Large-scale Geographic Seroprevalence Surveys

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CDC wants to learn more about the percentage of people in the United States who have been infected with SARS-CoV-2, the virus that causes COVID-19 and to better understand how the virus is spreading through the U.S. population over time. Because infected people can have mild illness or may not get medical care or testing, CDC also wants to use this information to estimate the number of people who have been previously infected with SARS-CoV-2 and were not included in official case counts. To help answer those questions and others, CDC is collaborating with public health and private partners on a variety of seroprevalence surveys of different sizes, locations, populations studied, and purposes.

Seroprevalence surveys use serology (blood) tests to identify people in a population or community that have antibodies against an infectious disease. Antibodies are proteins that help fight off infections and provide protection against getting that disease again (immunity). If a person has SARS-CoV-2 antibodies in their blood, it means that person was likely previously infected with the virus, even if the infection was not recognized because it was mild or did not cause symptoms.

CDC is conducting seroprevalence surveys called “large-scale geographic seroprevalence surveys” in locations across the United States. The first seroprevalence surveys began in areas that first reported community transmission of SARS-CoV-2 in the United States; they are now being expanded to more regions. Descriptions of these surveys are provided below.

Commercial Laboratory Survey

About this survey

CDC is partnering with commercial laboratories to conduct a large-scale geographic seroprevalence survey that will first test clinical blood specimens from Washington State and the New York City metro region for SARS-CoV-2 antibodies. CDC, in partnership with state and local health departments, plans to expand this seroprevalence survey to an additional eight states, including California, Connecticut, Florida, Louisiana, Minnesota, Missouri, Pennsylvania and Utah.

The survey will include people who had blood specimens tested for reasons unrelated to COVID-19, like for a routine or sick visit blood test by commercial laboratories in participating areas from each of the 10 states. CDC will test about 1,800 samples collected from each of these 10 areas, approximately every 3–4 weeks. Researchers are looking to see what percentage of people tested already have antibodies against SARS-CoV-2, and how that percentage changes over time in each area.

Interpreting Serology Results from This Survey

There are limitations of this survey that should be considered when interpreting the results.

- People who have blood taken for routine screening or sick visits may not represent people from the total population in an area.
- Some results may be false positive results (the test result is positive, but the person does not really have antibodies to SARS-CoV-2), or false negative results (the person has antibodies to SARS-CoV-2, but the test doesn't detect them). False positive results are more likely change the survey results if it is an area where the percentage of individuals previously infected is relatively low; it could make it look like more people are infected in the community than really are.
- Results from seroprevalence surveys should **not** be interpreted to mean that people who have tested positive for having SARS-CoV-2 antibodies are immune. We do not know whether having SARS-CoV-2 antibodies provides protection against getting infected again. Other studies are planned to learn more about SARS-COV-2 antibodies, including how long they last, whether or not they provide protection against getting infected again, and if you get infected again, whether they can make that illness milder.
- While some seroprevalence surveys can look at risk factors for infection, such as a person's occupation or underlying health conditions, this seroprevalence survey was not designed to be able to provide that information. This survey will help us better understand the percentages of people who were previously infected with SARS-CoV-2 in the areas studied (that is called seroprevalence). CDC also will use this information to estimate the number of people in the areas sampled who have been previously infected with SARS-CoV-2, including those that may not have been reported in official case counts. Some of those people may not have been counted because they had mild illness or no symptoms and did not get medical care or testing.
- Finally, some seroprevalence surveys can show how long antibodies last in people's bodies following infection; this survey was not designed to provide that information.

Early results

CDC has begun receiving early results from Washington State and the New York City metro region from blood samples collected by commercial laboratories as part of routine patient care. As these data become available, tables and data charts will be added to this page to show the early antibody test results for patient specimens tested in these areas. This survey will continue to collect additional samples from selected areas over time. The survey will expand to include testing of samples from patients in additional geographic areas. The table below will be regularly updated as new seroprevalence survey results become available.

Blood Donor Survey

Preliminary results are expected in the coming weeks.

About this survey +

CDC is conducting a nationwide COVID-19 seroprevalence survey in 25 U.S. metropolitan areas, in collaboration with the National Institutes of Health (NIH), the Food and Drug Administration (FDA), Vitalant Research Institute (VRI), and large blood collection organizations, including Vitalant, American Red Cross, Bloodworks Northwest, and New York Blood Center. This is the largest nationwide COVID-19 seroprevalence survey to try and understand the percentage of people in the U.S. who may have been infected with the virus that causes COVID-19.

This seroprevalence survey will expand an ongoing National Institute of Allergy and Infectious Diseases (NIAID) and National Health, Lung and Blood Institute (NHLBI) funded project with VRI that involves the NHLBI REDS (Recipient Epidemiology and Donor Evaluation Study) program. The SARS-CoV-2 REDS project plans to test already-existing blood donation samples from Boston, Los Angeles, Minneapolis, New York City, San Francisco, and Seattle for SARS-CoV-2 antibodies each month for six months from March through August, 2020.

As part of this collaboration, CDC will provide technical assistance and financial support to VRI and collaborating institutions that will allow the survey to be expanded to 19 additional cities. These cities have not yet been finalized but will include major metropolitan areas from across the nation. Once the 19 additional cities are added, VRI and collaborating organizations will collect and test approximately 1,000 anonymous blood donation samples from each of the 25 total cities. They will test samples each month for 12 months, and again at 18 months. Nearly 300,000 samples will be tested overall. Because this survey will collect samples from major metropolitan areas across the entire country at different time points, its findings will help estimate the percentage of previous SARS-CoV-2 infections out of the total U.S. population. It also will track how the percentage of infections is changing over time.

Information on blood donations samples tested

When blood is donated in the United States, small samples are taken from each blood unit to find out the donor's blood group. The blood is also screened for infectious diseases to make sure the donated blood is safe for medical use. VRI and collaborating organizations will collect and test existing samples to see if there are antibodies against the virus that causes SARS-CoV-2. Specimen collection is scheduled to begin in June and continue until May 2021, with one final collection in November 2021.
Testing the same geographic locations each month over time will allow CDC to understand the percentages of people who have antibodies against SARS-CoV-2 at different points in time. This helps figure out the differences in infection rates around the country and over time. The results will help public health officials better understand how widespread the virus is, and how it is spreading.

CDC Seroprevalence Survey Types

CDC is collaborating with public health and private partners on a variety of surveys of different sizes, locations, populations studied, and purposes. The seroprevalence surveys CDC is conducting include:

- Large-scale Geographic Seroprevalence Surveys
- Community-level Seroprevalence Surveys
- Special Populations Seroprevalence Surveys

Learn more

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