



NEWSLETTER

Welcome to the Autumn 2021 edition of the COMPARE Newsletter

A lot has happened since the COMPARE study finished in 2017 and we're excited to tell you how your participation is yielding results and facilitating future studies. **Thank you for all your help!**

Research studies utilising COMPARE samples and data from the Blood Donors Studies BioResource

If you have had COVID-19, the disease caused by the new coronavirus SARS-CoV-2, or been vaccinated for COVID-19, then you will have antibodies. A diagnostic device—which could be called a lateral flow test, lateral flow device, lateral flow assay or lateral flow immunoassay, among other common names—can easily test if you have antibodies. **Antibody tests are used for population surveillance and might help in the future with individual risk assessment.**

Our researchers, in collaboration with Public Health England, used samples from the COMPARE study to test the accuracy of four SARS-CoV-2 antibody tests. The COMPARE samples were essential as they were collected before the emergence of the new coronavirus and thus will give a negative result. Head-to-head comparisons were performed in a laboratory setting using COMPARE samples and blood samples from key workers. The results showed a clear trade-off between sensitivity and specificity between the four antibody tests. Sensitivity is the ability of a test to correctly identify individuals who have antibodies; for example, a highly sensitive test means that there are few false negative results and thus fewer cases of the presence of antibodies are missed. Specificity is the ability of a test to correctly identify individuals who do not have antibodies. Notably, none of the four tests met the UK Medicines and Healthcare products Regulatory Agency's requirement of sensitivity >98% for the use of individual level risk assessment. However, the basis for this criterion is unclear and this study describes test sensitivity following natural infection, not after vaccination.

Research paper: <https://pubmed.ncbi.nlm.nih.gov/34098341>

Email: donorhealth@medschl.cam.ac.uk if you can't access any of the papers within this newsletter.

One aim of the Blood and Transplant Research Unit (BTRU) is to ensure blood donor health. Anaemia is a condition in which the number of red blood cells or the haemoglobin (Hb) concentration within them is lower than normal. Hb is needed to carry oxygen and if you have too few or abnormal red blood cells, or not enough Hb, there will be a decreased capacity of the blood to carry oxygen to the body's tissues. This results in fatigue, weakness, dizziness and shortness of breath, among other symptoms.

Blood donors must undergo a Hb test to ensure levels are not too low before donation. Blood services around the world use different tests and while the measuring performance of each test is important, the *strategy* when using these tests is also important. For the Selective Testing (ST) strategy, if a donor is tested and their measured Hb level is below a sex-specific donation threshold required for donation, then a second measurement should be taken and if that is below the threshold then a third measurement should be taken. The final measurement taken becomes the decision-making measurement for the donor. A second strategy, the Average Measurement (AM) strategy, uses the average of measurements for all donors. A third strategy is a combination of ST and AM (thus called the STAM strategy) and is similar to the ST strategy, which takes a new measurement if, and only if, the previous measurement is below the threshold, but an average of the measurements taken is used to define the donor's final decision-making measurement.



Research results within the BTRU, using data from the COMPARE study, recommend that the ST strategy is not used by blood services due to the biases incurred for donors close to the Hb threshold and that the AM strategy is the best strategy to use. However, a STAM2 strategy—defined as using a maximum of two Hb measurements—may be considered as an alternative to the AM strategy using a maximum of one Hb measurement (AM1) as it can increase specificity. In this study, specificity is defined as the proportion of donors with a “gold-standard” measurement above the threshold who also had a decision-making measurement above the threshold.

Research paper: <https://pubmed.ncbi.nlm.nih.gov/30175406>

Linking COMPARE data to electronic health records

During the COVID-19 pandemic our researchers have been using the Blood Donors Studies (BDS) BioResource (www.donorhealth-btru.nihr.ac.uk/project/bioresource) to investigate whether genetic and other factors affect the risk of developing COVID-19. This work is possible through the ability to link to data from electronic health records (www.donorhealth-btru.nihr.ac.uk/project/electronic-health-records). We currently receive data about COVID-19 test results, hospital treatment, Intensive Care stay, General Practice (GP) records and information on Deaths and Cancer diagnoses. We will also be receiving Antibody Testing data, Vaccination data and Stroke Audit data for COMPARE study participants to enable further research into COVID-19.

Update on TRACK-COVID study

In May 2020 we began recruiting individuals into our new study, TRACK-COVID (www.trackcovid.org.uk), which aims to: (1) determine the risk factors for infection of the new coronavirus (SARS-CoV-2) and (2) investigate why only some people have symptoms. The primary aim is to understand the frequency and

evolution of symptoms compatible with COVID-19, the disease caused by the coronavirus. The secondary aim is to define and monitor the evolution of antibodies to SARS-CoV-2 infection and vaccines.

~90,000 individuals previously recruited into the INTERVAL, COMPARE and STRIDES studies were invited to participate. As of July 2021, ~20,000 have consented and provided COVID-19-related information using an online questionnaire. Participants answer this questionnaire on a monthly basis and will be invited to participate until December 2021, which will generate useful data for analysing symptoms associated with new COVID-19 variants (i.e. Alpha, Delta, etc). A subset of ~15,000 participants provided six weekly capillary blood samples which will be analysed for COVID-19 antibodies.

In May 2021, participants were notified that TRACK-COVID would be participating in the UK Longitudinal Linkage Collaboration (UK LLC; <https://ukllc.ac.uk>). This involves linking participants' de-identified study data to health and administrative records and storing this information in a Trusted Research Environment (TRE). A TRE is a highly secure space for researchers to access sensitive data. The UK LLC aims to answer pressing COVID-19 questions through accelerating progress in establishing a pioneering health data and research infrastructure. Participants were provided with the opportunity to opt out of their data being used in the UK LLC and all participants can opt out of this at any time by contacting the study helpdesk (helpdesk@trackcovid.org.uk). **We thank our Public Contributors for helping us write the email to TRACK-COVID participants, to inform them of this research.**

Blood and Transplant Research Unit (BTRU) in Donor Health and Genomics

Our 'Blood Donors Studies'—INTERVAL, COMPARE and STRIDES—fit under the umbrella of the BTRU in Donor Health and Genomics. Led by Emanuele Di Angelantonio, Professor of Donor Health, the Unit aims to: (1) address major questions about the health of blood donors, (2) produce strategies to improve blood donor safety and (3) ensure a steady supply of blood to the NHS.

Find out more about the Unit and our studies: www.donorhealth-btru.nihr.ac.uk

Interested in working with us? Email: donorhealth@medschl.cam.ac.uk

Visit our YouTube channel to learn more about our research:
www.youtube.com/channel/UCeS9CPB2_QGcBsnORnNQyjQ

Follow us on Twitter: @DonorHealthBTRU

As a COMPARE participant we will continue to update you on the study. Published papers will be posted on our website: www.comparestudy.org.uk/publications and we'll let you know, by email, when they are available. To make sure you receive our emails, please let us know, by emailing: donorhealth@medschl.cam.ac.uk, if you change your contact details.