NIHR Blood and Transplant Research Unit in Donor Health and Genomics at University of Cambridge





NEWSLETTER

Welcome to the Spring 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!

COMPARE main study results

We are delighted to announce that the results from the COMPARE study have been published!

The study, led by Emanuele Di Angelantonio, Professor of Donor Health, recruited more than 29,000 donors attending blood donation sessions across England between February 2016 and March 2017. They analysed blood samples to compare the accuracy and donor safety of four rapid diagnostic tests: (1) copper sulphate, (2) "post donation"—estimation of current haemoglobin concentration from the measurement at the previous donation session, (3) a finger-prick sample measured in a HemoCue device and (4) non-invasive spectrometer (light shone on the skin).

COMPARE, the largest study reporting on methods for measuring haemoglobin, showed that the safest test, in terms of the fewest donors accepted below safety limits, was the finger-prick HemoCue. The test was also quicker (taking about one-fifth of the time) than the usual method and performed consistently among donors of different ethnicities and ages.

These evidence-based results guided NHSBT to update protocol documentation and staff training and to introduce a new approach to measuring haemoglobin in 2018. It has led NHSBT to replace its former method of measuring haemoglobin—copper sulphate followed by measurement from a venous blood sample—to measuring a prick of blood from the finger in a HemoCue machine, which supplies an accurate haemoglobin measurement, helping the blood service to determine if the donor should give blood or be deferred to a later date. As a direct result, around 30,000 people will be saved from avoidable anaemia and potential iron deficiency every year. This is a significant benefit to donors, who generously give blood to help others, and has helped improve donor care within the blood service.

New haemoglobin test helps prevent anaemia in blood donors (NIHR lay summary): <u>www.nihr.ac.uk/case-studies/new-haemoglobin-test-helps-prevent-anaemia-in-blood-donors/27556</u>

You can read the full paper here: <u>https://onlinelibrary.wiley.com/doi/10.1111/tme.12750</u>

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Blood Donors Studies BioResource

The Blood and Transplant Research Unit (BTRU) in Donor Health and Genomics is the umbrella group for the INTERVAL (2012-2016), COMPARE (2016-2017), CARRIAGE (2019-present), STRIDES (2019-present) and TRACK-COVID (2020-present) studies, collectively known as our 'Blood Donors Studies'.

Blood donors who consented to participate in these studies also consented to our Blood Donors Studies (BDS) BioResource. This resource began with the storage of blood samples from each study. The blood samples were then used for a variety of assays and genetic work, which added data to the BDS BioResource. This data—for example, genotyping (determining differences in an individual's genetic make-up), blood cell characteristics (number, size, granularity), protein and iron measurements— enhances questionnaire data collected during each study. We can now link this data to electronic health records (data related to health conditions that has been collected by a hospital or General Practitioner), creating a highly valuable, large database to enable the study of associations between genetic, biological, lifestyle and other variables with health outcomes (risk and presence of disease).



BioResource

Bona fide researchers around the world can enquire about access to the BDS BioResource and complete a robust application process. Access to the samples and de-identified data is strictly controlled by a formal Data Access Committee, which includes members of the public. The use of the data within the BDS BioResource (i.e. linking to electronic health records and allowing access to approved researchers) has been reviewed and approved by an ethics committee.

Data from the BDS BioResource is stored securely at the University of Cambridge. Copies of de-identified data (without any identifiable details such as the participant's name or date of birth) may also be stored in Trusted Research Environments (TREs) and secure cloud-based storage platforms for research. These are secure environments for approved researchers to access sensitive data for analysis, instead of receiving copies of data to download to their local systems. There are strict controls in place to prevent unauthorised access to the data. There are also security measures to ensure that the data cannot leave the environment, only the results from analysis by the approved researchers.

You can read more about the Blood Donors Studies (BDS) BioResource here: <u>www.donorhealth-btru.nihr.ac.uk/project/bioresource</u>

Our Data Access Policy is available here: <u>www.donorhealth-btru.nihr.ac.uk/wp-content/uploads/2020/04/Data-Access-Policy-v1.0-14Apr2020.pdf</u>

Linking COMPARE data to electronic health records

During the current COVID-19 pandemic, researchers at the BTRU and the University of Cambridge have been using the BDS BioResource to investigate whether genetic and other factors affect the risk of developing COVID-19 (the disease caused by the new coronavirus). This work is possible through the ability to link to data from 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 are in the process of requesting Antibody Testing data, Vaccination data and Stroke Audit data for COMPARE study participants to enable further research into COVID-19.

Results from analyses using data from health records by the researchers at the University of Cambridge are contributing to the COVID-19 Host Genetics Initiative (<u>www.covid19hg.org</u>). Work by this consortium has identified areas in the genome that are associated with SARS-CoV-2 infection or severe COVID-19 disease. This information is increasing global knowledge of SARS-CoV-2 and may help to identify areas for therapeutic treatment.

Update on PHE sero-diagnostic test (samples)

In the previous newsletter, we mentioned our collaboration with Public Health England in developing a test that uses blood components to determine the presence of the new virus Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2). Results from this work have now been published and we are delighted to announce that the paper was Health Data Research (HDR) UK's publication of the month in January. From the press release (link below): "Several recently developed COVID-19 lateral flow immunoassays (LFIAs)—small devices which use a finger prick of blood—provide an alternative way of detecting antibodies. This study investigated one such device, the AbC-19 Rapid Test, developed by the UK Rapid Test Consortium (UK-RTC). By using blood samples that had been taken from individuals before the pandemic (from the COMPARE study), a particular strength of this study, their assessment of the AbC-19 device found that it correctly confirmed the absence of SARS-CoV-2antibodies in 97.9% of cases."

Read the full press release: <u>www.hdruk.ac.uk/case-studies/assessing-lateral-flow-antibody-tests-for-covid-19</u>

The research received considerable media coverage, including highly appreciative comments from the Science Media Centre describing it as an exemplary approach to evaluate coronavirus test accuracy in the context of much current confusion about how to conduct such evaluations: www.sciencemediacentre.org/expert-reaction-to-study-evaluating-the-accuracy-of-the-abc-19tm-rapid-test-for-sars-cov-2-antibodies

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

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 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: www.donorhealth-btru.nihr.ac.uk

Get involved: <u>www.donorhealth-btru.nihr.ac.uk/involved</u> and <u>www.donorhealth-btru.nihr.ac.uk/hdruk-</u> <u>cambridge</u>

Visit our YouTube channel to learn more about our research

Watch our talk delivered to a public audience – Every drop counts: blood donors of the future: <u>www.youtube.com/channel/UCeS9CPB2_QGcBsnORnNQyjQ/featured</u>

Catch-up on all of our blood donor health talks (convalescent plasma; blood matching for sickle cell patients; blood group genotyping; and blood donation and COVID-19 in Denmark): www.youtube.com/playlist?list=PL7VR7iDFpJEF77Xsympg3yte0M83J1X0y

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: <u>www.comparestudy.org.uk/publications</u> 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: <u>donorhealth@medschl.cam.ac.uk</u>, if you change your contact details.