Multistate Assessment of SARS-CoV-2 Seroprevalence in Blood Donors

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About this survey

CDC is conducting a nationwide COVID-19 seroprevalence survey in 25 U.S. metropolitan areas to understand the percentage of people in the United States who may have been infected with SARS-CoV-2, the virus that causes COVID-19.

This is the largest nationwide COVID-19 seroprevalence survey to date, and it will be conducted in collaboration with the National Institutes of Health, the Food and Drug Administration (FDA), Vitalant Research Institute (VRI), and large blood collection organizations, including Vitalant, American Red Cross, Bloodworks Northwest, New York Blood Center, OneBlood, The Blood Center, Versity, Blood Bank of Hawaii, Carter Blood Care, and Banco de Sangre de Servicios Mutuos.

This seroprevalence survey will expand an ongoing National Institute of Allergy and Infectious Diseases and National Heart, 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 existing blood donation samples from Boston, MA; Los Angeles, CA; Minneapolis, MN; New York City, NY; San Francisco, CA; and Seattle, WA for SARS-CoV-2 antibodies each month for 6 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 metropolitan areas including Atlanta, GA; Baltimore, MD/Washington, D.C.; Chicago, IL; Dallas/Ft Worth, TX; Denver, CO; Detroit, MI; Fargo, ND/Sioux Falls/Rapid City, SD; Honolulu, HI; Las Vegas, NV; Miami, FL; Milwaukee, WI; New Orleans, LA; Phoenix, AZ; Pittsburg, PA; Salt Lake City, UT; San Juan, PR; St. Louis, MO; Tampa/St. Petersburg, FL; and Tulsa, OK.

VRI and collaborating organizations will collect and test about 1,000 anonymous blood donation samples from each of the 25 total metropolitan areas. They will test samples each month for 12 months, and again at 18 months. About 325,000 samples will be tested overall. Because this survey will collect samples from major metropolitan areas across the country at different time points, its findings will help scientists estimate the percentage of previous SARS-CoV-2 infections out of the total U.S. population. It also will track how the percentage of previous infections is changing over time.

Information on blood donation 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 type and Rh type. The blood is also screened for certain infectious diseases to make sure it's safe for medical use. VRI and collaborating organizations will collect and test existing samples for antibodies to SARS-CoV-2. The serology test is different than the nasal swab test and cannot determine whether a person has SARS-CoV-2 infection at the time blood is

drawn. Instead, it provides information on whether a person was infected in the past. It typically takes 1 to 3 weeks after infection for a person with SARS-CoV-2 to produce detectable antibodies. Sample collection began in June and will 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 to SARS-CoV-2 at different points in time. This helps scientists 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.

Safety of US blood supply

Respiratory viruses, in general, are not known to be transmitted by blood transfusion. There have been no reported cases of transfusion-transmitted coronavirus, including SARS-CoV-2, worldwide.

Routine measures used to determine blood donor eligibility prevent people with respiratory infections from donating blood. For example, blood donors must be in good health and have a normal temperature on the day of donation. See FDA recommendations for deferral of blood donation among persons diagnosed with or suspected to have COVID-19 for more information.

Interpreting Serology Results from This Survey

This survey has limitations that should be considered when interpreting the results.

- People who donate blood are generally healthy, non-pregnant adults who may not represent people from the total population in an area.
- Antibody tests can sometimes give a positive result in people who were not previously infected with SARS-CoV-2 (which is more common in communities that have not had high infection rates). This is known as a false-positive result and can make it look like more people have been infected in the community than really were.
- A test can also give a negative result in people with a previous SARS-CoV-2 infection. This is known as a false-negative result. It is also possible that some people can be infected with SARS-CoV-2 and not make enough antibodies to be detected by the test. These factors can make it look like fewer people have been infected in the community than really were.
- 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 they provide protection against getting infected again, and, if re-infection is possible, whether the second infection is 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. 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 who 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.

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