


Rapid COVID-19 Testing and On-site Case Investigation and Contact Tracing in an Underresourced Area of Salt Lake City, Utah, December 2020–April 2021

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Abstract

This case study describes how we paired free SARS-CoV-2 rapid antigen testing with on-site case investigation and contact tracing at a drive-through site in an underresourced area of Salt Lake City. Residents of this area had lower rates of employment and health insurance and higher rates of poverty than in the Utah general population. People were given an option to remain on-site and wait until their test results were ready. If a vehicle occupant received a positive test result, the case investigation occurred on-site; contact tracing with the other vehicle occupants was also initiated. People were provided resources to support isolation and quarantine. Bilingual staff who spoke Spanish were incorporated into the workflow. From December 2020 through April 2021, public health staff administered 39 587 rapid tests; 4094 people received a positive test result and 1133 stayed for on-site case investigation. More than half (60.5%) of people with a positive test result who agreed to stay for on-site case investigation were Hispanic or self-reported belonging to a non-Hispanic racial minority group (American Indian/Alaska Native, Asian, Black or African American, Native Hawaiian or Other Pacific Islander, or other racial identities). Pairing rapid antigen testing with on-site case investigation and contact tracing is feasible and improved the timeliness of case investigation by ≥ 1 day. On-site vaccination services were later integrated. Future emergency responses might consider assisting underresourced communities with on-site services that provide convenient and accessible public health interventions. By providing dependable and reliable services, we were able to achieve buy-in and become a consistent resource for those in the community.

Keywords

COVID-19 testing, rapid on-site evaluation, contact tracing, health services accessibility, public health practice

In December 2020, the Utah Department of Health, in collaboration with the Salt Lake County Health Department, Utah National Guard, and Centers for Disease Control and Prevention (CDC), established a first-of-its-kind COVID-19 testing site in an underresourced area of Salt Lake City, Utah. Residents of this area had low rates of employment and health insurance and high rates of poverty.¹ Located at the Utah State Fairpark (hereinafter, Fairpark) amid neighborhoods of relatively low income and high unemployment,¹ the drive-through operation offered free SARS-CoV-2 rapid antigen testing. The Rosepark and Glendale neighborhoods within Salt Lake County, Utah, had 102 SARS-CoV-2 cases per 100 000 population in November 2020 (Utah average was 84 cases per 100 000 population).² Tested people could depart immediately after specimen collection or stay to receive the results in person. Those who stayed and received

a positive test result took part in on-site case investigation; other car occupants took part in either on-site contact tracing or traditional contact tracing via telephone. Resources to support isolation and quarantine were also part of this public health outreach activity.

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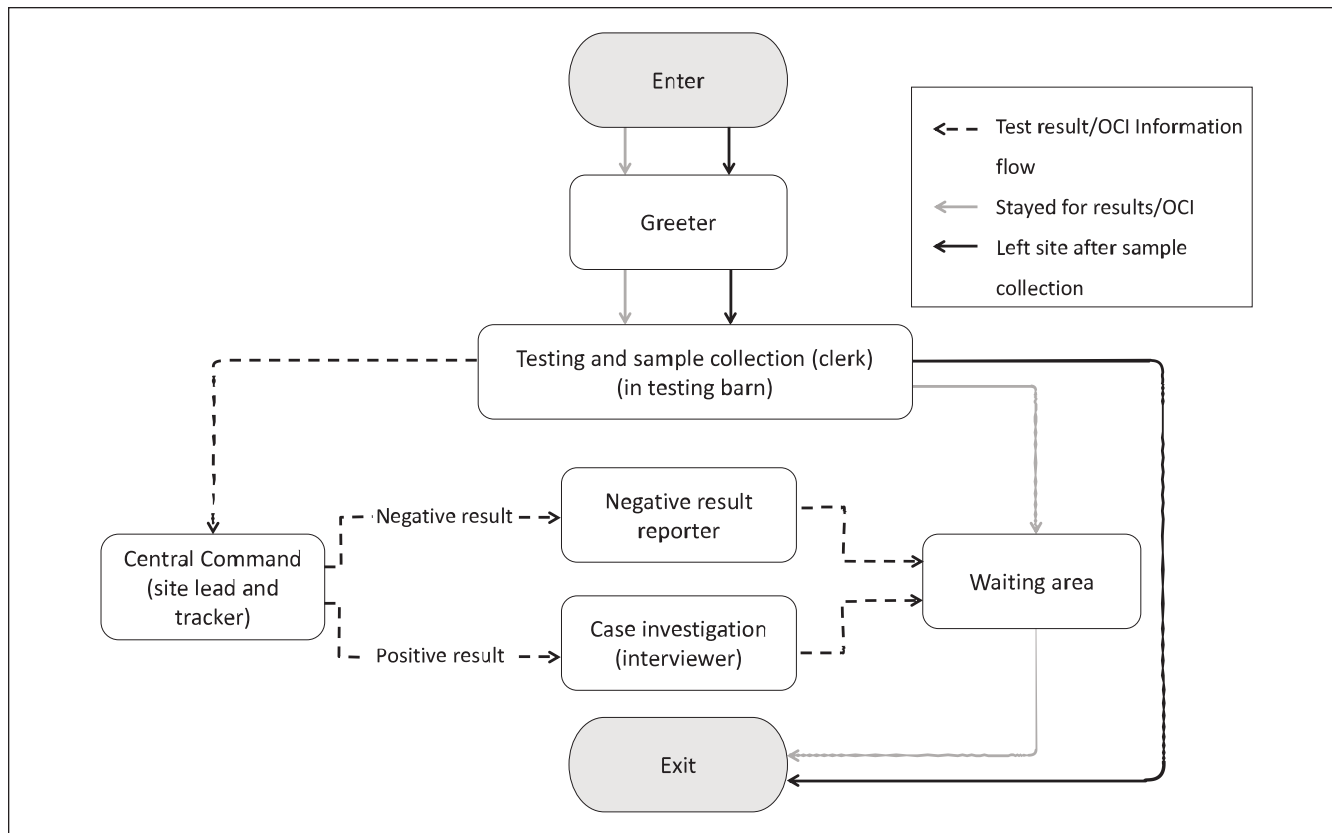


Figure. Flow of SARS-CoV-2 testing and COVID-19 case investigation and contact tracing operations at the Utah State Fairpark, December 2020–April 2021. OCI, on-site case investigation.

Purpose

This case study describes the workflow of a drive-through COVID-19 testing site and characteristics of the people who stayed for on-site case investigation in Utah during December 4, 2020, through April 30, 2021.

Methods

This site operated Monday through Saturday from 11 AM to 6 PM. On-site case investigation involved approximately 10 Utah Department of Health staff daily from a roster of 40 who had been trained for COVID-19 case outreach work; 19 staff members spoke Spanish. Spanish-speaking staff were always present during operating hours.

Targeted campaigns to promote the Fairpark testing site to Salt Lake City residents included social media and radio announcements. We established the drive-through area for sample collection and testing (Figure) in a vacant rodeo barn. Walk-up testing was available for those who did not arrive by car.

Before or upon arrival, people completed a mobile testing registration and consent form on the Utah.gov website before being tested; people without an internet-enabled smartphone completed their registration using a provided digital tablet. Adult guardians provided consent for

children aged ≤ 17 years. During the registration process, the secure REDCap survey tool form was available in English and Spanish and collected data on name, sex (male/female), date of birth, ethnicity (Hispanic), race (American Indian/Alaska Native, Asian, Black or African American, Native Hawaiian or Other Pacific Islander, White, Other), residential address, telephone number, and self-reported COVID-19 symptoms. People were also asked to provide an email address and consent to receive test results through a secure email. Alternately, people could opt to stay and receive paper results at the testing site.

Upon arrival, a greeter determined if a Spanish-speaking staff member was needed and then verified the online registration, explained the testing process, and offered people the option to remain on-site for their results or immediately depart after specimen collection. Those who opted to remain on-site had a tracking card placed on the vehicle. Whether the vehicle would depart or remain after specimen collection was also noted in the secure REDCap tracking spreadsheet that was accessible to other on-site staff. Once the vehicle entered the testing barn, people underwent midturbinate sampling performed by health department testing teams, with the swabs submitted for a COVID-19 rapid antigen test³ in a dedicated separate area.

Table 1. SARS-CoV-2 testing and on-site case investigations at Utah State Fairpark, December 2020–April 2021

Month	No. (% of tests administered)			No. of people with on-site case investigation		
	Rapid antigen tests administered	People who stayed on-site for results	Positive results	All (% with positive result)	Hispanic (% of all)	Other races and ethnicities ^a (% of all)
December ^b	7455	—	1082 (14.5)	—	—	—
January	14 193	2442 (17.1)	1705 (12.0)	417 (24.5)	137 (32.9)	106 (25.4)
February	7898	2612 (33.1)	677 (8.6)	330 (48.7)	90 (27.3)	81 (24.5)
March	6094	2428 (39.8)	374 (6.1)	226 (60.4)	79 (35.0)	84 (37.2)
April	3947	1633 (41.4)	256 (6.5)	160 (62.5)	54 (33.8)	54 (33.4)
Total	39 587	9115 (28.4) ^c	4094 (10.3)	1133 (38.3) ^d	360 (31.8)	325 (28.8)

Abbreviation: —, does not apply.

^aThese 325 included 18 American Indian/Alaska Native, 28 Asian, 42 Native Hawaiian or Other Pacific Islander, and 183 people of multiple races. All data on race and ethnicity were self-reported, and data for 39 people were not reported or otherwise unknown.

^bDashes indicate that December data were excluded because systematic tracking of on-site case investigation did not start until December 23, 2020.

^cProportions derived from January observations and forward (n = 32 132) because of incomplete December counts.

^dProportions derived from positive January test observations and forward (n = 2961) because of incomplete December counts.

Tested people not wishing to wait on-site exited Fairpark and were notified of their results 30 to 60 minutes later by secure email; if the test result was positive, they were automatically added to the Utah Department of Health disease surveillance database, EpiTrax, for subsequent case interview. These people were contacted through traditional case investigation and contact tracing methods (ie, telephone, text message, and email surveys) by off-site contact tracers. Those willing to remain on-site were directed to a parking area where they waited 15 to 30 minutes for results. If all vehicle occupants received a negative test result, a negative result reporter would walk to the vehicle in the waiting area and provide paper results and educational materials related to potential exposures and next steps; then, the vehicle exited Fairpark. However, if ≥ 1 vehicle occupant had a positive test result, an interviewer would walk to the vehicle in the waiting area and provide the positive test result, offer related health counseling and assessment, and conduct an on-site case investigation interview. Any other occupants in the vehicle were immediately classified as close contacts and received an on-site contact tracing interview.

No external signage indicated to tested people that positive or negative test results were being delivered differently. Vehicles were spaced to maximize privacy during the interviews. Interviews were conducted through the car window with the use of standard personal protective equipment precautions (eg, gloves, eye protection, gowns, face masks); surgical or N95 masks were also provided to the person being interviewed.⁴ Interviewers used the standard case investigation and contact tracing forms adopted by health jurisdictions across Utah; the data were entered directly via digital tablets into Utah's disease surveillance system. The interview included questions related to exposure history, such as "Have you been in contact with someone who has tested positive for COVID-19?" and "Have you traveled within the past two weeks?" When multiple people were in a vehicle, verbal consent was first obtained from each person

before the disclosure of a result and then again, if applicable, at the beginning of the interview. If anyone objected to receiving a test result in a vehicle, then that individual would be asked to accompany the staff member to a more private area to disclose the result and conduct the interview. Any additional close contacts identified through the interview were subsequently notified of their exposure through the Utah Automated Contact Tracing System or by a remote contact tracer.

To support isolation and quarantine, bags containing face masks, hand sanitizer, disinfectant wipes, thermometers, and brochures describing support services were provided to people in vehicles where someone received a positive test result. In addition, referral could be made to a community health worker through the COVID-19 Community Partnership, a separate statewide project that could directly link people to a wider range of resources for urgent needs, such as assistance with rent, food, and utilities.⁵ Finally, once vaccination services were readily available, they were added to the site on a daily basis for those who were vaccine eligible based on Utah Department of Health and CDC vaccination guidelines. These combined services led to a one-stop-shop approach for reaching infected people.

This activity was reviewed by CDC and received a non-research determination in which institutional review board approval was not required for this project. The study was conducted consistent with applicable federal law and CDC policy; see, for example, 45 CFR part 46.102(1)(2), 21 CFR part 56, 42 USC §241(d), 5 USC §552a, and 44 USC §3501 et seq.

Outcomes

A total of 39 587 people underwent SARS-CoV-2 rapid antigen testing at Fairpark from December 4, 2020, through April 30, 2021. A total of 4094 (10.3%) people received a positive test result; 1133 of 3012 (37.6%) completed on-site case investigation before leaving Fairpark (Table 1).

Table 2. Demographic characteristics of people who registered for COVID-19 testing, had a positive result, and completed on-site case investigation at Utah State Fairpark, January–April 2021

Characteristic	Tests administered ^a (N = 39 587)	Positive result (n = 4094)	On-site case investigation (n = 1133)
Sex			
Male	19 367 (48.9)	2108 (51.5)	583 (51.5)
Female	20 103 (50.7)	1981 (48.9)	550 (48.5)
Age, median (IQR), y	29.4 (21.2–41.9)	30.9 (21.9–43.6)	31.3 (22.4–43.2)
Race and ethnicity			
American Indian/Alaska Native	566 (1.4)	72 (1.8)	18 (1.6)
Asian	1169 (3.0)	72 (1.8)	28 (2.5)
Black or African American	754 (1.9)	72 (1.8)	15 (1.3)
Native Hawaiian or Other Pacific Islander	1085 (2.7)	123 (3.0)	42 (3.7)
White	29 939 (75.6)	2933 (71.6)	808 (71.3)
Other	4587 (11.6)	656 (16.0)	183 (16.2)
Not reported or unknown	4643 (11.7)	166 (4.1)	39 (3.4)
Hispanic ethnicity	10 094 (25.5)	1381 (33.7)	360 (31.8)

Abbreviation: IQR, interquartile range.

^aDemographic information is based on what people self-reported when they registered with Utah.gov for SARS-CoV-2 testing, January 1–April 30, 2021. Some numbers might include duplicate tests for the same person if a person sought testing at Fairpark more than once during the 4-month period. As such, numbers add up to more than the total. All values are number (percentage) unless otherwise noted.

Demographic characteristics were available for the 39 587 people who registered for a test during January 1–April 30, 2021. Their median age was 29.4 years (interquartile range [IQR], 21.2–41.9), and 50.7% were female (Table 2). Three-quarters (75.6%, n = 29 939) of people self-reported non-Hispanic White race and ethnicity, 25.5% (n = 10 094) Hispanic ethnicity, and 11.6% (n = 4587) Other race. Similarly, among the 4094 people who received a positive SARS-CoV-2 rapid antigen test result, the median age was 30.9 years (IQR, 21.9–43.6), and 48.5% were female. Among the 1133 people with a positive test result who took part in on-site case investigation, the median age was 31.3 years (IQR, 22.4–43.2), 48.5% were female, 31.8% were Hispanic, and 28.7% self-reported as another racial minority group (American Indian/Alaska Native, Asian, Native Hawaiian or Other Pacific Islander, or multiple races).

The on-site case or contact interview averaged 18 to 20 minutes and fluctuated per the responses. On-site investigation and linkage to supportive services were generally completed within an hour of a person's arrival at Fairpark. By comparison, case investigation via telephone during the same period occurred a median 1 day but in some cases up to 15 days after the positive test result.

Lessons Learned

Timely testing, case investigation, and contact tracing can contribute to the prevention of SARS-CoV-2 transmission.⁶ We found that on-site case investigation improved the timeliness of case investigation by ≥ 1 day, providing an efficient approach for reaching infected people and, if present in the vehicle, some of their close contacts. By placing this activity

within an underresourced part of the city and involving public health staff who were bilingual in English and Spanish, we were also able to reach a demographically diverse group: more than half of people who stayed for on-site case investigation were Hispanic or self-reported belonging to a non-Hispanic racial minority group.

To better evaluate the effectiveness of similar efforts in the future, we plan and would recommend collecting certain data on the people with positive test results who were not interviewed on-site. Specifically, we would have liked to compare contact tracing outcomes for people who were tested elsewhere and interviewed via telephone only, people who were tested at Fairpark but interviewed via telephone after their departure, and people who were tested and interviewed at Fairpark. Nevertheless, the high rate of participation in on-site case investigation suggests that on-site services were well received by the community around Fairpark.

This case study had several limitations. First, we did not quantify participation rates for case investigation via telephone after a positive test result at Fairpark. Second, we were unable to compare the efficacy of on-site case investigation with that of other approaches. Third, although the sensitivity of SARS-CoV-2 rapid antigen tests can be low in this type of setting, the positive predictive value is high,⁷ ensuring that people who received a positive test result were likely not only infected but also infectious, underscoring the value of immediate on-site case investigation and contact tracing with other people in the vehicles.

We encountered several challenges during the implementation of the site. One challenge was finding an efficient method to relay test results to on-site staff who were stationed in different areas within our site. We overcame this challenge by

using secured Google spreadsheets, which allowed for real-time updates. Another challenge was achieving community buy-in for the services that we were offering. We used targeted promotional campaigns to promote the site, and we offered consistent times, locations, and services to establish ourselves as a reliable source of support during the pandemic.

Because of the success of this activity, the operation was extended for several months and was still in operation as of July 2022 (Monday–Saturday but with fewer hours). Additionally, on-site vaccination services for COVID-19 were incorporated in July 2021. Furthermore, this integrated approach to integrated testing and vaccination was implemented at 7 additional sites in the state. Future steps would be to compare the case rates of neighborhoods that used this on-site approach with neighborhoods that did not.

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Disclaimer

The findings and conclusions of this article are those of the authors and do not necessarily represent the official position of CDC.

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References

1. Gordon C. Health Improvement Index (HII). Utah Department of Health. March 13, 2019. Accessed July 20, 2021. <https://ruralhealth.health.utah.gov/2019/03/13/health-improvement-index-hii>
2. Utah Department of Health and Human Services. Overview of COVID-19 surveillance. Accessed July 12, 2022. <https://coronavirus-dashboard.utah.gov/overview.html>
3. Abbott. BinaxNOW COVID-19 Ag Card and NAVICA mobile app. Accessed July 28, 2021. <https://www.globalpointofcare.abbott/en/product-details/navica-binaxnow-covid-19-us.html>
4. Centers for Disease Control and Prevention. COVID-19 personal protective equipment (PPE). Accessed September 28, 2021. <https://www.cdc.gov/coronavirus/2019-ncov/hcp/using-ppe.html>
5. Utah Department of Health. COVID Community Partnership Project 2020: Outcomes of integrating community health workers into COVID-19 response efforts. 2021. Accessed August 3, 2021. <https://healthequity.utah.gov/wp-content/uploads/2022/02/CCPProject2020-2021.pdf>
6. Ferretti L, Wymant C, Kendall M, et al. Quantifying SARS-CoV-2 transmission suggests epidemic control with digital contact tracing. *Science*. 2020;368(6491):eabb6936. doi:10.1126/science.abb6936
7. Prince Guerra JL, Almendares O, Nolen LD, et al. Evaluation of Abbott BinaxNOW rapid antigen test for SARS-CoV-2 infection at two community based testing sites—Pima County, Arizona, November 3–17, 2020. *MMWR Morb Mortal Wkly Rep*. 2020;70(3):100-105. doi:10.15585/mmwr.mm7003e3