

NEWSLETTER

Welcome to the Autumn 2020 edition of the COMPARE Newsletter

Find out how COMPARE samples are aiding COVID-19 research efforts and how COMPARE data helped validate new technology to characterise blood groups.

Thank you for your study participation!

COMPARE samples aiding COVID-19 research efforts

Blood donors who consented to participate in the COMPARE study donated a blood sample. A proportion of blood from these samples was used to collect data in order to examine the main research question *What is the best method for measuring iron levels in blood donors?* However, only a proportion of each sample has been used; thus we have access to blood that was donated before the appearance of the new virus Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2).

Public Health England (PHE) is developing a test that uses blood components to determine the presence of SARS-CoV-2. In order to develop this test, they need access to blood which is negative for the virus—which is how we can help! We are collaborating with PHE to test various devices in the laboratory using blood that has and has not been exposed to SARS-CoV-2. This will enable PHE to develop a tool for diagnosis.

TRACK-COVID study

As a COMPARE study participant you have been invited to participate in our new study, TRACK-COVID (www.donorhealth-btru.nihr.ac.uk/studies/track-covid-study), which aims to help: (1) monitor the evolution of immunity to the SARS-CoV-2 virus and (2) define its key characteristics across a wide sample of the population resident across the geographical breadth of England. During the first stage of this study, ~90,000 individuals previously recruited into our INTERVAL, COMPARE or STRIDES studies have been invited via email to participate; ~20,000 have already consented and provided COVID-19 (the disease caused by the SARS-CoV-2 virus) information using an online questionnaire. During the second stage, a subset of ~15,000 participants will be contacted and asked to provide a self-collected, finger-prick capillary blood sample every 4-6 weeks over a period of 12 months. We cannot provide individual results to donors, but participants will receive study updates. The impact of this effort will be immediate; for example, it will directly inform public health modelling, in order to help better control and understand the COVID-19 pandemic.

Linking COMPARE data to electronic health records

The Blood and Transplant Research Unit (BTRU) in Donor Health and Genomics is the umbrella Unit for our 'Blood Donors Studies' (INTERVAL, COMPARE and STRIDES: www.donorhealthbtru.nihr.ac.uk). The questionnaire data, samples and results from assays collected from blood donors forms our Blood Donors Studies (BDS) BioResource. We will say more about our BioResource in the next newsletter.

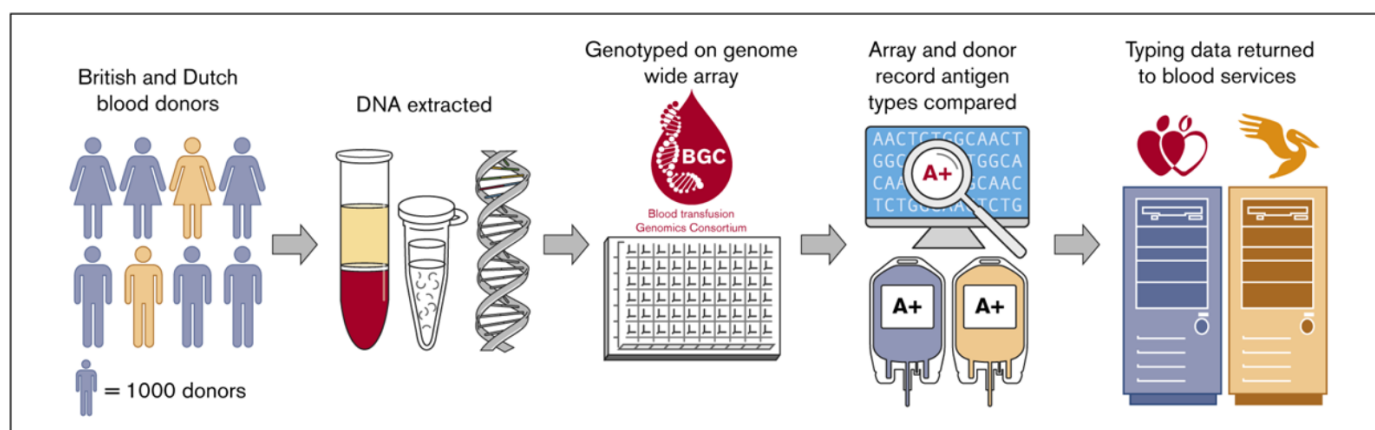
During the current COVID-19 pandemic, researchers within the BTRU have been using the BDS BioResource to investigate whether genetic and other factors affect susceptibility to COVID-19. This work is possible through the ability to link to COVID-19 test results from Public Health England and intensive care data from the Intensive Care National Audit & Research Centre. We are also in the process of requesting some General Practice data for COMPARE study participants to support COVID-19 research efforts.

New tool for characterising blood groups

The two most important blood group systems for transfusion are ABO and Rh. There are four main blood groups in the ABO system (O, A, B, AB) and five main Rh antigens (a foreign substance that induces the production of antibodies) in the Rh system (C, c, D, E, e). The combination of these determines your exact blood type.

It is very important that the type of blood given to regular blood transfusion patients exactly matches their blood type. Otherwise, each time they are transfused, they will develop an immune response to antigens in the transfused blood and they will not be able to receive that blood type in future.

Using samples and data collected during our INTERVAL study we, in collaboration with NHS Blood and Transplant (NHSBT), have developed a simple-to-use DNA test for determining exact blood type (see figure). The fully-automated test also generates results for the Human Leukocyte Antigen (HLA) and the Human Platelet Antigen (HPA) types. This information is invaluable for the rapid identification of platelet donors. The accuracy of the test was checked using data from the COMPARE study.



From the NHSBT Research and Development (R&D) blog (link below):

“Analysis of the results of nearly 8,000 blood donors showed an excellent level of accuracy at 99.9% in 101,676 comparisons. The new test provides a >10-fold increase in the number of antigen types available from typed donors (increasing from 110,980 to over 1.2 million). Using real-world data from NHS patients we have shown that the increased information on donor blood groups makes it 2.6 times more likely that a compatible donor will be identified.”

Excitingly, the next step is to bring this precision medicine test to the bedside of NHS patients.

Read NHSBT R&D's blog: www.nhsbt.nhs.uk/research-and-development/rd-blog/development-and-validation-of-a-universal-blood-donor-genotyping-platform

Read the full paper: <https://ashpublications.org/bloodadvances/article/4/15/3495/461690/Development-and-validation-of-a-universal-blood>

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

The INTERVAL, COMPARE and STRIDES studies (our ‘Blood Donors Studies’) fit under the umbrella of the BTRU in Donor Health and Genomics. Led by Emanuele Di Angelantonio, Professor of Donor Health, the Unit addresses major questions about the health of blood donors and produces evidence-based strategies to enhance donor safety, whilst ensuring a sustainable blood supply in the future.

Find out more about our research: www.donorhealth-btru.nihr.ac.uk/studies

Get involved: www.donorhealth-btru.nihr.ac.uk/involved

Videos on our new YouTube channel: www.youtube.com/channel/UCeS9CPB2_QGcBsnORnNQyjQ/featured

Follow us on Twitter: @DonorHealthBTRU

You can withdraw from the COMPARE study at any time by contacting the study helpdesk. Please visit the BTRU website – www.donorhealth-btru.nihr.ac.uk/project/electronic-health-records – for information on how to contact us and our Data Protection Notice.

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.