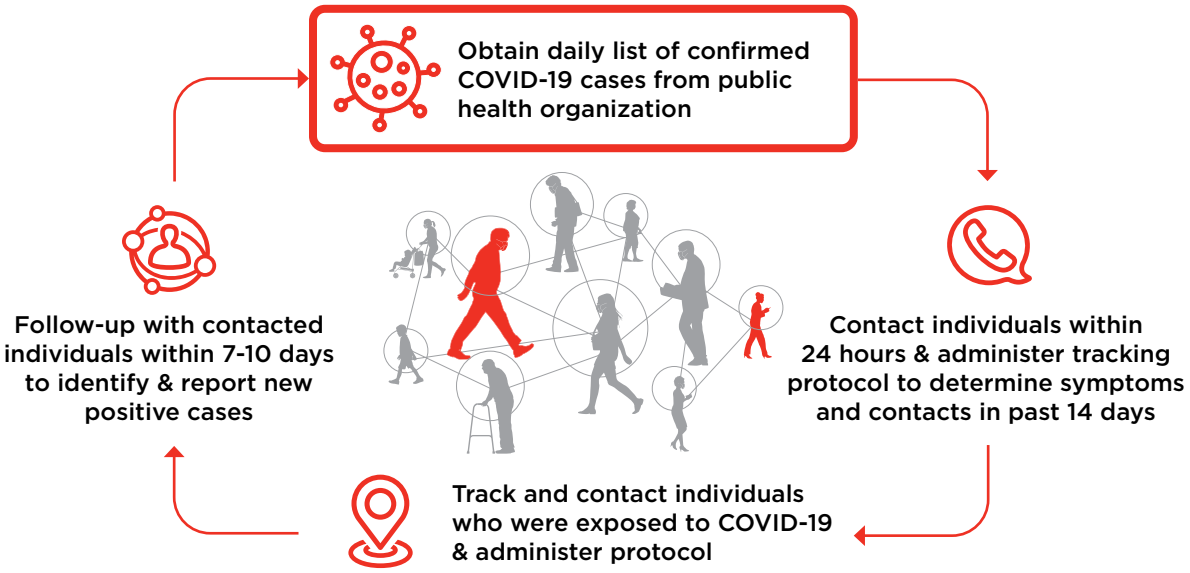

Figure 1. Key Steps in Abt Approach to COVID-19 Contact Tracing

1. First, working with the appropriate public health agency, we obtain daily listings of individuals who tested positive for COVID-19 as well as their contact information (e.g., address, telephone number and, ideally, email address). This continually updated list serves as the starting point for the tracing effort.

2. Second, we contact these individuals and administer a protocol consisting of an explanation as to why we are contacting them and the importance of the information they will provide, a short set of questions to capture their current symptoms and quarantine status (note that these questions can be customized to meet the health agency's specific information needs), and a rostering of individuals with whom—and/or places where—the individual may have come into contact with others while they were infected. We will collect as much detailed information as possible, such as names, addresses, telephone numbers or any additional information to help in identifying and following up with potentially exposed individuals.

3. Third, leveraging the information obtained from the infected individual, combined with additional tracing resources at Abt's disposal (such as commercial databases, geographic information, etc.), we will trace and attempt to contact as many of the potentially exposed individuals as possible. Upon contact, we will administer a similar protocol as above, tailored to remain sensitive to the fact that these are individuals who may not know they were exposed to COVID-19. Individuals will be provided with information on how to obtain testing in their area and encouragement to do so.

4. Fourth, we will re-contact these individuals 7-10 days after the initial contact to determine if they were tested and if the results were positive. Individuals who indicate that they've tested positive will then be asked about their contacts in the past 14 days in the same manner as those in step two above, and the contacting effort will continue and build upon these new potential exposures.

This "snowball" approach allows us to identify and alert not just those exposed to individuals who tested positive and are in the public health database, but to continue to track those exposures to the second, third, and fourth levels and beyond–until no additional positive cases are identified in that cluster. As our experience with HIV and TB-related contact tracing projects has demonstrated, this is an extremely effective and efficient means of tracking the spread of the virus so that pre-emptive measures can be taken to slow the pandemic and ultimately reduce the number of new cases.

Abt's Contact Tracing Expertise & Capabilities

Coordination of Contact Tracing Efforts

To ensure deployed contact tracing efforts are effective, Abt recommends that significant efforts be made to facilitate COVID-19 testing, confirm test results, and follow-up with confirmed positives to discuss isolation procedures and/or identify appropriate healthcare services. To accomplish this, public health departments will need additional support to coordinate contact tracing efforts, from initial contact to follow-up appointments, testing and linkage activities, and coordination among community stakeholders and engagement efforts.

Data Capture

Abt maintains a broad array of data collection capabilities, including telephone, web, in-person, text, and Interactive Voice Response (IVR) surveys. Our extensive expertise managing mixed-mode data capture efforts and large interviewing workforces allows us to tailor the data collection approach to the contact tracing needs required for any individual community.

For effective and efficient contact tracing, we recommend a combination of web and telephone surveys.

Web surveys provide the ability to reach out to a broad set of individuals quickly and at much lower cost than interviewer-administered surveys. Information with a link to a web survey portal can be sent via either the mail, email, or text (where email addresses or telephone number for text are available and the individual has given the public health agency permission to contact them via that method). Respondents can log in to a web portal via any internet-accessible device—laptop, tablet, smartphone, etc.—to complete the information collection, including the rostering of potential contacts. Moreover, our web surveys can be programmed in as many as 40 different languages to meet community needs. We believe this to be an effective approach for first contact of those coming from the list of positive cases provided by the public health agency. A web approach can also be used to reach secondary contacts where an address may be available, but no telephone number can be identified. The goal of the web survey approach is to cast a wide net quickly to collect as much information as possible with the most cost effective methodology.

Telephone surveys with trained contact tracing interviewers would be used for the remainder of the contacting and information collection, including those on contact lists from the public health agency who do not respond to the web survey within 7 days; those on the initial contact list who may be in known "hot spots" or other priority geographies; and for first contact with those who may have been exposed to individuals with positive tests, where we might expect respondents to have numerous questions best answered by a trained interviewer. This allows us to target the use of live interviewing where it will have the most impact. Moreover, our cloud-based, FISMA Moderate security infrastructure allows us to expand our virtual call center capability to fit the labor needs of the effort and locate local trained contact tracing interviewers as needed.

Technical Assistance

Once public health agencies identify and hire staff to conduct contact tracing, they need to deploy detailed training materials quickly. Abt is a trusted partner to many government health agencies, including (CDC) and the World Health Organization (WHO), who count on us to help develop and administer pandemic response training materials. From our substantial experience, all training materials developed for individual contact tracing efforts must ensure staff members complete and correctly record tracing data and do so consistently. Training materials should also address important social and cultural humility considerations that are essential for conducting contact tracing activities among a diverse range of communities.

Training topics and tools needed for successful tracing include:

- Tracing record management (forms, coding cases in a computerized system, etc.)
- Data capture procedures
- Reference guides and materials
- Personal protective equipment (PPE) application, use, and maintenance
- Cultural competence and humility
- Resource materials to be left behind with tracing subjects

Monitoring and Evaluation of Contact Tracing Efforts

Abt strongly recommends a thorough monitoring and evaluation of contact tracing program activities to provide critical knowledge to public health officials. A mixed-methods evaluation strategy of COVID-19 contact tracing programs will enable state and local public health officials to identify effective tracing and testing tactics and lessons learned and receive rapid feedback to support measurable program improvements. Rapid integration of evaluation lessons will be critical to changing the course of the pandemic. The monitoring and evaluation strategy should rely on well-established methods while being responsive to the changing needs of the contact tracing program. Such a monitoring and evaluation strategy would include:

- Social and digital media monitoring
- Feedback from community stakeholder interviews
- Feedback from contact tracer interviews
- Contact tracing data performance analytics
- Brief follow-up surveys of contact tracing respondents/subjects

Why Abt?

- Founded in 1965, Abt is one of the premier health research and consulting organizations in the world. We apply our energy, experience, expertise, and creativity to help our clients make better decisions and deliver better products and services.
- Abt is a recognized expert in all aspects of data capture, management, analysis, and dissemination, including survey research, administrative data, qualitative methods, statistical modeling, geographic information system mapping technology (GIS), data visualization, machine learning, and natural language processing.
- Abt has world-recognized subject matter experts in the areas of health, housing, homelessness, education, environment, food security, and governance, who can assist with all phases of strategy, design, analysis, and interpretation of findings.
- We routinely work with state and local governments and foundations to collect, analyze, and disseminate pertinent and sensitive health, welfare, and demographic information that is used to develop and evaluate policies and programs.

Example Projects

2018 CDC/WHO Workshop in Tunisia

Abt partnered with CDC and WHO to develop training materials for regional pandemic preparedness activities. We also facilitated training with participants from Ghana, Morocco, Oman, Tanzania, and Tunisia to improve their action plans and infrastructure.

2020 CDC COVID-19 Research

Using the pandemic influenza research network Abt helped CDC establish in 2013, we're collaborating with a dozen healthcare system research partners across the U.S. to conduct five cohort studies among vulnerable populations, including healthcare personnel and first responders, pregnant women and infants, middle-aged and older adults, older adults in continuing care retirement communities, and households. The studies are assessing the transmissibility of infection, rates of infection and illness for key population groups, the clinical epidemiology of the disease, and characteristics of medically and non-medically attended COVID-19 cases.

CDC's Zika Domestic Readiness Initiative

Abt carried out cutting-edge formative research to inform culturally appropriate messages and materials, and designed multi-modal campaigns to maximize reach and coverage. With advance testing, we published ads within two days of the announcement of the first U.S. case in Wynwood, Fla., and responded even faster to cases in Miami Beach. The campaign used Google Ads to hyper-target audiences through animated banner ads, video, Facebook, Twitter, and Instagram ads and reached broader audiences through in-flight magazines, newspaper and radio ads, billboards, bus shelters, and posters in malls. Abt evaluated performance metrics to inform mid-course corrections and provide lessons learned for future risk communication campaigns.

Endnotes

1 https://www.whitehouse.gov/openingamerica/

2 Muller J., Kretzschmar M., Dietz K. Contact tracing in stochastic and deterministic epidemic models. Math Biosci. 2000; 164:39–64; Eames K.T., Keeling M.J. Contact tracing and disease control. Proc Biol Sci. 2003;270:2565–2571.

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